
Land at Lickers Lane, Whiston

Environmental Statement Volume 1

Environmental Statement

Prepared on behalf of Vistry Partnerships North West

September 2022

Land at Lickers Lane, Whiston

Environmental Statement Volume 1

Main Text and Figures

**Prepared by Barton Willmore on behalf of
Vistry Partnerships North West**

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Checked by:	NP	NP

Barton Willmore, now Stantec
7 Soho Square
London
W1D 3QB

Tel: 0207 446 6888



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ABBREVIATIONS

ADBA	Archaeological Desk Based Assessment
APS	Annual Population Survey
AOD	Above Ordnance Datum
AONB	Area of Outstanding Natural Beauty
BAP	Biodiversity Action Plan
BGS	British Geological Survey
BNG	Biodiversity Net Gain
BPM	Best Practice Means
BMV	Best and Most Versatile agricultural land
BRES	Business Register and Employment Survey
BS	British Standard
CCG	Clinical Commissioning Group
CEMP	Construction Environmental Management Plan
CIfA	Chartered Institute for Archaeologists
CLP	Construction Logistics Plan
CITB	Construction Industry Training Board
DAS	Design and Access Statement
DCLG	Department for Communities and Local Government
DEFRA	Department for Environment, Food and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DfE	Department for Education
DoE	Department of the Environment
DLUHC	Department for Levelling Up, Housing and Communities
EA	Environment Agency
EcIA	Ecological Impact Assessment
EIA	Environmental Impact Assessment
EPA	Environmental Protection Act
EPS	European Protected Species
ES	Environmental Statement
EVCP's	Electric Vehicle Charging Points
FRA	Flood Risk Assessment
FTE	Full Time Equivalent
GCN	Great Crested Newts
GEA	Gross External Area
GFA	Gross Floor Area
GLVIA	Guidelines for Landscape and Visual Impact Assessment
GP	General Practitioner
Ha	Hectares
HEDBA	Historic Environment Desk Based Assessment
HER	Historic Environment Record
HIA	Health Impact Assessment
HMP	Habitat Management Plan
HUDU	Healthy Urban Development Unit
IEA	Institute for Environmental Assessment
IEEM	Institute of Ecology and Environmental Management
IEMA	Institute of Environmental Assessment and Management
ILP	Institute of Lighting Professionals
IPG	Interim Planning Guidance
Km	Kilometre
KMBC	Knowsley Metropolitan Borough Council, the determining authority for the application
LBAP	Local Biodiversity Action Plan
LDF	Local Development Framework
LFT	Labour Forecasting Tool
LGS	Local Geological Sites
LNR	Local Nature Reserve
LPA	Local Planning Authority
LSOA	Lower Super Output Area

LWS	Local Wildlife Site
m ³	Cubic metres
m	Metres
mm	millimetre
mph	Miles per hour
MYPE	Mid-Year Population Estimates
NCN	National Cycle Network
NERC	Natural Environment and Rural Communities
NGR	National Grid Reference
NOMIS	Official Labour Market Statistics
NRMM	Non-Road Mobile Machinery
NPPF	National Planning Policy Framework
NTS	Non-Technical Summary
NW	North West
ONS	Office for National Statistics
OS	Ordnance Survey
PAS	Portable Antiquity Scheme
PEA	Preliminary Ecological Appraisal
PHE	Public Health England
PPE	Personal Protective Equipment
PPG	Planning Practice Guidance
PPS	Planning Policy Statement
PROW	Public Right of Way
RQO	River Quality Objective
SAC	Special Areas of Conservation
SANGS	Suitable Alternative Natural Green Spaces
SCI	Statement of Community Involvement
SFRA	Strategic Flood Risk Assessment
SINC	Site of Importance for Nature Conservation
SPA	Special Protection Area
SNPP	Sub National Population Projections
SSSI	Site of Specific Scientific Interest
SoS	Secretary of State
SPD	Supplementary Planning Document
SPZ	Source Protection Zone
sqm	Square metres
SUE	Sustainable Urban Extension
SuDS	Sustainable Drainage System
TPO	Tree Preservation Order
µg/m ³	micrograms per cubic metre
WQS	Water Quality Standards

GLOSSARY

Within this Environmental Statement, the following terms are defined as follows:

Above Ordnance Datum	Ordnance Datum is the vertical datum used by ordnance survey as the basis for deriving altitudes on maps. Topography may be described using the level in comparison or 'above' ordnance datum.
Agriculture	Section 336(1) of the Town and Country Planning Act 1990 defines agriculture as including: • Horticulture, fruit growing, seed growing, dairy farming; • The breeding and keeping of livestock (including any creature kept for the production of food, wool, skins or fur, or for the purpose of its use in the farming of land); • The use of land as grazing land, meadow land, osier land, market gardens and nursery grounds; and • The use of land for woodlands where that use is ancillary to the farming of land for other agricultural purposes.
Ancient Woodland	Woodland that has existed continuously since 1600 or before in England and Wales.
Applicant	Vistry Partnerships North West
Site	The Site, located south of Lickers Lane, Whiston, extends to approximately 3.4 hectares (ha) and is irregular in shape. The northern portion of the Site comprises a dense area of shrubs and trees, whereas the southern portion of the Site comprises open greenspace, with some scattered trees. There are also some scattered trees and hedgerows along the eastern and western perimeters of the Site boundary.
Aquifer	A geological formation (soil or rock) which is able to store water in significant quantities and transmit water relatively quickly under natural conditions (or when pumped).
Baseline	Environmental conditions at specific periods of time, present on, or near a site, against which future changes may be measured or predicted.
Biodiversity	Abbreviated form of 'biological diversity'.
Completed Development	Within the ES, this phase refers to the Development when fully built and operational.
Considerate Contractors	Contractors who are compliant with the Considerate Contractors scheme can be considered as a contractor who is clean, respectful, safe, environmentally conscious, responsible and accountable.
Construction	The indicative construction programme for the Development is anticipated to commence in February 2023 subject to gaining planning permission, and span approximately 3 years. Overall, construction is expected to be completed by January 2026.
Construction Liaison Officer	A designated liaison officer who will deal with public and other complaints and enquiries during the construction phase.
Cumulative effects	The summation of effects that result from changes caused by a development in conjunction with other past, present or reasonably foreseeable actions.
Development	The Development comprises full planning application for the erection of 120 residential dwellings with vehicular access points off Lickers Lane, public open space, landscaping, boundary treatments and other associated works.

Effect	A physical or measurable change to the environment attributable to the project.
EIA Regulations	The Town and Country Planning (Environmental Impact Assessment) Regulations 2017
Environmental Impact Assessment (EIA)	A systematic means of assessing a development project's likely significant environmental effects.
Environmental Statement (ES)	Statutory report summarising the findings of an environmental impact assessment.
Field Pattern	The pattern of hedges, fences and walls that define fields in farmed landscapes.
Flood Risk Assessment (FRA)	A desk based study which considers the contributing factors and predicts / quantifies the risk of flooding and also identifies a water level in the event of flooding.
Habitat	The environment in which populations or individual species live or grow.
Landscape Character	The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape, and how this is perceived by people. It reflects particular combinations of geology, landform, soils, vegetation, land use and human settlement. It creates the particular sense of place of different areas of the landscape.
Landscape Effects	Change in the elements, characteristics, character and qualities of the landscape as a result of development.
Landscape Sensitivity	The extent to which a landscape can accept change of a particular type and scale without unacceptable adverse effects on its character.
Light spill	The unwanted spillage of light on to adjacent areas and may affect or cause nuisance to sensitive receptors, particularly residential properties and natural habitats.
Local Nature Reserve	Local Nature Reserve (LNR) are places with wildlife or geological features that are of special interest locally.
Local Wildlife Site (LWS)	Local Wildlife Sites are non-statutory sites with 'substantive nature conservation value'. They are defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a national, region
Mitigation Measures	Actions proposed to moderate adverse effects arising from the whole or specific elements of a development including any process, activity or design to avoid, reduce, remedy or compensate for adverse environmental effects of a development project.
Non-Technical Summary	A report which briefly describes the main points discussed in the Environmental Statement in a clear manner, without the use of technical jargon and phraseology.
Phase 1 Habitat Survey	An ecological survey technique that provides a standardised system to record vegetation and wildlife habitats. It enables a basic assessment of habitat type and its potential importance for nature conservation. Each habitat type or feature is identified and presented on a map.
Public Open Space	Open space, designated by a local authority, defined where public access is generally not formally established, but which fulfils or is capable of fulfilling a recreational and/or non-recreational role (for example, amenity, ecological, educational, social or cultural). It

	includes most nature reserves, city farms, cemeteries, reservoirs (including covered reservoirs) and some private institutional and housing estate grounds which are not considered suitable for building development. Public Open Space does not include school playing fields nor the amenity areas associated with the development of homes or flats or pedestrian precincts (Local Government Act 1966 Section 8).
Public Right of Way (PROW)	A right of passage by the public over the surface of the land without impediment. Public Rights of Way include public footpaths, bridleways and byways open to all traffic and Restricted Byways.
Receptor	A component of the natural, created or built environment such as human being, water, air, a building, or a plant that has the potential to be affected by the Development.
Scoping	An exercise undertaken to determine the topics to be addressed within the Environmental Statement.
Screening	Consideration as to whether an environmental impact assessment is required for a project.
Section 106 Agreement	Section 106 (S106) of the Town and Country Planning Act 1990 allows a local planning authority (LPA) to enter into a legally-binding agreement or planning obligation with a landowner in association with the granting of planning permission. The obligation is termed a Section 106 Agreement.
Site of Nature Conservation Importance (SNCI)	Sites of Nature Conservation Importance (SNCI) are amongst the best sites for wildlife in the County. They are a comprehensive suite of local wildlife sites that are of high value for biodiversity, with habitats and species that are uncommon in the County and sometimes further afield.
Site of Special Scientific Interest (SSSI)	The nature conservation agencies have a duty under the Wildlife and Countryside Act 1981, as amended, to notify any area of land which in their opinion is 'of special interest by reason of any of its flora, fauna, or geological or physiographical features'. Such areas are known as Sites of Special Scientific Interest (SSSIs).
Sky glow	The upward spill of light into the sky which can cause a glowing effect and is often seen above cities when viewed from a dark area.
Sustainable Drainage System (SuDS)	Sustainable management practices designed to control the rate and quality of surface water runoff into receiving waters, for example the use of swales and wetlands as buffers, as opposed to conventional drainage practices.
Topography	The natural or artificial features, level and surface form of the ground surface.
Tree Preservation Order	A Tree Preservation Order (TPO) is a legally enforceable order made by the Local Planning Authority (LPA) to protect trees and woodland in the interests of public amenity. The power to make a TPO is contained in the Town and Country Planning Act 1990 and the Town and Country (Tree Preservation) (England) Regulations 2012. The principal effect of a TPO is to prohibit the cutting down, uprooting, topping, lopping, uprooting, wilful damage to or wilful destruction of protected trees or woodlands unless permission has been given by the LPA.
Upward Light of the Installation (ULR)	The maximum permitted percentage of luminaire flux that goes directly into the sky.
Visual Effect	Change in the appearance of the landscape from available viewpoints as a result of development.

1.0 INTRODUCTION

- 1.1 Vistry Partnerships North West (the 'Applicant') is applying for full planning permission for the development of 120 new residential homes, along with associated drainage, and access (the 'Development') on land south of Lickers Lane, Whiston, Knowsley (the 'Site').
- 1.2 The Site is located in the administrative area of Knowsley Metropolitan Borough Council ('KMBC') and is approximately 3.4 hectares (ha) in area; the Site boundary is shown on Figure 1.1 and location within the wider area is shown on Figure 1.2. A full description of the Site and Development is provided in Chapter 3: Site and Development Description of this Environmental Statement (ES).

Planning Context

- 1.3 The Site forms part of the Halsnead Garden Village Masterplan for up to 1,600 dwellings. The Site is allocated in Policy SUE1 and SUE2c within the KMBC Core Strategyⁱ as land safeguarded for Sustainable Urban Extension (SUE). The land, totalling 110.3ha is referred to as South of Whiston, and is allocated for residential development, the KMBC Core Strategy gives the Site a notional capacity to provide up to 1,503 new dwellings.
- 1.4 The allocated site was split into different areas, which have subsequently been purchased by varying sources and are expected to be brought forward for development.

Requirement for Environmental Impact Assessment

- 1.5 Environmental Impact Assessment ('EIA') is a process by which development proposals deemed likely to have significant environmental effects are appraised. EIA is a means of drawing together, in a systematic way, an assessment of a development's likely significant environmental effects. This helps to ensure that the importance of the predicted significant environmental effects, and the scope for reducing them, are properly understood before a decision is made. Information on the likely significant effects of the Development has been gathered and is presented in this document, the ES. The ES will inform the decision-maker (in this case KMBC) of the likely significant environmental effects of the Development both during demolition/construction and operation, and proposes mitigation measures to prevent, reduce or offset any significant adverse effects on the environment.
- 1.6 The Development falls within the category 'urban development projects' (Schedule 2, 10, (b)) of the *Town and Country Planning (Environmental Impact Assessment) Regulations*

2017¹, as amended (the 'EIA Regulations'), however the Development does not exceed any of the applicable thresholds or criteria. The Applicant did not submit a request for a formal EIA Screening Opinion to KMBC, but instead decided to proceed with an ES, following informal screening discussions with the Council. An ES, informed through an EIA Scoping process (see Chapter 2 for further details), has therefore been prepared in support of the planning application.

Organisation of the Environmental Statement

- 1.7 Regulation 18 of the EIA Regulations sets out the information an ES should include. Table 1.1 below shows where the Regulation 18 information has been provided in this ES. Appendix 1.1 sets out where the information required by Schedule 4 has been provided in this ES.

Table 1.1: Location of Information Required by Regulation 18 of the EIA Regulations

Specified Information		Location within ES
Reg 18 (3) An environmental statement is a statement which includes at least—		
(a)	a description of the proposed development comprising information on the Site, design, size and other relevant features of the development;	Chapter 3.
(b)	a description of the likely significant effects of the proposed development on the environment;	Technical Chapters 6-11.
(c)	a description of any features of the proposed development, or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment	Chapters 3, 5 and Technical Chapters 6-11.
(d)	a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment;	Chapter 4.
(e)	a non-technical summary of the information referred to in sub-paragraphs (a) to (d);	Separate standalone NTS.
(f)	any additional information specified in Schedule 4 relevant to the specific characteristics of the particular development or type of development and to the environmental features likely to be significantly affected	Technical Chapters 6-11.
Reg 18 (4) An environmental statement must—		
(a)	where a scoping opinion or direction has been issued in accordance with regulation 15 or 16, be based on the most recent scoping opinion or direction issued (so far as the proposed development remains materially the same as the proposed development which was subject to that opinion or direction);	Chapter 2.
(b)	include the information reasonably required for reaching a reasoned conclusion on the significant effects of the development on the environment, taking into account current knowledge and methods of assessment; and	Technical Chapters 6-11.

Specified Information		Location within ES
(c)	be prepared, taking into account the results of any relevant UK environmental assessment, which are reasonably available to the person preparing the environmental statement, with a view to avoiding duplication of assessment.	No other European assessments have been prepared to accompany this application and no duplicate reports of any assessments contained in the ES have been provided as part of the planning application.
Reg 18 (5) In order to ensure the completeness and quality of the environmental statement—		
(a)	the developer must ensure that the environmental statement is prepared by competent experts;	A 'statement of expertise' as required by Regulation 18 (5)(b) of the EIA Regulations 2017 is provided in Appendix 1.2.
(b)	the environmental statement must be accompanied by a statement from the developer outlining the relevant expertise or qualifications of such experts.	A 'statement of expertise' as required by Regulation 18 (5)(b) of the EIA Regulations 2017 is provided in Appendix 1.2.

ES Structure

- 1.8 This ES comprises 12 chapters and is supported by figures (located at the back of each chapter within Volume 1) and technical appendices (within a separate Volume 2). A Non-Technical Summary (NTS) of the full ES is provided as a separate standalone document. Table 1.2 sets out the structure of the ES.

Table 1.2: ES Structure

Volume 1 – Main Text & Figures		
Chapter No.	Chapter Title	Description
1	Introduction	Introduction to the ES, EIA requirements, details of project team, ES organisation and availability.
2	EIA Methodology	Methods used to prepare each chapter, description of ES structure and content, generic significance criteria, scoping and consultation.
3	Site and Development Description	Site description and details of the Development.
4	Alternatives and Design Evolution	Outline of the main alternatives considered by the Applicant.
5	Construction Methodology and Phasing	Details of anticipated programme for Development and construction methodology.
6	Population and Human Health	Assessment of effects of the Development on population and human health.
7	Landscape and Visual Effects	Assessment of effects of the Development relating to landscape and visual amenity.
8	Biodiversity	Assessment of effects of the Development relating to ecology and biodiversity.
9	Built Heritage	Assessment of effects of the Development relating to above

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		ground built heritage assets.
10	Air Quality	Assessment of effects of the Development relating to air quality as a result of construction activities and vehicle movements, and during the operation phase, including from traffic movements and plant emissions.
11	Transport	Assessment of effects on the Development relating to construction and operational traffic.
12	Summary and Residual Effects	Summary of the residual and interactive effects of the Development.
Volume 2	Technical Appendices	Technical data and reports to support the chapters in Volume 1.
Standalone Document	Non-Technical Summary	Summary of the ES in non-technical language.

Project Team

- 1.9 The ES has been coordinated by Barton Willmore, now Stantec and presents the results of technical studies carried out in conjunction with a number of specialist consultants appointed by the Applicant. The project team is listed in Table 1.3 along with their respective disciplines and contributions to the ES.

Table 1.3: Project Team

Organisation	Expertise / Competence
Vistry Partnerships North West	The Applicant
MPSL Planning and Design	Architects
Barton Willmore, now Stantec	EIA Coordination and Population and Human Health
Hive Land and Planning Limited	Planning
Urban Green	Landscape Architects
E3P	Ecology
Lanpro	Built Heritage
Redmore Environmental	Air Quality
Eddisons	Transport

Other Documents

- 1.10 A number of other documents have been submitted to KMBC in support of the planning application, which have been used to inform the ES. These include:

- Planning Statement including the Statement of Community Involvement;
- Layout Plans and other standalone application plans;
- Landscape Management Plans;
- Transport Assessment;
- Travel Plan;
- Design and Access Statement;

- Energy and Sustainability Statement;
- Flood Risk - Sustainable Urban Drainage and Surface Water Management;
- Noise & Vibration Monitoring Report;
- Arboricultural Impact Assessment;
- Phase 1 Geo-Environmental Site Assessment;
- Viability Assessment;
- Social Value Statement;
- Waste Strategy; and
- Utilities Report.

Environmental Statement Availability

- 1.11 Printed paper copies of the ES and the technical appendices can be purchased at a cost of £300 and £400 respectively. The NTS can be obtained for £20. Copies of the ES, technical appendices and NTS can be obtained on data stick for £20. All documents are available from:

Environmental Planning Team
Barton Willmore, now Stantec
7 Soho Square
London, W1D 3QB

Tel: 020 7446 6888

Email: IEPenquiries@bartonwillmore.co.uk

- 1.12 The ES should be made available for public viewing. A hard copy of the ES will be issued to KMBC and can be reviewed in person via appointment. Comments on the planning application can also be made via the Councils' websites or can be forwarded to the Planning Departments at the addresses below:

Planning Service
Knowsley Metropolitan Borough Council
Municipal Buildings
Huyton
L36 9UX

Tel: 0151 443 2381

Email: planning@knowsley.gov.uk

REFERENCES

ⁱ Knowsley Local Plan Core Strategy. Link <https://localplanmaps.knowsley.gov.uk/documents/knowsley-local-plan-adopted-core-strategy.pdf>

ⁱⁱ SI 571 as amended by 2018/659

2.0 ENVIRONMENTAL IMPACT ASSESSMENT METHODOLOGY

Introduction

- 2.1 This chapter explains the EIA methodology and describes the ES structure and content. In particular it details the process of identifying and assessing the likely significant environmental effects of the Development.
- 2.2 The ES has been prepared in accordance with the Town & Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017 (as amended) (the "EIA Regulations")ⁱ. Reference has also been made to currently available good practice guidance on EIA including the Planning Practice Guidance issued by the Department for Levelling Up, Housing and Communitiesⁱⁱ.

Screening

- 2.3 As noted in Chapter 1, the Applicant did not submit a formal EIA screening request to KMBC. Through informal discussions with the Applicant, KMBC advised the Applicant that the proposals are considered to be EIA development and therefore the Applicant proceeded to EIA Scoping. The Halsnead Park SPDⁱⁱⁱ states that all applications within the Halsnead Park Garden Village should be subject to an EIA.

Scoping

- 2.4 Scoping involves focusing the content of an ES on issues of significance. It is an important tool for identifying the likely significant effects of a proposed development through its design, construction and completed phases and ensures that appropriate mitigation options are considered where necessary. A request for an EIA Scoping Opinion, accompanied by an EIA Scoping Report (Appendix 2.1), was submitted to KMBC on 29th June 2022. The Scoping Report identified the topics to be scoped into and out of the ES and for those assessments to be included, details of the scope of the assessments. KMBC subsequently issued their formal EIA Scoping Opinion (Appendix 2.2) on 18th August 2022. The topics scoped into the ES comprise:
- Population and Human Health;
 - Landscape and Visual Effects;
 - Biodiversity;
 - Built Heritage;

- Air Quality; and
- Transport (requested by KMBC to be scoped in to the ES).

Topics Scoped Out of the ES

Noise and Vibration

- 2.5 Due to the nature of the Development, there are not expected to be any significant sources of vibration, neither is the Site subject to any existing sources of vibration that could have amenity implications. Nevertheless, standard best practice mitigation measures would be implemented during construction in accordance with the CEMP, to minimise potential temporary noise and vibration from construction plant and activities.
- 2.6 Once complete and occupied, noise and vibration effects would primarily be from road traffic associated with the Development which could affect existing and future residents of the area. However, given the small increase in traffic anticipated, it is considered that noise effects will not be significant and where necessary will be addressed at the detailed design stage to mitigate any potential effects. Nevertheless, a standalone Noise and Vibration Monitoring Report has been submitted as part of the planning application. Noise and Vibration is therefore scoped out of this ES.

Water Resources and Flood Risk

- 2.7 The Site is located entirely within Flood Zone 1, which is considered to be at the lowest risk (<0.1% risk) of fluvial flooding in any given year. The Site is also considered to be at a very low risk of flooding from surface water sources, and there is very low risk of flooding from the sea. The Site is not considered to be at risk from groundwater flooding.
- 2.8 Beyond the Site boundary to the north east lie two ponds surrounded by an area of scattered trees. Although from east – south west the topography of the Site slopes somewhat from approximately 55m AOD to approximately 49m AOD, the ponds are not considered to pose a risk to flooding of the Site.
- 2.9 A Flood Risk Assessment (FRA) and a Sustainable Drainage Strategy has been prepared in support of the planning application which outlines how the Development will comprise appropriate drainage and landscaping to reduce the risk of flooding.
- 2.10 Due to the Site being at no to very low risk of flooding from a variety of sources, a standalone water resources and flood risk chapter is scoped out of this ES.

Land Contamination

- 2.11 The Site currently comprises a mixture of open greenspace, with areas of scattered trees, shrub, and hedgerows.
- 2.12 With the exception of the western edge of the Site, the majority of the Site is located within a Source Protection Zone (SPZ) (Zone 3) (i.e. an area where groundwater is vulnerable to contamination). The Site is not however located within a drinking water safeguarded zone for surface water or groundwater.
- 2.13 The Site has no record of being used as a historic landfill site, the nearest historic landfill sites (Coalgate Lane Landfill Site and Whiston Tip) are located approximately 900m to the west of the Site and were used for household, inert, commercial, industrial, and liquid sludge waste.
- 2.14 The Site does not comprise a history of polluting or contaminating uses. Although it is partially located within an SPZ, any risk of contamination will be appropriately mitigated in a land contamination desk study, submitted in support of the planning application. Notwithstanding, the likelihood of significant effects from land contamination is considered to be low and therefore is scoped out of this ES.

Archaeology

- 2.15 The Site predominantly comprises undeveloped open greenspace and is not located within an Archaeological Priority Area. The Archaeological Desk Based Assessment (ADBA) for an adjacent scheme within the Halsnead Garden Masterplan outlines that the potential for prehistoric and Roman archaeological remains is low within the Site boundary. For early Medieval and Medieval assets, the potential for remains is considered to be medium however should any archaeological features be found, these would be of low significance. Twelve Post Medieval & Modern artefacts are recorded on the Portable Antiquity Scheme (PAS) from the Knowsley area. The potential for Post Medieval buried archaeological remains in the form of structures or shafts associated with mining to the south west of the Site, and of agricultural features such as pits and field boundaries is high, but any remains would be of low significance.
- 2.16 Given the above, significant effects on archaeology are not anticipated. An ADBA will be prepared and submitted with the planning application. Therefore, archaeology is scoped out of this ES.

Wind Microclimate

- 2.17 The Development will not include any high-rise buildings which could influence wind patterns. The maximum number of storeys on houses is 2.5 storeys, whereas the apartment block to the south east of the Development will be a maximum of 3 storeys. Therefore, likely significant wind effects are not anticipated, and this topic is therefore scoped out of this ES.

Daylight, Sunlight and Overshadowing

- 2.18 The scale and massing of the Development will not cause changes to daylight or sunlight availability or cause overshadowing of residents or amenity space as the maximum number of storeys across the Development is 3 storeys. This discipline is therefore scoped out of the ES.

Agricultural Land

- 2.19 The Site includes areas of open greenspace, particularly in the south of the Site. However, as the Site area only extends to 3.4ha, the Development would not result in a loss of more than 20ha of Best and Most Versatile (BMV) agricultural land (Natural England Technical Information Note 049¹), which is considered the threshold for likely significant effects. The Development will therefore not generate significant effects on agricultural land, and it is therefore scoped out of the ES.

Lighting

- 2.20 The Site is located on the southern edge of the town of Whiston and existing residential areas which are already well lit. In addition, lighting will be designed carefully in accordance with relevant Institute of Lighting Professionals (ILP) (2020) Guidance Notes for the Reduction of Obtrusive Light² and BS 5489-1:2013³ and BS EN 13201-2:2015⁴. Therefore, the Development is not anticipated to produce a significant lighting impact. Where appropriate, lighting has been considered within the ES, including Chapter 8 Biodiversity. Lighting has therefore been scoped out of the ES.

¹ Natural England (December 2012) Technical Information Note TIN049 Second edition, Agricultural Land Classification: protecting the best and most versatile agricultural land.

² Guidance Note 01/20. Guidance Notes for the Reduction of Obtrusive Light (2020). Institute of Lighting Professionals.

³ British Standards EN 13201-2:2015 Road Lighting Performance requirements.

⁴ British Standards EN 13201-2:2015 Road Lighting Performance requirements.

Waste

- 2.21 The Development is not anticipated to produce significant amounts of waste to the extent that the creation or disposal of which would give rise to significant effects on the environment. The CEMP to be secured by a planning condition following planning approval, would detail the mitigation measures to be implemented during the construction phase to minimise waste and ensure that it is stored, managed, collected and disposed of appropriately.
- 2.22 Operational waste will be minimised as far as possible and disposed of in line with KMBC requirements and managed in accordance with all applicable legislation. The potential effects from refuse servicing movements will be considered within the Transport Assessment and Air Quality Assessment. No likely significant effects are anticipated and therefore waste is scoped out of the ES.

Accidents and Disasters

- 2.23 The Development is for residential uses which are not considered to be hazardous. The Site is not in a location which is at risk of disasters such as, land instability or earthquakes. As previously stated, the Site is located entirely within Flood Zone 1, meaning the Site is at the lowest risk of fluvial flooding. Moreover, the Site is at very low risk of flooding from surface water and flooding from the sea, and there is no risk of groundwater flooding on site. A Flood Risk Assessment (FRA) will be submitted with the planning application to ensure no significant effects arise in terms of flooding.
- 2.24 During the construction phase, the contractor(s) would implement measures in accordance with Health and Safety legislation, and best practice, to minimise the risks of accidents that would have effects on people or the environment. All such measures would form part of the CEMP. No likely significant effects are anticipated and therefore an accidents and disasters chapter has been scoped out of the ES.

Climate Change

- 2.25 The Applicant will consider how climate change may affect the Development from the outset as part of the design process. Considerations will include future-proofing and resilience measures. The Development will also include identification of the future climate in assessments within the ES, including Flood Risk and where relevant in the landscaping proposals i.e. plants suitable for a changing climate. Additionally, an Energy and Sustainability Statement has been submitted in support of the planning application,

outlining how the operational development can reduce its greenhouse gas emissions.

- 2.26 Accordingly, an assessment of climate change and greenhouse gases, as a separate chapter, is scoped out of the ES. The introductory chapters will summarise the findings of the ES relevant to climate change and outline how climate change adaptations are integrated into the Development. These will draw upon technical chapters and reports, including the Air Quality Assessment and summarise the sustainability and energy provisions included as well as other mitigation measures seeking to reduce greenhouse gas emissions such as Travel Plans. For a development of this nature, this is considered a suitably proportionate approach.

Consultation Process

- 2.27 The planning application is the culmination of an extensive design process which has involved consultation with KMBC, statutory consultees, the local community, and other stakeholders.
- 2.28 The Applicant distributed Community Consultation leaflets about the Development to 300 local households, on 1st July 2022. Local ward councillors and Whiston Town Council were also sent a copy of the leaflet by email. This leaflet provided stakeholders and the local public the opportunity to share their views with the Applicant regarding the Development. The consultation period was due to close on 13th July 2022 however, this was extended to 21st July 2021 to allow Whiston Town Councillors to be briefed on the consultation at their meeting the previous day. A dedicated email address was provided for respondents to provide their comments. There was also an option for respondents to post their responses to Hive Lane and Planning' address, should local residents not have access to the internet.
- 2.29 It was not considered necessary to hold public events in person due to the fact that local residents were likely to be aware of the Halsnead Garden Village development as part of the Local Plan allocation process, or the planning applications submitted by other applicants.
- 2.30 A Statement of Community Involvement (SCI) setting out the full background to the consultation undertaken as part of the Development has been submitted, as a chapter within the Planning Statement, as part of this planning application.
- 2.31 Only two comments were received from local residents, with the primary concerns raised during the consultation process as follows:
- Sustainability of the Development;

- Traffic congestion;
- The lack of infrastructure;
- Flooding and flood risk on site; and
- The visual impact of the Development.

2.32 These have been considered during the design evolution of the Development to ensure concerns are addressed, as discussed in the SCI and Chapter 4 Alternatives.

Approach to Technical Studies

- 2.1 The EIA studies commenced at an early stage in the development process. The findings of these baseline environmental studies have played an important role in the design of the Development by defining the environmental sensitivities, constraints and opportunities associated with the Site.
- 2.2 The technical studies have been undertaken in accordance with current best practice. Specific guidance used is referenced within each of the respective assessment chapters. The majority of assessments involved consultations with statutory and non-statutory bodies, desk-based research, site inspections and surveys, impact prediction and mitigation.
- 2.3 The assessment and conclusions of the ES are based on the description of the Development provided in Chapters 3 and accompanying figures. Chapter 5 sets out details of the construction phase of the Development, on which the ES is based.

Assessment Methodology

- 2.33 The EIA Regulations stipulate that an ES should identify, describe, and assess the likely significant effects of a development on the environment. Therefore, this ES identifies and assesses the likely significant effects of the Development in relation to the construction and operational phases. Environmental effects have been evaluated with reference to definitive standards and legislation where available. Where it has not been possible to quantify effects, qualitative assessments have been carried out, based on available knowledge and professional judgement. Where uncertainty exists, this has been noted in the relevant assessment chapter.

Structure of Technical Chapters

- 2.34 Each technical chapter of the ES (Chapters 6-11) has been set out broadly in line with Table

2.1 below. Chapter 5 provides information to allow the construction phase of the Development assessed by the disciplines set out in chapters 6-11.

Table 2.1: Structure of the Technical Chapters

Heading	Content
Introduction	Each of the technical chapters begins with an introduction providing context to the EIA completed.
Policy Context	This section includes a summary of policies of relevance to the environmental discipline and explains its purpose in the context of the Development and the ES.
Assessment Methodology	This section describes the method and approach employed in the assessment of likely significant effects, the criteria against which the significance has been evaluated, the sources of information used, and any technical difficulties encountered. Relevant legislation is also identified.
Baseline Conditions	This section describes and evaluates the baseline environmental conditions i.e. the current situation and anticipated changes over time assuming the Site remains undeveloped.
Likely Significant Effects	This section identifies the likely significant effects on the environment resulting from the Development during the construction and operational phases. A description of the likely significant effects of the Development and an assessment of their predicted significance is provided.
Mitigation Measures	This section describes the measures which would be implemented to mitigate against potential adverse impacts. Where possible, enhancement measures have also been proposed.
Residual Effects	The residual effects, i.e. the remaining effects of the Development assuming implementation of the proposed mitigation measures, have been estimated and presented.
Cumulative Effects	This section considers the cumulative effects of the Development with committed developments identified within the vicinity of the Site. Any likely significant effects on the environment arising in this respect are set out in this section.
Summary	Each technical chapter concludes with a brief summary outlining the potential residual effects for the construction phase (short/medium) and operation (medium/long-term) phase of the Development.

Baseline Conditions

- 2.35 The ES includes a description of the prevailing environmental conditions, the 'Baseline Conditions', against which the likely significant environmental effects of the Development have been assessed. These are taken to be the conditions at the time or immediately prior to the submission of the planning application. Each technical assessment has also identified the Future Baseline conditions in the absence of the Development.

Determining Significance

- 2.36 It is broadly accepted that significance reflects the relationship between two factors:
- The actual change taking place to the environment (i.e. the magnitude or severity of an effect); and
 - The sensitivity, importance or value of the affected resource or receptor.

Magnitude

- 2.37 The magnitude of an effect is often quantifiable in terms of, for example, extent of land take, or predicted change in noise levels. A methodology for determining the scale, or magnitude, of effect is set out in Table 2.2 below.

Table 2.2: Methodology for Assessing Magnitude

Magnitude of Impact	Criteria for Assessing Effect
Major	Total loss or major/substantial alteration to key elements/features of the baseline conditions such that the post development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character / composition / attributes of the baseline condition will be similar to the pre-development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

Sensitivity

- 2.38 The sensitivity, importance or value of the resource or receptor is normally derived from:
- Legislative controls;
 - Designated status within the land use planning system;
 - The number of individual receptors such as residents;
 - An empirical assessment on the basis of characteristics such as rarity or condition; and/or
 - Ability of the receptor to absorb change.
- 2.39 The sensitivity of a receptor is based on the relative importance of the receptor using the scale in Table 2.3 below.

Table 2.3: Methodology for Assessing Sensitivity

Sensitivity	Examples of Receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Moderate	The receptor/resource has moderate capacity to absorb change without significantly altering its present character, or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.

Significance

- 2.40 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the impacts can be beneficial or adverse. Table 2.4 below shows how magnitude and sensitivity interact to derive effect significance.

Table 2.4: Methodology for Assessing Significance

Magnitude	Sensitivity		
	High	Moderate	Low
Major	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial
Moderate	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

- 2.41 The above magnitude and significance criteria have been provided as a guide for technical specialists to assess impact significance. Where discipline specific methodology has been applied that differs from the generic criteria above, this has been clearly explained within the given chapter under the heading of 'Assessment Methodology'.
- 2.42 The significance criteria takes into account the following factors:
- The value of the resource (international, national, regional and local level importance);
 - The magnitude of impact;
 - The duration involved;
 - The reversibility of the effect; and
 - The number and sensitivity of receptors.

Mitigation

- 2.43 Any adverse environmental effects have been considered for mitigation at the design stage and, where practicable, specific measures have been put forward. Measures have been considered based on the following hierarchy of mitigation:
- Avoidance;
 - Reduction;
 - Compensation;
 - Remediation; and
 - Enhancement.

- 2.44 Where the effectiveness of the mitigation proposed has been considered uncertain, or where it depends upon assumptions of operating procedures, data and/or professional judgement has been introduced to support these assumptions.
- 2.45 Mitigation recommended during the construction phase would be set out in the Construction Environmental Management Plan (CEMP) to be agreed with KMBC prior to the commencement of work and implemented throughout the duration of the works. Outline mitigation measures to be included in a future CEMP are set out in Chapter 5 of this ES: Construction Methodology and Phasing.
- 2.46 Mitigation to be implemented during the operational phase would be secured through planning conditions and obligations.

Residual Effects

- 2.47 The likely significant effects on the environment, assuming the successful implementation of mitigation measures proposed, have been identified within each chapter.

Cumulative and Interactive Effects

Cumulative Effects

- 2.48 A requirement of the EIA Regulations is to assess cumulative effects. Cumulative effects are generally considered to arise from the combination of effects from the Development and from other proposed or permitted schemes in the vicinity, acting together to generate elevated levels of effects. The assessment has been informed by paragraph 5(e) of Schedule 4 of the EIA Regulations, which states:

"A description of the likely significant effects of the development on the environment resulting from, inter alia: ... (e) the cumulation of effects with other existing and/ or approved projects..."

- 2.49 This ES duly considers the potential for likely significant effects on the environment resulting from 'existing and/ or approved' developments in the area coming forward at the same time as the Development. In addition, schemes which may not yet have received planning permission, but which could be approved during the determination period of the planning application, have been considered.
- 2.50 The following schemes have been identified, that could have the potential to lead to likely significant cumulative effects on the environment. Table 2.5 provides details, and the

location of the schemes are shown on Figure 2.1. These schemes have been agreed for assessment with KMBC through the Scoping process (refer to Appendix 2.1 and 2.2).

Table 2.5: Cumulative Schemes

Figure 2.1 Ref.	Site and Planning Reference	Description of Development	Planning Status	Distance from the Site
1	Land South Of Lickers Lane And Site Of Former Saunder's Nursery, Windy Arbor Road, Halsnead Garden Village, Whiston Ref. 20/00399/OUT	Outline application for proposed residential development of up to 277 no. dwellings (Use Class C3) and an apartment development of up to 100 units for over 55's (Use Class C3) together with new vehicular access to Lickers Lane and Windy Arbor Road, landscaping and associated works (inc. demolition of buildings) (Approval sought for access – all other matters reserved).	Resolution to grant planning permission subject to S106 in June 2022.	Immediately adjacent to the Site to the west
2	Fox's Bank, Halsnead Garden Village, Land West Of Fox's Bank Lane And North Of M62, Whiston, Knowsley Ref. 20/00417/FUL	Residential development comprising the erection of 250 no. dwellings together with the construction of vehicular access off Fox's Bank Lane (comprising signalised junction), SuDS ponds, landscaping boundary treatments and other associated works (including demolition of existing farm buildings)	Consented February 2022	Approximately 175m south
3	Land North of M62 Motorway, Off Windy Arbor Road (Halsnead), Whiston, Knowsley Ref. 18/00283/HYB	Hybrid application comprising full application for erection of 123 no. dwellings, construction of vehicular/pedestrian access, laying out of public open space and associated works; Outline application for erection of up to 237 no. dwellings, car park, and associated works (Access into site to be considered – All other matters reserved for future approval).	Consented in March 2021	Approximately 470m south west
4	Former Site of Cronton Colliery, Cronton Road, Halsnead Garden Village, Knowsley Ref. 20/00494/HYB	Hybrid Planning application comprising: Full Application for the development of 161,900 square feet (15,041 square metres) (gross internal area) of storage and distribution floorspace (Use Class B8), including ancillary offices (Use Class B1), security gatehouse, site access road, engineering earthworks to form a part country park, public car park	Consented in March 2022	Approximately 620m south

		to serve country park, and associated works; and Outline Application with details of point of access (details of part-access, landscaping, appearance, scale and layout are reserved) for the development of up to offices and light industrial (Use Class B1); Engineering earthworks to form country park and drainage attenuation ponds; pedestrian/cycle/equestrian route connecting existing M62 footbridge with proposed country park; and associated works.		
5*	Disused Railway Line Extending From M62 Motorway Extending North Through Halsnead Park And To Rear Of Cronton Avenue, Whiston, Knowsley Ref. 19/00651/FUL	Construction of a multi-use path and associated ground works including the facilitation of a rising main associated with the proposed residential development of the adjoining land on disused railway land extending from the M62 Motorway, extending north through Halsnead Park and to the rear of Cronton Avenue, Whiston.	Consented in March 2021	Approximately 1km south west
6*	Former Site Of Cronton Colliery Cronton Road Cronton Knowsley L35 1QR Ref. 20/00578/FUL	Construction of a new country park comprising the creation of sculptured landscape habitat/wetland creation, associated works and infrastructure, engineering/earthworks including changes to site levels together with the erection of a single storey visitor centre including reception, café, education space, ranger offices and an outdoor terrace area, erection of outdoor classroom canopy, sky room, provision of colliery and mineral line multi user route, new paths including a multi user route north of the M62 bridge up to windy Arbor road and provision of a new car park. Vehicular access to be taken from Cronton Road via access to neighbouring employment site/country park car park with new footbridge over employment site/car park, access road and pedestrian/cycle access from	Awaiting Decision	Approximately 770m south

		Cronton Road and Fox's Bank Lane.		
7*	Parcel C At Prescott Cables Site Prescott Park Way Knowsley Prescott L34 1AH Ref. 20/00767/REM	Application for approval of reserved matters pursuant to outline planning permission 15/00022/OUT (Outline application for mixed-use development comprising up to 750 no. dwellings & up to 929 sq m of commercial/industrial buildings (Use Classes B1/B2/B8)) approval sought for appearance, access, layout, scale and landscaping for the erection of 53 no. dwellings (Use Class C3).	Consented August 2021	Approximately 1.7km north west
8*	South of Whiston/Land north of the M62 SUE, 'Halsnead Park' (allocated within the Knowsley Local Plan Core Strategy).	1,500 dwellings (north of the M62), plus 22.5 hectares of employment use and a country park (south of the M62)	Awaiting Decision	Adjacent to the Site

*These additional cumulative schemes assessed were requested via the KMBC Scoping Opinion.

2.51 Each of the technical assessments considers the likely significant cumulative effects of the Development with the cumulative schemes set out in Table 2.5. The level of detail of assessment has been dependent on the information available for each scheme and has generally been undertaken in a qualitative manner. Where no cumulative effects are predicted, this has also been stated.

2.52 Each technical chapter (Chapters 6-11) has assessed the potential for likely significant effects on the environment as a result of the above committed developments. The interrelationship between likely significant effects (interactive effects) is included in Chapter 12: Summary and Residual Effects.

Assumptions and Limitations

2.53 The principal assumptions that have been made and any limitations that have been identified, in preparing this ES are set out below. Assumptions relevant to specific topics have been made in the appropriate chapter. General assumptions include the following:

- Assessments assume the baseline conditions at the time of ES preparation (2022) unless otherwise stated in the technical chapter;
- Chapter 10 Air Quality uses data derived from Chapter 11 Transport, which uses model flows provided by the transport consultant who has modelled traffic on opening/future

years of the Development;

- It is assumed that current surrounding land uses do not change, with the exception of the committed developments identified;
- Assessments are based on published sources of information and primary data collection. Sources are provided as necessary;
- Assessments are based on the description of development set out in Chapter 3 and the anticipated construction methodology and programme described in Chapter 5 of this ES;
- Information received by third parties is complete and up to date;
- The design, construction and completed stages of the Development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge;
- Significant environmental effects have been assessed using the detailed Development plans shown in Appendix 3.1;
- Each chapter within the ES sets out the limitations and assumptions regarding any assessment scenarios that have been established in order to assess the Development;
- Conditions will be attached to the planning permission that will control disturbance during the construction works;
- Necessary off-site services infrastructure for the Development will be provided by statutory undertakers; and
- The planning permission, when granted, will contain conditions that will be sufficient to limit the Development to what has been assessed.

Objectivity

- 2.54 The technical studies undertaken within the ES have been progressed in a transparent, impartial and unbiased way with equal weight attached, as appropriate, to beneficial and adverse effects. Where possible, this has been based upon quantitative and accepted criteria together with the use of value judgments and expert interpretations.
- 2.55 The assessment has been explicit in recognising areas of limitation within the ES and any difficulties that have been encountered, including assumptions upon which the assessments are based. Where appropriate, the assessment of significance has been given confidence levels.

REFERENCES

ⁱ The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (2017 No. 571) (as amended) (2018 No.695)

ⁱⁱ <https://www.gov.uk/guidance/environmental-impact-assessment>

ⁱⁱⁱ KNOWSLEY Halshead Garden Village Masterplan Supplementary Planning Document June 2017

3.0 SITE AND DEVELOPMENT DESCRIPTION

Site Context

- 3.1 The north of the Site is bound by Lickers Lane, which runs east-west along the southern edge of the town of Whiston. The north east edge of the Site is bound by the designated Sandfield Park Local Wildlife Site (LWS), the LWS comprises an area of scattered trees and shrubs, as well as two ponds. Along the eastern and southern edges of the Site boundary, the land is used for agricultural purposes. Scattered trees and open greenspace are adjacent to the western portion of the Site.
- 3.2 Immediately to the west of the Site, an outline planning application (ref: 20/00399/OUT) was given a resolution to grant planning permission subject to S106 by KMBC in June 2022. The application comprises a proposed residential development within the Halsnead Masterplan (as outlined in the Planning Context section in Chapter 1 of this ES), providing up to 277 new residential dwellings, and an apartment development of up to 100 units for over 55's. Together with new vehicular access, landscaping, and associated works. This scheme is included as part of the proposed cumulative schemes for assessment in the ES.
- 3.3 The land surrounding the Site varies, with residential land uses to the north associated with the town of Whiston. The closest residential properties to the Site are properties that lie off Croftwood Grove, approximately 25m to the north of the Site. Whiston railway station is located approximately 600m to the north of the Site. The town of Whiston merges into Prescot towards the north and Rainhill towards the east, forming a larger metropolitan area of Knowsley. Residential land uses are also located towards the south west of the Site associated with Halsnead Park, approximately 165m south west of the Site boundary. Agricultural fields lie to the south of the Site and beyond these fields is the M62 Motorway, located approximately 600m to the south. The M62 runs west-east across the Pennines and connects Liverpool and Hull, via Manchester, Leeds, Bradford, and Wakefield. Access to the M62 is via Fox's Bank Lane which lies to the east of the Site and the Fox's Bank Cemetery.
- 3.4 Other surrounding land uses include the Sandfield Natural Play Centre, located approximately 95m from the Site to the north east. The Southmead Children's Centre is also located approximately 190m north east of the Site.
- 3.5 The Site is not covered by any national or local landscape, ecological and heritage designations. The nearest national designation is Thatto Heath Meadows Local Nature Reserve (LNR) which is located approximately 4.4km north east of the Site and the

Knowsley Park Registered Park and Garden is located approximately 3.1km north west of the Site. The Woodland, Sandfield Park LWS is located immediately adjacent to the Site along the north eastern boundary. The Lickers Lane LWS is also located approximately 100m to the west of the Site.

- 3.6 The 'Rainhill Hall Farm moated site and twelve fishponds in The Rough' Scheduled Monument is located approximately 1.4km east of the Site. Within 1km of the Site boundary, there are no Grade I or Grade II* Listed Buildings. There are eight Grade II Listed Buildings within 1km of the Site, the closest being Sandfield House, located approximately 90m north east of the Site. The Site is not located within a Conservation Area. The nearest Conservation Area to the Site is Prescott Town Centre Conservation Area, located approximately 2km to the north of the Site.

Site Description

- 3.7 The Site (shown in Figure 1.1) extends to approximately 3.4 hectares (ha) and is irregular in shape. The northern portion of the Site comprises a dense area of shrubs and trees, whereas the southern portion of the Site comprises open greenspace, with some scattered trees. There are also some scattered trees and hedgerows along the eastern and western perimeters of the Site boundary.
- 3.8 Primary access to the Site is taken from Lickers Lane to the north of the Site.
- 3.9 The Site contains tracks and ditches that are associated with agricultural and recreational use, including around the perimeter of the southern portion of the Site. Tracks appear to exit the Site boundary on the western portion of the Site.
- 3.10 There are no environmental, landscape or historic designations within the Site boundary. The Site is located entirely within Flood Zone 1¹. The topography of the Site is relatively uniform, sloping gradually from the east towards the south west of the Site.

Sensitive Receptors

- 3.11 The features which are considered potentially sensitive to the construction and operation of the Development have been identified and the likely significant effects on these potential receptors have been considered by the various technical studies and chapters of this ES. The potential sensitive receptors are identified in Table 3.1 and shown in Figure 1.2. Those assessed by each technical discipline are set out in the corresponding chapter.

¹ Land having a less than 1 in 1,000 annual probability of river or sea flooding.

Table 3.1: Potential Sensitive Receptors

Category	Sensitive Receptor/Land Use
Local Economy	- Economically Active Adults; - Unemployment rates and Claimant Counts; and - Workplace based employment structure.
Residential/ Buildings	Local Housing tenure
Educational Facilities	Early Years Education: - Waverton Cottage Day Nursery; - Kidzone Longton; - Lynwood Day Nursery; - Portico Lodge; - Hilltop Childrens Centre Choices; - Orchard Day Nursery; - Little Apples; and - Wizzkids. Primary Schools: - St Leo's and Southmead Catholic Primary School Serving the Community; - Halsnead Primary School; - Whiston Willis Primary Academy; - St Luke's Catholic Primary School; - St Mary and St Paul's CofE Primary School; - Prescot Primary School; - Evelyn Community Primary School; and - Our Lady's Catholic Primary School. Secondary Schools: - Saint Edmund Arrowsmith Catholic Academy; - Lord Derby Academy; and - The Prescot School.
Healthcare	- Knowsley Medical Centre; - Longton Medical Centre; - The Crossroads Surgery; and - Rainhill Village Surgery.
Landscape and Views	Setting of Listed Buildings: - Sandfield House – Grade II; - Gate Piers Beside North East Lodge to Halsnead Park – Grade II; - North East Lodge to Halsnead Park – Grade II; - Barn at Snape Gate – Grade II; - Old Halsnead – Grade II; - Church of St Nicholas - Grade II; - Ropers Bridge - Grade II; - Dean's Farmhouse - Grade II; and - Range of Adjoining Farm Buildings in L Plan (Rear of Dean's Farmhouse) - Grade II. Conservation Areas: - Town End, Cronton Conservation Area. Views: - Views from Licker's Lane; - Views from Fox Bank Lane; - Views from Windy Arbor Road; - Views from Main Drive; - Views from Blundell Lane; - Views from areas of open space accessed from Lickers Lane; and - Views from Footpath St Helen's 201.

Category	Sensitive Receptor/Land Use
Ecological Features	- Protected Species; - Mersey Estuary SSSI, SPA and Ramsar; - Lickers Lane LWS; and - Sandfield Park LWS.
Built Heritage Assets	- Church of St Nicholas (1261894); - Sandfield House (1253251); - North East Lodge to Halsnead Park (1253249); - Gate Piers Beside North East Lodge to Halsnead Park (1253429); - Halsnead Park (MME15147); - Church Lodge (MME18748); - Remains of Princes House Farm (MME13083 and MME6857); - Halsnead Hall (MME6856); - Woodland Clumps and Belts; - Designed and dynamic views across the landscape formed by the open landscape between routes, water features and tree clumps/belts; and - Halsnead Park Boundary Walls (MME 15681).

Description of Development

3.12 The Development comprises a full planning application for the development of the land south of Lickers Lane, Whiston, including:

- "Full planning application for the erection of 120 residential dwellings with vehicular access points off Lickers Lane, public open space, landscaping, boundary treatments and other associated works."*

3.13 Drawings illustrating the following proposals are shown in the Final Layout Plan, Appendix 3.1.

Land Use

Residential

3.14 The Development includes the delivery of 120 new homes across the Site, within housing plots as well as an apartment block.

3.15 Dwellings will be provided in a range of tenures as shown in Table 3.2 below.

Table 3.2: Residential Unit Mix

Residential Unit Size	Total Number of Homes
2 bedroom	30
3 bedroom	68
4 bedroom	22
Total	120

- 3.16 In total, 10% of the homes on site will be affordable. Table 3.3 below provides a breakdown of the proposed affordable housing mix.

Table 3.3: Proposed Affordable Housing Mix

Housing Mix	Total Homes (%)
2 bed apartments	12 (10%)

Building Heights and Massing

- 3.17 The proposed height and massing of the Development has been designed to confirm to the prevailing character of the surrounding landscape.
- 3.18 The proposed maximum number of storeys of the Development are detailed below in Table 3.4 below.

Table 3.4: Maximum Heights of Proposed Buildings

Building	Max Number of Storeys
Housing	2.5 storeys
Apartment Block	3 storeys

Green Infrastructure

- 3.19 Planting has been carefully designed to provide high percentages of native tree and shrub planting across the Development. Moreover, planting has been chosen to create year round interest, offering a variety of colours and textures to the green infrastructure provision.
- 3.20 The DAS summarises that the Development has been designed in accordance with the amended New Residential Development (SPD)ⁱ ensuring that each dwelling is provided with adequate private amenity space.
- 3.21 Front garden space will comprise lawned areas complimented by a mix of native and ornamental shrub, and hedge planting. Rear gardens will be turfed, apart from areas of hardstanding.
- 3.22 A degree of existing tree removal is required to facilitate the Development, although limited to low value tree categories where possible, and any loss will be mitigated through an appropriate ratio of replacement tree planting.

The 'Green Edge'

- 3.23 As summarised in the DAS, the Green Edge is one of two key character areas in the Development. The Green Edge comprises properties positioned to the outer development edge, adjacent to the Main Street and Residential Avenue, as shown in the Final Landscape Plan (Appendix 3.2). These properties have taken referenced from the existing listed building positioned off Lickers Lane, and emerging development, forming part of the Halsnead Garden Village, to the south.

The Urban Core

- 3.24 Urban Core properties feature a more contemporary style, as well as traditional brick and tiled roof construction. Details include dark red facing bricks, brick soldier course window heads and sills. This has been designed to reference local context and create a distinct place in the wider local setting.

*Access**Vehicular Access*

- 3.25 Access to the Site will be provided via the existing Lickers Lane (primary vehicular and pedestrian access point). The entrance will be designed to accommodate vehicle queuing, which will manage the flow of traffic.
- 3.26 Within the Site, the internal road network will provide circulation via one-way primary roads and two-way secondary roads.
- 3.27 Bus Services 99, 239 and 248 serve the Site with a bus stop immediately to the north of the Site on Lickers Lane. The 99 bus serves the town of Whiston, running from Whiston Train Station to the Prescott Circular. The 239 bus runs from Prescott to the north of Whiston to Broadgreen Hospital, which is approximately 6.9km west of the Site towards Liverpool. The 248 bus runs from Prescott Bus Station through Whiston to Huyton Bus Station, located to the west of the Site.

Walking and Cycling Access

- 3.28 The footpath and cycle strategy within the Development is designed to provide pleasant, safe and accessible routes for new residents at the Development. The DAS outlines that pedestrian movement has been a primary consideration in the design of the Development,

ensuring that the Development creates a permeable link which connects to the wider area.

- 3.29 Pedestrian movement is encouraged throughout the Development with the provision of new 2m wide footpaths, adjacent to the Main Street, and a new 2m wide footpath to the western side of the Residential Avenue. These routes form a network of safe and convenient footpaths with existing and emerging infrastructure.
- 3.30 The Development provides new pedestrian links which connects the Development to the countryside to the east, providing new recreational routes for future residents.

Accessibility

- 3.31 The main access to the Site is granted via Lickers Lane, along the northern boundary of the Site.
- 3.32 As outlined in the DAS, access to and within the public external environment has been designed to ensure that there are no excessive changes in level between the highway and the principal access, where possible.
- 3.33 Housing entrances will be constructed to comply with current Building Regulations (Part M), ensuring ease of wheelchair access. Each property will therefore be provided with level access to either the primary or secondary entrance point. Furthermore, houses will have a path and/or driveway, providing a safe access route from the public highway to this entrance point.
- 3.34 These design considerations ensure that the Development is accessible and inclusive for all future residents.

Vehicle and Cycle Parking

- 3.35 In total, 253 car parking spaces will be provided across the Development. These car parking spaces are broken down as followed:
- 12 car parking spaces for the apartments;
 - 5 car parking spaces for apartment visitors;
 - 217 car parking spaces for the remaining plots;
 - 15 car parking spaces included in detached garages; and
 - 4 car parking spaces within internal garages.

- 3.36 The design of the Development has made an allowance to provide Electric Vehicle Charging Points (EVCPs) to all of the homes in the Development, and for two of the 12 apartments. There is no allowance to install additional points, unless required to do so to satisfy policy.
- 3.37 The parking provision has been designed in accordance with the adopted Ensuring a Choice of Travel (SPD) (2010)ⁱⁱ, comprising a mix of in-curtilage arrangements. Parking provision predominantly features driveways to the side of the dwelling, or driveways fronting detached or integral garages. A select number of properties feature up front parking bays, although these are limited, where possible, and will be separated through soft landscaping.
- 3.38 The Development will provide 90 cycle stores for cycle parking, 89 of these will be for the houses, and the remainder is provided for the apartment block.

Drainage Infrastructure

- 3.39 The Site is located entirely within Flood Zone 1 and subsequently at low risk of fluvial and tidal flooding.
- 3.40 A Flood Risk Assessment (FRA) and Drainage Strategy Report has been submitted with the planning application. The Strategy advises that the Development will implement the following SuDS features:
- Rainwater harvesting;
 - Bio-retention areas;
 - Permeable surfaces; and
 - Tanked/piped systems.
- 3.41 The SuDS strategy for the Development outlines that for rainwater harvesting, where possible, water butts will be installed to all residential homes. Bio-retention areas should be incorporated where possible, it is envisaged that tree pits and/or rain gardens could be used to drain some hardstanding areas. These would also contribute to water quality and biodiversity enhancement across the Site.
- 3.42 Non-infiltration permeable surfaces such as permeable paving should be considered for the Development to drain the proposed driveways and other car parking areas. Finally, the use of oversized pipe networks and below ground cellular attenuation tanks will likely be required due to the lack of other available SuDS solutions to attenuate the majority of the surcharged runoff across the Site.

- 3.43 The drainage regime will comply with KMBC requirements, the maximum surface water discharge rate for the Site will be restricted to the existing greenfield runoff rate for the same rainfall event. This will be applied for all rainfall events up to and including a 1 in 100 year return period, plus a 40% uplift for climate change allowance.
- 3.44 A suitable maintenance strategy should be adopted to ensure the proposed drainage network is cleaned regularly and the routine maintenance and cleansing regime should be documented. The maintenance of water butts will be the responsibility of the individual property owner. Therefore, a copy of the final drainage layout will be provided in the final Operations and Maintenance Manual provided for new residents.

Lighting

- 3.45 The Site is located on the southern edge of the town of Whiston and existing residential areas which are already considered to be well lit.
- 3.46 The adoption of controlled lighting and implementation of a lighting strategy in accordance with current best practice guidance, including the Institute of Lighting Professionals (ILP) (2020) Guidance Notes for the Reduction of Obtrusive Lightⁱⁱⁱ and BS 5489-1:2013^{iv} and BS EN 13201-2:2015^v. These measures will ensure that the potential effects on surrounding sensitive receptors from light spill, glare and sky glow are minimised and reduced to an acceptable level.

Energy, Sustainability and Climate Change

- 3.47 In order to deliver environmentally responsible buildings, an exemplar approach is proposed based on low energy design principles. This approach involves energy demand minimisation through effective building form and orientation, good envelope design and proficient use of services. As set out in the Energy and Sustainability Statement, submitted with the planning application, the key commitments include:
- A fabric first approach that will reduce energy demand and consequent CO2 emissions by 1.49% beyond the Part L 2013 baseline;
 - Materials and products used will be specified and selected that strike a responsible balance between social, economic and environmental factors;
 - Incorporate recycled content, use resource-efficient products and give due consideration to end of life uses;
 - Influence, specify and source increasing amounts of materials which can be reused and consider future deconstruction and recovery;

- Heat generation and distribution systems will be designed to give occupants a high level of control over their use, encouraging and allowing energy-efficient behaviour;
- Primary pipework will be fully insulated in all dwellings;
- Internal lighting will be low energy wherever possible, and areas of infrequent use will be fitted with occupancy sensors;
- Measures taken to reduce internal heat gain and provide natural ventilation through window opening will allow sufficient air exchanges rates to limit heat build up;
- Future occupants will be provided with an information pack detailing KMBC's current waste collection arrangements; and
- The Development will be designed to effectively and appropriately monitor and manage construction waste.

Ecological Mitigation

- 3.48 The Development is designed to avoid and minimise adverse effects to key habitats and species identified on-site (as described in Chapter 8: Biodiversity). Mitigation in the form of a Construction Environmental Management Plan (CEMP), submitted alongside the planning application, will ensure that adverse effects on retained features are addressed to avoid any degradation during the construction phase.
- 3.49 Precautionary working methods will be adhered to during construction works on site, and include measures such as:
- A Toolbox Talk will be given to all contractors on site by the Ecological Clerk of Works (ECoW) and will be signed. During the talk, contractors will be made aware of the designated site and its ecological importance;
 - No works will be undertaken within 5m of the Sandfield Park LWS and no machinery will be tracked in this buffer area;
 - All excavations will be backfilled at the end of each day to ensure that wildlife that may use the designated site do not become trapped in the excavations;
 - All site machinery and materials will be appropriately stored to avoid harm to wildlife; and
 - Construction plant is to be turned off when not in use.
- 3.50 New habitat creation has been incorporated into the landscape design proposals, as outlined above and in the DAS. The biodiversity metric for the Development shows there will be a loss of 17.33 habitat units. However, it is anticipated that the wider Garden Village Masterplan will include a long-term management Habitat Management Plan. The Development will offset habitat loss within the wider masterplan.

- 3.51 A Habitat Management Plan will be produced and implemented during the operational phase, it will identify measures to ensure the protection of species and enhancement of habitats. New residents will be provided with sales packs, informing residents of the importance of designated sites, and the location of Suitable Alternative Natural Green Spaces (SANGS). A range of other operational mitigation measures will be adhered to including a Lighting Plan being implemented on the Site, bat boxes being installed, nesting boxes, an insect hotel, and hedgehog houses.

REFERENCES

- ⁱ KMBC Amended New Residential Development Supplementary Planning Document, September 2018. Link: <https://www.knowsley.gov.uk/knowsleycouncil/media/Documents/New-Residential-Development-Updated-SPD.pdf>
- ⁱⁱ KMBC Ensuring a Choice of Travel Supplementary Planning Document (SPD) 2010. Link: <https://www.knowsley.gov.uk/pdf/TravelSPDLowRes.pdf>
- ⁱⁱⁱ Guidance Note 01/20. Guidance Notes for the Reduction of Obtrusive Light (2020). Institute of Lighting Professionals.
- ^{iv} British Standards EN 13201-2:2015 Road Lighting Performance requirements.
- ^v British Standards EN 13201-2:2015 Road Lighting Performance requirements.

4.0 ALTERNATIVES & DESIGN EVOLUTION

Introduction

4.1 Regulation 18 and Schedule 4 of the EIA Regulations require an applicant to provide:

"a description of the reasonable alternatives studied by the developer, which are relevant to the proposed development and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the development on the environment".

4.2 This chapter of the ES identifies the main alternatives to the Development which have been considered by the Applicant and describes the main reasons for the choices made.

Alternatives

4.3 Alternative options typically comprise:

- The 'Do Nothing' alternative, where the Development is not progressed;
- Consideration of Alternative Locations or Uses; and
- Consideration of Alternative Designs.

The 'Do Nothing' Alternative and Alternative Locations or Uses

4.4 The 'Do Nothing' alternative considers the future conditions at the Site, should the Development not progress. As discussed in Chapter 1, the Site forms part of the Halsnead Garden Village Masterplan for up to 1,600 dwellings. The Site is allocated in Policy SUE1 and SUE2c within the KMBC Core Strategy as land safeguarded for Sustainable Urban Extension (SUE). The land, totalling 110.3ha is referred to as South of Whiston SUE, and is allocated for residential development, the KMBC Core Strategy gives the Masterplan area a notional capacity to provide up to 1,503 new dwellings. In January 2017, the South of Whiston SUE was announced as one of the 14 Government backed Garden Villages across England. KMBC will support development of the Site for residential development provided it is consistent with the Halsnead Garden Village Masterplan Supplementary Planning Document (SPD)ⁱ.

4.5 The Development would provide an increase in residential homes across the Site, optimising density and creating a better use of land in accordance with the NPPF and the Core Strategy.

- 4.6 As the Site is allocated for residential development, assuming the Development were not to proceed, the Site could be progressed by another entity for residential development. The Applicant is in a position to deliver residential development and so the do-nothing option was not considered.
- 4.7 Alternative sites were not considered as the Applicant can deliver the Development at the Site. Furthermore, as the Site is allocated under the KMBC Core Strategy this means it has been specified for residential development by KMBC due to its strategic position and limited site constraints.

Consideration of Alternative Designs

- 4.8 As discussed in Statement of Community Involvement ('SCI') accompanying the planning application, the design of the Development has evolved from engagement with the local community and stakeholders, and in response to the constraints and opportunities within and local to the Site.

Consultation

- 4.9 Only two comments were received from local residents. One comment expressed support for the Development and the other queried the associated sustainability proposals such as solar panels, heat pumps and EV charging points. Whiston Town Council raised concerns regarding traffic congestion, lack of infrastructure, flooding & visual impact. These comments have been considered during the design evolution of the Development to ensure concerns are addressed and a response is provided in the SCI.
- 4.10 The following concerns were raised by the consultation process. They are grouped into common themes and set out in Table 4.1 which includes the Applicant's considerations and design response to the feedback raised. Further information on the consultation process is provided in the SCI accompanying the planning application.

Table 4.1: Design Response to Consultation Feedback

Consultation Feedback	Applicant's Response
Sustainability query	The Applicant has provided an Energy and Sustainability Statement, submitted as part of the planning application. This outlines measures to be undertaken to reduce emissions in accordance with the energy hierarchy and make the most efficient use of natural resources. The statement outlines that the Development adopts a fabric first approach, which reduces emissions below the Part L 2013 Baseline.
Traffic congestion	The Transport Assessment (refer to Appendix 11.1) confirms that the Site is sustainably located close to Whiston railway station and several bus stops. In addition, traffic impact assessments undertaken show that the

Consultation Feedback	Applicant's Response
	Development will not have a material impact or give rise to any highways related issues. Furthermore, a Residential Travel Plan will assist in reducing any impact and help to create a wider choice of travel to residents and visitors.
Lack of infrastructure	This comment is addressed in relation to social infrastructure, as highways infrastructure is covered above. Chapter 6 of the ES (Population and Human Health) considers the effects of the completed Development upon the local population and human health. With mitigation including financial contributions, it is not expected that there will be any adverse effects. The Development is anticipated to have negligible effects on primary and secondary school provision, and no significant adverse effects on social infrastructure.
Flooding	The Flood Risk Assessment, which has been submitted separately as part of the planning application, demonstrates that the Site is located within Flood Zone 1 and also has a low probability of flooding from all sources. The Drainage Strategy outlines that the Development will incorporate a range of SuDS, including rainwater harvesting, bio-retention areas such as rain gardens, permeable paving and below ground cellular attenuation tanks. All of these measures combined are expected to reduce the runoff rate of the Development to pre-development greenfield rates, for up to a 1 in 100-year storm event, including a climate change uplift.
Visual Impact	Chapter 7 of the ES (Landscape and Visual) assesses the likely significant effects of the Development on the environment in respect of identified Landscape and Visual receptors within the identified study area. The chapter concludes that: It is considered that the Site has an existing relationship with the developed edge of Whiston and that on balance the proposed residential development will, whilst wholly replacing the central and southern portion of the landscape character at the Site level, sit within the existing retained landscape character elements at the Site level and the landscape character at the regional and district level. Whilst some negative landscape and visual effects will arise from the Development as it emerges through the construction period, the Development forms a logical expansion to the settlement. Furthermore, the landscape and visual effects are limited to the Site and district level receptors only as identified in this chapter. The effects will essentially reduce over time as the proposed planting matures. The provision of open space areas within the Development will be of benefit to the existing local and new community. New tree planting and a vegetation strategy is to be considered for long term replacement and reinforcement of existing networks, ensuring the longevity and vigour of the existing vegetation is maintained on Site.

4.11 The Masterplan for the Development has been informed by the following key design principles:

- Placemaking;
- Architectural Quality and Style;
- Building Character;
- Building Layout;
- Building Style and Form;
- Boundary Treatments;

- Character Areas;
- A Green Edge; and
- An Urban Core.

4.12 Further detail on the key design principles is provided in the Design and Access Statement (DAS) submitted with the planning application.

4.13 As set in the DAS which accompanies the planning application, the design for the Development has been refined to respond to a contextual analysis and a design review:

- The design is focussed on creating successful 'places', using building layout and style, hard and soft landscape, highway design, and use of materials to create a cohesive character and sense of community;
- The Development has been designed to feature two character areas, which have distinct and independent styles. These are the Green Edge and the Urban Core.

Design Evolution

4.14 A number of changes have occurred over the course of the design evolution in relation to key environmental constraints and opportunities on and surrounding the Site. The information pertinent to the choices made taking into account environmental effects is provided below. The DAS provides more detail on the evolution of the Development, which is not required for the ES.

4.15 The following design changes were made, which improved the environmental effects of the Development:

- Access into the Site is taken from the southern side of Lickers Lane, in the form of a new junction, which will be constructed to adoptable standards;
- The existing woodland to the north is to be retained. The new residential avenue is positioned to the south, forming a boundary between the Development and the woodland, reducing the effects on Biodiversity;
- The new Main Street, to the south, will provide connection to emerging and future Development parcels. Feature nodal points are created at the junction between the Main Street and the Residential Avenue, comprising a mix of hard and soft landscaping;
- The existing footpath routes have been retained to the north, within the woodland. A link between the new residential avenue and the existing footpath is provided, promoting pedestrian movement, this reduces adverse effects in relation to Transport, and provides

- opportunity for positive human health effects;
- All properties are orientated to front the proposed highway network, promoting active streetscapes;
 - Dwellings which are located on corner plots at street intersections are to be articulated to define the corner and provide active interfaces on both sides;
 - Loss of vegetation is appropriately mitigated with replacement tree planting. All high quality trees are to be retained, reducing adverse effects on Biodiversity;
 - A substation proposed to the northern side of the residential avenue will be screened with landscaping to reduce its impact on the streetscape, reducing adverse visual effects;
 - The layout allows for vehicle and pedestrian access to the emerging Halsnead Garden Village Masterplan, reducing potential adverse effects on Transport; and
 - Focal buildings, featuring rendered facings have been positioned to create interest across the street scene, contributing to reduce adverse effects on built heritage receptors.

REFERENCES

ⁱ Knowsley Metropolitan Borough Council. Halsnead Garden Village Masterplan Document, June 2017

5.0 CONSTRUCTION METHODOLOGY & PROGRAMME

Introduction

- 5.1 This chapter describes the anticipated construction methodology and programme of the Development. Consideration of likely significant effects on the environment that may arise during the construction phase and any necessary mitigation measures, are provided within the respective technical assessments of this ES (Chapters 6 to 11).
- 5.2 Planning for construction is necessarily broad at this stage and may be subject to modification. This chapter is based on reasonable assumptions and experience and allows assessment of the realistic "worst case" effects. This chapter is supported by the outline Construction Environmental Management Plan (CEMP) (Appendix 5.1).

Anticipated Programme

- 5.3 Construction of the Development is anticipated to commence in February 2023 subject to gaining planning permission, and span approximately 3 years. Overall, construction is expected to be completed by January 2026.
- 5.4 The build out phase for open market homes is anticipated to run from February 2023 until January 2025. For the registered provider (RP) units, the construction phase is anticipated to run from April 2023 until January 2026.
- 5.5 Each chapter of the ES has assessed the worst-case scenario for construction to ensure all realistic likely significant effects have been considered and appropriate mitigation proposed.

Construction Methodology

Construction Machinery

- 5.6 Consideration has been given to the types of plant that are likely to be used during the construction works. The plant and equipment likely to be associated with each key element of the construction process is as follows:
- Tracked/ wheeled 360 degree excavators;
 - Dozers;
 - Crushing machines;
 - Scissor lifts;

- Cherry pickers;
- Dumpers;
- Mobile cranes;
- Hand held tools including breakers (pneumatic and hydraulic);
- Power tools including percussion drills, cutting disks and pipe-threaders;
- Piling equipment;
- Wheel washing plant;
- Scaffold;
- Mobile access platforms;
- Delivery trucks;
- Skips/ Skip trucks;
- Forklift trucks;
- Ready mix concrete wagons;
- Concrete placing booms and pumps; and
- Road sweepers.

Site Preparation and Enabling Works

5.7 Site preparation will involve the establishment of on-site parking provision and any construction worker facilities (including site compound area with offices and welfare facilities for management and construction workers). Enabling works would comprise:

- Preparation of Health and Safety Plans;
- The establishment of the Site, compound, welfare facilities, and general construction site set-up implemented in accordance with the Applicants' standard processes and procedures, which are accredited to ISO 9001:2008;
- Set up of the Site access and egress, which will be set back from the road to allow vehicles to park on the Site and not cause congestion to Lickers Lane;
- Establishment of a build route and location of the Site compound area to ensure that on-site works are safely and securely segregated as far as possible from residents;
- Arboricultural works – including the protection of trees to be retained and removal of trees where applicable;
- Ground modelling works;
- Removal of underground obstructions;
- Installation of site hoarding and further security fencing; and
- Installation of temporary surface water management measures.

Demolition

- 5.8 The Site currently comprises open greenspace, vegetation, and trees, therefore it is anticipated that there will be no demolition, as there are no existing structures on site.

Excavation and Sub-structure Works

- 5.9 This will involve the installation of below ground services and construction of new foundations. Substructure works will include installation of foundations.
- 5.10 Excavated material from the Site is likely to comprise made ground and topsoil, the exact volume of which is not currently available at this stage of the design. The total volume will aim to be re-used on-site. However, any clean excavated material that cannot be reused on-site would be removed by licensed waste carriers.
- 5.11 Sub-structure works will involve:
- Localised re-grading within the Site to create level development platforms for the structures; and
 - Installation of ground slabs (ground bearing or suspended block) and supporting beams.
- 5.12 Remedial works are expected to be required for ground contamination, a Site Investigation and Remediation Strategy is being submitted in support of the planning application.

Infrastructure and Drainage works

- 5.13 Appropriate infrastructure to serve the Development will be installed and sustainable drainage systems (SuDS) will be constructed. All site works will be undertaken in accordance with CIRIA (2001) Control of Water Pollution from Construction Sitesⁱⁱ which promotes environmental good practice for control of water pollution arising from construction activities, as well as the Environment Agency pollution prevention guidelines, principally PPG6 'Working at Construction and Demolition Sites'ⁱⁱⁱ.
- 5.14 Construction vehicles and Non-Road Mobile Machinery (NRMM) will be properly maintained to reduce the risk of hydrocarbon contamination and will only be active when required. Construction materials will be stored, handled and managed with due regard to the sensitivity of the local water environment and thus the risk of accidental spillage or release will be minimised.

- 5.15 In accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001^{iv}, any tanks storing more than 200 litres of oil will have secondary bunding. Bunding will be specified as having a minimum capacity of "*not less than 110% of the container's storage capacity or, if there is more than one container within the system, of not less than 110% of the largest container's storage capacity or 25% of their aggregate storage capacity, whichever is the greater.*" Any above ground storage tanks will be located on a designated area of hardstanding. No underground storage tanks will be used during the construction period. Storage of liquids such as degreasers, solvents, lubricants and paints will be in segregated, bunded enclosures.
- 5.16 The construction drainage system will be designed and managed to comply with BS6031 "*The British Standard Code of Practice for Earthworks*"^v, which details methods that should be considered for the general control of drainage on construction sites. Further advice is contained within the Geotechnical Design, General Rules (BS EN 1997)^{vi} which should be read in conjunction with Basis of Structural Design (BS EN 1990)^{vii}.

Construction of Substructure

- 5.17 This will involve foundation excavation, the installation of below ground services and construction of new foundations. Substructure works will include the installation of foundations.

Construction of Superstructure

- 5.18 This stage will involve the construction of the main building envelope of the residential dwellings. It will include the pouring of concrete, the installation of steel frames, load bearing brick walls, reinforced masonry and the external buildings fabric.

Fit Out

- 5.19 Fit out of the Development will involve the installation of drylined party walls, internal walls, commercial mechanical and electrical installations, joinery, tiling, flooring and plumbing.

Landscaping

- 5.20 Landscaping works will involve the establishment of green spaces within the Site, structural landscaping inclusive of tree and vegetation planting, seeding, construction of footpaths/ cycle routes.

Material and Resource Use

- 5.21 The primary construction materials to be used will include concrete, timber and steel. All construction materials would be stored on-site to minimise damage.
- 5.22 Where possible, materials and resources used during the construction of the Development will be sourced from the local area. All timber and wood-based products would be sustainably sourced and procured from known and legal sources. Recycled aggregate will be given preference over virgin aggregate, a finite resource, wherever such material can meet the required specification for use.
- 5.23 As outlined in the CEMP, the Site Management Team will adopt the waste hierarchy in the Development of appropriate mitigation control measures to reduce the amount of waste sent to landfill and promote recycling. The off-site re-use, recycling or recovery of construction and excavation waste would be maximised where possible. Construction waste would only be sent to landfill as a last resort if there is no alternative disposal route. If landfill is selected, it would be notified to the project team in advance of any collections.

Construction Phase Vehicle Movements

- 5.24 Construction vehicle movements will be managed to minimise the impact on the local road network. It is anticipated that construction traffic will access the Site via Lickers Lane. Table 5.1 provides an indicative level of construction traffic trip generation showing robust estimates of the likely number of vehicles generated by the construction of on-site infrastructure and buildings, together with potential staff movements. Table 5.1 presents two-way trips, whereby the same vehicle enters and exits the Site.

Table 5.1: Estimated Daily Construction Traffic

Vehicle Type	Average Trips Per Day
Heavy Goods Vehicles (HGVs)	10
Cars and Light Goods Vehicles	90

- 5.25 The 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 be concentrated during the morning and evening periods; however, it is likely that a significant majority of construction workers would travel outside the network peak periods due to an early daily start on-site.
- 5.26 During the initial stages, vehicular movements will solely be associated with construction traffic. As the Development phases are completed, there will be a mix of operational and construction traffic.

Construction Traffic Access and Management

- 5.27 If abnormal or oversized loads are required to deliver materials to the Site, notice will be given to KMBC, depending on the routing, and also the Police, the Fire Brigade, and other emergency services, sufficiently in advance of the required closure or diversion dates. Should any hazardous materials arise during the course of the works, these materials will be transported to a licensed disposal site using permitted routes as identified in a CEMP.
- 5.28 All vehicle unloading will take place within the Site and will not affect public highways or adjacent occupiers. Deliveries and vehicle movements will be planned so as to avoid the queuing of construction vehicles on the public highway. If waiting or queuing is unavoidable, engines will be switched off and not left to idle.
- 5.29 A Construction Management Plan is included as an appendix within the outline CEMP (Appendix 5.1).
- 5.30 All management of construction traffic and access will be carried out in accordance with the CEMP as set out below:
- Planning and managing both vehicle and pedestrian routes;
 - The elimination of reversing, where possible;
 - Safe driving and working practices;
 - Protection to the public;
 - Adequate visibility splays and sight lines;
 - Provision of signs and barriers; and
 - Adequate parking for off-loading storage areas.

Construction Traffic Vehicle Routing

- 5.31 As outlined in the CEMP, construction vehicles will travel via the local road network, with Lickers Lane providing access to the Site. All subcontractors and suppliers will be provided with information showing the access, egress, and parking arrangements for the Site. No other roads (other than Lickers Lane) will be used for accessing the Site.
- 5.32 The construction phase Health and Safety Plan will include a full traffic management plan, detailing vehicle movements, delivery locations, compound locations, car parking and pedestrian walkways.

Controls to Protect the Environment

5.33 The environmental controls (or mitigation measures) to eliminate, reduce or offset likely significant adverse effects on the environment during the construction phase are identified below. It is anticipated that these controls will be secured by appropriately worded planning conditions or obligations:

- The CEMP has been prepared which clearly sets out the methods of managing environmental issues for all involved with the construction works, including supply chain management;
- Requirement to comply with the CEMP will be included as part of the contract conditions for each element of the work. All contractors tendering for work will be required to demonstrate that their proposals can comply with the content of the CEMP and any conditions or obligations secured through the planning permission;
- In respect of necessary departures from the above, procedures for prior notification to KMBC, as appropriate, and affected parties will be established;
- Establishing a dedicated point of contact and assigning responsibility to deal with construction related issues if they arise. This will be a named representative from the construction team; and
- Regular dialogue with KMBC and the local community.

5.34 The preparation of a CEMP is an established method of managing environmental effects resulting from construction works. The CEMP will be submitted to KMBC (and other statutory authorities) prior to the commencement of the works. Compliance with the CEMP will be to be secured by planning condition. The CEMP includes the following:

- Site Information: including environmental management structure, roles and responsibilities, location of any potentially sensitive receptors such as trees, watercourses and local residents, primary contact in working hours and emergency details outside of working hours;
- Construction Information: a description of the works and potential mitigation/optimisation measures, construction programme, proposed working hours, details of haulage routes and equipment to be used;
- Environmental Management: details of the audit programme, methods for managing environmental risks and reducing effects, emergency procedures, waste and hazardous materials storage procedures, liaison with the local neighbourhood, and specific management and monitoring plans relating to drainage, water resources, archaeology, dust, landscape, contaminated land, lighting and noise and vibration; and
- Monitoring: procedures for recording and reporting monitoring results and taking remedial

action in the event of any non-compliance, details of receptors, threshold values and analysis methods.

5.35 The CEMP includes measures on protecting ecologically sensitive areas, including measures such as:

- Details of protective fencing installed prior to construction to demarcate works areas and to safeguard sensitive ecological features to be retained;
- Requirements for any pre-construction checks required before the commencement of the construction phases (i.e. for badgers and nesting birds);
- Details associated with vegetation management and vegetation clearance, including appropriate timing of site clearance to avoid breeding bird period (March - August inclusive) and sensitive vegetation clearance to avoid harm to mammals or herpetofauna;
- Details regarding removal of invasive species;
- Relevant pollution prevention guidelines and working practices to be adopted to prevent silt and contamination entering watercourses;
- Adherence to best practice guidelines to minimise noise disturbance, suppress dust and limit disturbance to retained areas of habitat;
- Outline of construction phase lighting measures to minimise light spill on sensitive habitat areas; and
- Relevant safeguards to minimise the risk to terrestrial mammals such as covering all excavations and the provision of escape ramps.

5.36 Surface water will be managed through the implementation of cut off V-ditches and earth bunds which will be constructed and maintained to prevent water from entering any drains or watercourses. Site runoff will be filtered through vegetation in the V-ditches before being attenuated in a pond/ lagoon where water will be allowed to settle before discharge. If water does not settle naturally, it will be treated using silt capture.

Site Offices & Welfare Accommodation

5.37 Specific offices and accommodation for construction staff will be required and located on-site, as outlined in paragraph 5.31, this will be detailed in the construction phase Health and Safety Plan.

Hours of Work

5.38 Working hours on the Site will be agreed with KMBC through the CEMP and it is likely that the standard hours of work will be:

- Monday to Friday, 08:00 to 18:00;
- Saturday, 08:00 to 14:00; and
- Sunday and Bank Holidays, no working anticipated, however this is subject to change according to planning conditions and Client requirements.

5.39 All noisy works outside these hours will be subject to prior agreement of, and/or reasonable notice to KMBC as appropriate. Night-time working will be restricted to exceptional circumstances and work internally with buildings. By arrangement, there may be some out of hours construction deliveries made to the Site.

Management of Construction Works

5.40 All contractors will be required to complete a method statement and risk assessment and obtain a works permit from the Applicant prior to commencement on-site.

Response to Complaints

5.41 Any complaints will be logged on-site and, where necessary, reported to the relevant individual within KMBC, as appropriate, (and vice versa) as soon as practicable. Protocols to be implemented on-site in instances of complaints, emergencies and environmental incidences are detailed within the CEMP for approval by KMBC.

Prior Notice

5.42 In the event of unusual activities or events, these will be notified to KMBC, as appropriate, and relevant property owners or occupiers in advance. The relevant activities will be agreed with KMBC, as appropriate, once the detailed programme of construction is defined. This will include:

- Necessary night-time, weekend or evening working (outside core areas) of a type which may affect properties; and
- Road or footpath closures/diversions and movements of wide loads (unlikely to be required).

5.43 The community will be kept informed during the construction phase as appropriate.

REFERENCES

- ⁱ ISO 9001:2008 Quality management systems — Requirements. Link: <https://www.iso.org/standard/46486.html>
- ⁱⁱ CIRIA C532 (2001) Control of Water Pollution from Construction Sites Guidance for consultants and contractors
- ⁱⁱⁱ Construction and demolition sites, PPG6: prevent pollution. April 2014. Link: <https://www.gov.uk/government/publications/construction-and-demolition-sites-ppg6-prevent-pollution>
- ^{iv} The Control of Pollution (Oil Storage) (England) Regulations 2001, Statutory Instrument 2001 No. 2954
- ^v British Standards Institution (December 2009) BS6031:2009 Code of Practice for Earthworks
- ^{vi} British Standards Institution (December 2004) BS EN 1997-1:2004 Eurocode 7. Geotechnical Design. General Rules.
- ^{vii} British Standards Institution (2002) BS EN 1990: 2002 Basis of Structural Design

6.0 POPULATION AND HUMAN HEALTH

Introduction

- 6.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of issues related to population and human health. In particular, the chapter considers the impact of the Development on housing delivery, employment generation and the population's health and wellbeing. It also considers the additional demand created by the Development's new residential population for social infrastructure and therefore considers the effect of the Development on education (early years, primary and secondary phase) and primary healthcare (General Practitioner (GP) provision).
- 6.2 This chapter should be read in conjunction with the following figures, which have been used to inform the assessment:
- Figure 6.1: Study Area;
 - Figure 6.2: Early years facilities;
 - Figure 6.3: Primary school provision;
 - Figure 6.4: Secondary school provision; and
 - Figure 6.5: GP provision.

Policy Context

- 6.3 A summary of the national and local planning policy relevant to the assessment of effects on population and human health is provided below.

National Planning Policy

National Planning Policy Frameworkⁱ

- 6.4 National planning policy is contained principally in the National Planning Policy Framework (NPPF) (July 2021). At the centre of the NPPF is the principle of sustainable development, with three overarching objectives: economic, social and environmental.
- 6.5 The social objective supports 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 (paragraph 8).

- 6.6 The economic objective is 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 (paragraph 8).
- 6.7 Significant adverse impacts on these objectives should be avoided and wherever possible, alternative options which reduce or eliminate such impacts should be pursued. Where significant adverse impacts are unavoidable, suitable mitigation measures should be proposed or compensatory measures should be considered (paragraph 32).
- 6.8 So that sustainable development is pursued in a positive way, the NPPF states that '*plans should promote a sustainable pattern of development that seeks to: meet the development needs of their area; align growth and infrastructure; improve the environment; mitigate climate change (including by making effective use of land in urban areas) and adapt to its effects*' (paragraph 11).
- 6.9 The NPPF requires planning authorities to work proactively with applicants to secure developments that will improve the economic, social and environmental conditions of the area (paragraph 38). Significant weight should be placed on the need to support sustainable economic growth (paragraph 81).
- 6.10 Planning policies and decisions should aim to achieve healthy, inclusive and safe places that promote social interaction; are safe and accessible; and enable and support healthy lifestyles, especially where this would address identified local health and well-being needs – for example, through the provision of safe and accessible green infrastructure, sports facilities, local shops, access to healthier food, allotments and layouts that encourage walking and cycling (paragraph 92).
- 6.11 To provide the social, recreational and cultural facilities and services the community needs, planning policies and decisions should ensure an integrated approach to considering the location of housing, economic uses and community facilities and services (paragraph 93).
- 6.12 In respect of education, the NPPF states that it is important that a sufficient choice of school places is available to meet the needs of existing and new communities, with local authorities taking a proactive, positive and collaborative approach to meeting this requirement through: giving greater weight to the need to create, expand or alter schools through the preparation of plans and decisions on applications; and working with school promoters, delivery partners

and statutory bodies to identify and resolve key planning issues before applications are submitted (paragraph 95).

- 6.13 The NPPF is supported by Planning Practice Guidance (PPG)ⁱⁱ on a range of different topics. Guidance is provided in respect of Environmental Impact Assessments, but socio-economic considerations are not specifically addressed.

Local Planning Policy

- 6.14 The Development is located within the administrative area of KMBC. The relevant local policy document for the Site comprises the Knowsley Local Plan Core Strategy 2016.

Knowsley Local Plan Core Strategy 2016ⁱⁱⁱ

- 6.15 The Knowsley Local Plan Core Strategy shapes the strategic framework for the growth and development of Knowsley up to 2028. The Plan's vision is for Knowsley to have attractive, sustainable neighbourhoods with a wide choice of housing and excellent community facilities.

- 6.16 Policies of relevance to the assessment of population and human health for the Development are:

- **Policy SD1 – Sustainable Development** states that a positive approach will be taken when considering development proposals which reflects the presumption in favour of sustainable development to secure development that improves the economic, social and environmental conditions in the area.
- **Policy CS1 – Spatial Strategy for Knowsley** prioritises the re-balance of the housing stock, to regenerate and enhance existing residential neighbourhoods, to enhance employment areas, to maintain and enhance the borough's town centres, to prioritise sustainable modes of transport, and to maintain and enhance the green infrastructure network.
- **Policy CS2 – Development Principles** recognises that new development will be expected to support and promote sustainable economic development, tackling the causes of deprivation and disadvantage and narrow the gap between the richest and poorest neighbourhoods.
- **Policy CS3 – Housing Supply, Delivery and Distribution** states provision will be made for 8,100 new dwellings to be delivered in Knowsley between 2010 and 2028, at an annual average of 450 dwellings per annum. Of this, 32% of housing will be distributed to Prescott, Whiston, Cronton and Knowsley Village.

- **Policy CS15 – Delivering Affordable Housing** requires housing developments which have a capacity of 15 dwellings or more to provide a minimum of 10% affordable housing on sites within the current urban area, and 25% of affordable housing on sites identified as Sustainable Urban Extensions identified in the KMBC Core Strategy, which includes the Site.
- **Policy CS17 – Housing Sizes and Design Standards** seeks to achieve a mix of dwelling sizes across the borough having regard to evidence of local housing needs and the monitoring of housing completions.
- **Policy CS27 – Planning for and paying for New Infrastructure** ensures that Knowsley's communities will be supported by an appropriate range of infrastructure, including any additional infrastructure which is required because of new developments. Proposals will be required to demonstrate that any negative impacts that the development may have on the improvement, replacement or provision of new infrastructure will be avoided or appropriately mitigated.

Assessment Methodology

Consultation

- 6.26 The proposed approach to the assessment of effects in relation to population and human and health was set out in the submitted EIA Scoping Report (Appendix 2.1 of the ES). KMBC's Scoping Opinion (Appendix 2.2 of the ES) agreed that population and human health should be scoped into the ES and did not provide any further comment in respect of the proposed approach. For this reason, the assessment of effects in relation to population and human health has been prepared in accordance with the approach submitted in the EIA Scoping Report (Appendix 2.1).
- 6.27 KMBC's Scoping Opinion requested the consideration of an additional four cumulative developments (thereby eight in total) when assessing the cumulative effects. The cumulative assessment on population and human health has considered all eight cumulative developments as described within Chapter 2: EIA Methodology of the ES.

Technical Scope of the Assessment

- 6.28 This assessment has been undertaken in accordance with the Development parameters set out in ES Chapter 3: Site and Development Description, and the following likely significant population and human health effects from the Development have been assessed:

Construction phase:

- Employment generation (direct and indirect); and
- Wider human health.

Completed Development:

- Delivery of new housing;
- Early years education;
- Primary school education;
- Secondary school education;
- GP provision;
- Wider human health; and
- Creation of resident labour supply.

6.29 Construction phase effects on housing, education and primary healthcare have been scoped out of the assessment, as it is expected that the construction workforce and their families would not move to the area and therefore not create any additional demand. There would either be no effect during the construction phase on these receptors or effects would be so small as to be insignificant.

6.30 The assessment comprises the following stages:

- Identification of current and future baseline conditions with respect to the above topics using information and statistics available in the public domain;
- Assessment of the likely significant effects of the Development on population and human health by reviewing the baseline conditions and determining the change attributable to the Development using published formulae and guidance to assess effects;
- Recommendation of mitigation or enhancement measures, if necessary;
- Assessment of residual effects assuming implementation of the mitigation/ enhancement measures; and
- Assessment of the cumulative developments described within Chapter 2: EIA Methodology of the ES for the potential to have likely significant cumulative effects on population and human health when combined with the Development.

Spatial Scope of the Assessment

6.31 ES Chapter 3: Site and Development Description details the Site context. The Site is located within the Whiston and Cronton electoral ward in KMBC, as shown in Figure 6.1; however, to more appropriately capture the extent of population most likely to be directly affected by the

Development, the local Study Area for assessment has been defined as comprising the two electoral wards of Whiston and Cronton, and Rainhill.

- 6.32 Baseline conditions for the Study Area (local area) are compared to the authority area of KMBC (borough level), the North West (NW) region (regional level) and England (national level).
- 6.33 Table 6.1 summarises the spatial area used within this assessment for each receptor.

Table 6.1: Receptor Spatial Assessment Areas

Receptor	Spatial Area	Justification
Housing	Borough level	The residential homes provided by the Development will contribute towards the Local Plan housing requirement for the KMBC area.
Early Years	Local level	People can register with any childcare provider. However, to limit assessment, provision within the Study Area has been considered as the area most likely to be impacted upon by the Development, given they are closest to the Site.
Primary Education	Local level	The Development is located within the primary school planning area of Knowsley Central East. All primary schools located within this planning area have been selected for assessment as all have the potential to be impacted upon by the Development's new residential population, given they are the closest primary schools to the Site.
Secondary Education	Borough level	The Development is located within the secondary school planning area of Knowsley Central Secondary. All secondary schools located within this planning area have been selected for assessment as all have the potential to be impacted upon by the Development's new residential population, given they are the closest secondary schools to the Site.
GP Provision	Local level	Since 2015, people can register with any GP of their choice; however, to limit this assessment, provision within the Study Area has been considered as the area most likely to be impacted upon by the Development, given they are the closest GP facilities to the Site.
Wider Human Health	Local level	The population most affected by the Development comprises residents closest to the Site.
Employment/ Resident Labour Supply	Borough level	The construction phase of the Development will provide employment opportunities across the KMBC area. The operational phase of the Development will create an additional resident labour supply to support the KMBC economy.

Topic-specific Methodologies

Population

- 6.34 The baseline population is established using the Office for National Statistics (ONS) 2020 Mid-Year Population Estimates (MYPE)^{iv}. The ONS, 2018-based Sub National Population Projections (SNPP)^v have been used to provide a future population for the year in which the Development is proposed to be fully completed and operational (2025). The SNPP are only

published for local authority areas, regions and England and therefore the SNPP are not available for the Study Area.

- 6.35 The number of future residents anticipated to live in the Development has been calculated using the projected household size for the KMBC area in the anticipated year of completion (2026) according to the ONS 2018-based household projections^{vi}.

Housing

- 6.36 Existing baseline housing conditions in respect of the number, type, tenure and overcrowding of homes have been informed by the ONS, 2011 Census^{vii}. Whilst the 2021 Census was undertaken in March 2021, to date, only population by age and total number of households has been published for local authorities and higher geographies; the detailed results are not yet available. Therefore, data from the 2011 Census remains the most up to date census dataset available in respect of accommodation type, tenure and overcrowding. The number of households on the housing waiting list in 2021 has been sourced from the Department for Levelling Up, Housing and Communities (DLUHC)^{viii}.
- 6.37 The impact of the Development on the local housing stock is a quantitative assessment based on the contribution that the Development will make to the identified housing requirements for the KMBC area set out in the adopted Knowsley Local Plan Core Strategy 2016.

Early Years Education

- 6.38 All registered early years/childcare providers in the Study Area that provide year-round care in non-domestic settings, have been sourced from Ofsted^{ix}, including details of the number places provided. The number of available places is not known. Those facilities included for assessment are shown on Figure 6.2.
- 6.39 The number of early years places required by the Development's future population has been calculated using child yield multipliers reported in KMBC's School Organisation Strategy 2019-2029^x. The Knowsley School Organisation Strategy does not provide a specific multiplier for early years aged children and therefore the yield multiplier for primary aged children has been used as a proxy.
- 6.40 The assessment is quantitatively based on the number of early year places generated by the Development versus the number of places provided within the existing early years provision.

Primary and Secondary Education

- 6.41 All state-maintained primary schools located within the Knowsley Central East Primary Planning Area, and all state-maintained secondary schools located within the Knowsley Central Secondary Planning Area, have been included for assessment (shown on Figures 6.4 and 6.5). Table 6.1 provides the rationale for the use of this selection.
- 6.42 Independent, special and selective schools have been excluded. This represents a worst-case scenario for assessment, as it assumes that all pupils living at the Development will enter mainstream state-maintained schools.
- 6.43 Baseline conditions in respect of the existing numbers of pupils on each individual school roll, along with current school capacities, have been informed by the Department for Education (DfE) School Capacity: Academic Year 2020/21^{xi}. This data has been used to determine baseline surplus or deficit school places.
- 6.44 Future baseline conditions in respect of primary and secondary school capacities have been informed by the DfE, School Place Planning Data, specifically the estimated number of primary places needed for years 2021/22 to 2025/26 (the furthest year for which primary level forecasts are available) and secondary places needed for years 2021/22 to 2027/2028 (the furthest year for which secondary level forecasts are available)^{xii}. Capacity forecasts are only published for school planning areas and are not available for individual schools.
- 6.45 The number of primary and secondary school places required by the Development's resident population has been calculated using child yield multipliers reported in KMBC's School Organisation Strategy 2019-2029^x, specifically the yield multipliers for primary aged children and separately secondary aged children.
- 6.46 The assessment is quantitatively based on the number of primary/secondary pupils generated by the Development versus the level of surplus or deficit forecast primary/secondary school places.
- 6.47 For the purpose of this assessment, secondary education is defined as school years 7 to 11 (children aged 11 to 15/16 years).

GP Provision

- 6.48 All GP provision located within the Study Area has been selected for this assessment (shown on Figure 6.5). Baseline conditions for GP provision are assessed through reference to the

National Health Service (NHS) GP Workforce Statistics^{xiii}, which provide total patient list size for individual GP Practices and the number of full time equivalent (FTE) GPs at each practice. It should be noted that the NHS only publishes GP and Patient data at a practice level. Data is not published for individual branches associated with a practice.

- 6.49 To determine whether existing GP provision is under or over-capacity, GP to patient ratios of the selected practices have been compared to the Healthy Urban Development Unit (HUDU) standard of 1 GP for every 1,800 people.
- 6.50 The assessment of likely significant effects has been quantitatively based on the number of future residents anticipated to live in the Development versus the number of surplus or deficit patient places within the selected GP provision. To assess the worst-case, it has been assumed that all residents of the Development will be new to the area and therefore not already registered with a local GP.

Wider Human Health

- 6.51 Human health is a multidimensional topic and covers both physical and mental wellbeing. This is reflected in the World Health Organisation's^{xiv} definition of health as, "*a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*". The assessment of wider human health effects from the Development is qualitative, drawing on the findings of the following ES chapters, which have a bearing on human health:
- Chapter 2: EIA Methodology;
 - Chapter 7: Landscape and Visual Effects;
 - Chapter 8: Biodiversity; and
 - Chapter 10: Air Quality.
- 6.52 Additionally, a Human Health Impact Statement is included in Appendix 6.1, which demonstrates how the requirements of a Health Impact Assessment (HIA) will be met through the Development.
- 6.53 Baseline conditions regarding the local human health environment and inequalities have been informed utilising the information from Public Health England's' (PHE) latest report for KMBC and from the English Indices of Deprivation^{xv}.

Employment and Resident Labour Supply

- 6.54 Baseline employment conditions in relation to economic activity have been informed by the ONS, Annual Population Survey (APS)^{xvi}, for the 12 months to December 2021. Data for the Study Area are not available from this data source and therefore baseline conditions on economic activity are only presented for the KMBC area, NW region and England; however, baseline conditions in relation to unemployment within the Study Area have been sourced from the ONS Claimant Count^{xvii} for the month of May 2022 (to represent the latest data available at the time of writing) and February 2020 (to represent the pre-Covid-19 pandemic position). In addition, claimants of Jobseeker Allowance (JSA)^{xviii} for the months of February 2020 and May 2022 have been considered for the Study Area to determine the number of people looking for employment and the occupations sought.
- 6.55 Baseline employment conditions in relation to the number of jobs in the KMBC area (workplace-based) have been sourced from the ONS, Jobs Density data set for the year 2020^{xix} (latest data available at the time of writing). Jobs Density data provide a measure of total jobs and therefore includes a count of all employees, self-employed, government-supported trainees and HM Forces. Jobs Density data is not available for the Study Area and therefore only data for the KMBC area, NW region and England has been presented. Data from the ONS, Business Register and Employment Survey (BRES)^{xx} provides a count of employees working in the Study Area, excluding self-employment jobs and government-supported trainees and HM Forces. Nonetheless, BRES data is presented to illustrate the key industrial sectors in the Study Area, KMBC area, NW region and England.
- 6.56 Baseline employment conditions in relation to commuting patterns (travel to work statistics) have been sourced from the 2011 Census^{xxi}. Whilst the 2021 Census was undertaken in March 2021, the travel to work results are not yet available and therefore data from the 2011 Census remains the most up to date census dataset available. Travel to work statistics are not available for the Study Area and therefore data is presented for the KMBC area only.
- 6.57 Assessment is quantitatively made based on the number of jobs created. The number of direct jobs generated during the construction phase has been assessed using the Construction Industry Training Board (CITB), Labour Forecasting Tool (LFT)^{xxii}. The LFT has been run using the indicative construction cost provided by the Applicant over a 23-month construction programme from April 2023 to February 2025. The number of indirect jobs generated during the construction phase of the Development has been assessed quantitatively by applying the ONS, Type 1 Employment Multiplier^{xxiii} to the direct number of jobs.
- 6.58 No operational employment will be created by the Development. However, a proportion of

the Development's future resident population will be economically active, contributing to KMBC's resident labour supply. The number is calculated through the application of local economic activity rates sourced from the ONS, APS for the 12 months to December 2021^{xvi} applied to the number of future residents anticipated to live in the Development.

Limitations and Assumptions

- 6.59 The assessment relies on secondary survey data published by the ONS. Each data source has methodological limitations related to data collection and surveys only represent the socio-economic context at a specific point in time.

Baseline Conditions

Population

- 6.60 The ONS 2020 MYPEs estimate that the Study Area has a population of circa 20,100 people, accounting for 13% of the KMBC area's total population (circa 152,500 people).
- 6.61 The Study Area has an older age profile relative to the KMBC area, NW region and England. 25% of the Study Area's population is aged 65+ years which is significantly higher than the KMBC area (17%), NW region (19%) and England (19%). Furthermore, a smaller proportion of the Study Area's population is aged 16 to 64 years (58%) compared to the KMBC area (62%), NW region (62%) and England (62%). The Study Area also has a smaller proportion of children aged 0 to 15 years (17%) compared to the KMBC area (20%), NW region (19%) and the national average (19%) as shown in Table 6.2.

Table 6.2: Age Profile by Broad Age Group (2020)

	Study Area	KMBC area	NW region	England
Aged 0 to 15	17%	20%	19%	19%
Aged 16 to 64	58%	62%	62%	62%
Aged 65+	25%	17%	19%	19%
All ages	100%	100%	100%	100%

Source: ONS, 2020 MYPE. All figures have been rounded and may not sum.

- 6.62 It is anticipated that construction of the Development will commence in 2023 and be completed by 2025. The ONS, 2018-based Sub National Population Projections (SNPP)^v indicate that by the year 2023, there will be 153,300 people living in the KMBC area and that by the year 2025, this will have increased to 154,700 people. An increase of 1,400 people represents a 0.9% increase in population. In comparison, the NW region's population is

projected to increase by 0.7% and England's population by 1.1% over the same period.

Table 6.3: Projected Population Growth (2023 to 2025)

	2023	2025	Change (2023 to 2025)
KMBC area	153,300	154,700	1,400 (+0.9%)
NW region	7,453,800	7,507,000	53,200 (+0.7%)
England	57,030,500	57,643,300	612,800 (+1.0%)

Source: ONS, 2018-based SNPP. All figures have been rounded and may not sum.

Housing

- 6.63 The 2011 Census recorded approximately 61,300 households in the KMBC area, 14% of which (c8,700) are within the Study Area. There is no housing on the Site currently.
- 6.64 Table 6.4 below highlights that the largest proportion of accommodation within the Study Area is semi-detached (47%). Whilst semi-detached properties also account for the highest proportion of homes in the KMBC area, the proportion of homes they represent is lower (41%). A further 27% of accommodation within the Study Area is terraced; lower than the average for the KMBC area (35%) and NW region (30%), but above the national average (25%). 18% of the Study Area's housing is detached, which represents a higher proportion than the average for the KMBC area (13%), comparable to the average for the NW region (18%) and a lower proportion than the national average (22%). Only 7% of accommodation within the Study Area is flats, which is lower than the average for the KMBC area (11%), NW region (16%) and significantly lower than the national average (22%).
- 6.65 The majority of accommodation in the Study Area is owned which is consistent with the profile for the KMBC area, NW region and England. However, a larger proportion of the Study Area's accommodation is owned (78%) compared to the KMBC area (62%), the NW region (65%) and England (63%). 13% of accommodation in the Study Area is socially rented; significantly lower than the average for the KMBC area (27%), the NW region (18%) and England (18%). A further 8% of accommodation in the Study Area is privately rented; again, lower than the average for the KMBC area (10%), NW region (15%) and England (17%).

Table 6.4: Household Accommodation Type and Tenure (2011)

Type	Study Area	KMBC area	NW region	England
Detached	18%	13%	18%	22%
Semi-detached	47%	41%	36%	31%
Terraced	27%	35%	30%	25%
Flats	7%	11%	16%	22%
Tenure				
Owned	78%	62%	65%	63%
Shared Ownership	0%	1%	1%	1%

Type	Study Area	KMBC area	NW region	England
Social Rent	13%	27%	18%	18%
Private Rent	8%	10%	15%	17%
Living rent free	1%	1%	1%	1%

Source: ONS, 2011 Census, Tables KS401EW and KS402EW

Caravans and other temporary structures are not included. All figures have been rounded and may not sum

- 6.66 Within the Study Area, 4% of homes are overcrowded, defined as there being fewer rooms than required for the size of the household. The proportion of overcrowded households in the Study Area is lower than the average for the KMBC area (6%), NW region (6%) and England (9%).
- 6.67 The ONS, 2018-based household projections estimate that currently the average size of a household in the KMBC area is 2.36 persons per household: larger than the average for the NW region (2.28 persons per household) but comparable to the national average (2.36 persons per household). By 2025 (the Development's anticipated year of completion) the projections indicate that the average household size of the KMBC area will remain the same as currently (2.36 persons per household) but that both the NW regional and national average household size will have reduced slightly (2.27 and 2.34 persons per household respectively).
- 6.68 There are currently 2,896 households on KMBC's housing waiting list for social housing, a decrease of 66 households (-2%) from 2020. In comparison, the number of households on the housing waiting list across the NW region decreased by 8.6% and across England increased by 4% over the same period.

Early Years Education

- 6.69 A total of eight registered, non-domestic childcare and early years facilities have been identified within the Study Area. These eight facilities are detailed in Table 6.5, along with the number of places provided by the individual facility. Figure 6.2 identifies the location of these facilities in relation to the Site.

Table 6.5: Existing Early Years facilities within the Study Area

Location on Figure 6.2	Name	Postcode	Places provided
1	Waverton Cottage Day Nursery	L35 7NJ	72
1	Kidzone Longton	L35 8PB	24
2	Lynwood Day Nursery	L35 7LN	13
3	Portico Lodge	L35 7JS	30
4	Hilltop Childrens Centre Choices	L36 1XH	10
5	Orchard Day Nursery	L36 5UZ	222
5	Little Apples	L36 6AZ	15

Location on Figure 6.2	Name	Postcode	Places provided
6	Wizzkids	WA8 5DW	60
Total			446

Source: Ofsted

- 6.70 The eight registered, non-domestic childcare places located within the Study Area collectively provide 446 places. Capacity data is not available.

Primary Education

- 6.71 There are eight primary schools located within the Central East primary planning area. Table 6.6 details these schools along with the current number of pupils on roll and the school's capacity, identifying the number of surplus/deficit places capacity figures. Figure 6.3 identifies the location of these primary schools in relation to the Site.

Table 6.6: Existing primary schools and capacities within Central East Primary Planning Area

Location on Figure 6.3	Name	Capacity (Places)	Pupils on Roll	Surplus/Deficit (Places)
1	St Leo's and Southmead Catholic Primary School Serving the Community	210	194	16
2	Halsnead Primary School	404	291	113
3	Whiston Willis Primary Academy	280	293	-13
4	St Luke's Catholic Primary School	245	186	59
5	St Mary and St Paul's CofE Primary School	210	208	2
6	Prescot Primary School	415	373	42
7	Evelyn Community Primary School	240	235	5
8	Our Lady's Catholic Primary School	210	204	6
	Total (surplus places only)			243

Source: DfE

- 6.72 The nearest primary school to the Site, St Leo's and Southmead Catholic Primary School is currently operating with a small surplus of 16 places. In total, across the Central East Primary Planning Area there is currently capacity to accommodate a further 243 additional primary school children. The surplus capacity exists in seven of the eight primary schools; only one primary school (Whiston Willis Primary Academy) is currently operating over-capacity by 13 places.
- 6.73 DfE, School Place Planning data provides future baseline conditions in respect of primary school capacities. As stated in the assessment methodology, future capacities are only available for school planning areas (not individual schools). The number of available primary

school places is forecast to remain similar to current levels over the coming years as shown in Table 6.7. By 2025/26 (the academic year in which the Development is anticipated to be completed), the Central East Primary Planning Area is forecast to have 238 primary school places available, a slight decrease from the number of places available currently (243 places).

Table 6.7: School Place Planning Estimates: Forecasts of the number of primary school places available in Central East Primary Planning Area

Academic Year	Number of places available
2021/22	243
2022/23	217
2023/24	247
2024/25	246
2025/26	238

Source: DfE

Secondary Education

- 6.74 There are three secondary schools located within the Central Secondary Planning Area, none of which have a Sixth Form. Table 6.8 details the current number of pupils on roll and capacity figures for all three secondary schools. Figure 6.4 identifies the location of the schools in relation to the Site.

Table 6.8: Existing Secondary Schools and Capacities (School Years 7 to 11) within Central Secondary Planning Area

Location on Figure 6.4	Name	Capacity (Places)	Pupils on Roll	Surplus/ Deficit (Places)
1	Saint Edmund Arrowsmith Catholic Academy	1,050	735	315
2	Lord Derby Academy	1,100	1,104	-4
3	The Prescott School	1,050	846	204
	Total (surplus places only)			519

Source: DfE

- 6.75 The closest secondary school to the Site is Saint Edmund Arrowsmith Catholic Academy which is currently operating under capacity with a surplus of 315 places. Across the Central Secondary Planning Area there is capacity to accommodate a further 519 additional secondary school aged children. The surplus capacity exists in two of the three secondary schools; Lord Derby Academy is currently operating over-capacity by 4 places.
- 6.76 DfE forecasts indicate that the number of available secondary school places in the Central

Secondary Planning Area will reduce over the coming years as shown in Table 6.9. However, by 2025/26 (the academic year in which the Development will be completed) there is forecast to be 169 secondary school places available in the Central Secondary Planning Area.

Table 6.9: School Place Planning Estimates: Forecasts of the number of secondary school places available in Central Secondary Planning Area

Academic Year	Number of places available
2021/22	519
2022/23	448
2023/24	304
2024/25	215
2025/26	169
2026/27	111
2027/28	125

Source: DfE

GP Provision

- 6.77 There are four GP practices operating from within the Study Area. Table 6.10 provides details of the number of registered patients and the number of FTE GPs. Figure 6.5 shows the location of the GP practice and associated branches in relation to the Site.

Table 6.10: Existing GP Provision and Capacities (May 2022)

Location on Figure 6.5	Surgery Name	GPs (FTE)	Patients	Ratio (Patients to 1 GP)	Surplus capacity (patients) ¹
1	Knowsley Medical Centre	2.0	4,266	1:2,133	-666
2	Longton Medical Centre	2.3	5,790	1:2,517	-1,650
2	The Crossroads Surgery	1.3	2,619	1:2,015	-279
3	Rainhill Village Surgery	3.0	6,919	1:2,306	-1,519
	Total (surplus places)				0

Source: NHS GP Workforce Statistics

Notes: 1. Capacity is calculated by subtracting the existing ratio (patients to 1 GP figure) from the HUDU average (1 GP for every 1,800 people) and multiplying this by the number of GPs at the relevant surgery.

- 6.78 The Knowsley Medical Centre is the closest GP practice to the Site and is currently operating over capacity when compared to the HUDU standard of 1 GP for every 1,800 patients, with 1 GP for every 2,133 patients. The remaining three practices are also operating over capacity. On the basis that all four GP practices located within the Study Area are currently operating over-capacity, it is concluded that there is no capacity to accommodate new patients. However, with reference to the NHS Choices website (as of 20 June 2022) all four GP are currently accepting new patient registrations.

Wider Human Health

- 6.79 A review of the Health Profile and various local health statistics for KMBC, available from PHE^{xxiv} has been undertaken as part of this assessment. Data has been obtained on various health features and compared with data for KMBC and England. On the whole, people in KMBC have worse health than the England average.
- 6.80 The Site is located within one 'neighbourhood': Lower Super Output Area (LSOA) Knowsley 013C, which is ranked 12,128 out of 32,844 LSOAs in England on the 2019 Indices of Multiple Deprivation (IMD); where 1 is the most deprived. This means the population is amongst the 40% most deprived neighbourhoods in England.
- 6.81 Local Health Statistics show that male life expectancy at birth in KMBC is 76.3, which is below the north west regional average of 77.9 and below the national average of 79.4. For females, life expectancy at birth in KMBC is 79.8, which is also below the regional and national average (which are 81.7 and 83.1 respectively). The under 75 mortality rates from cancer are significantly higher in KMBC (180.5 per 100,000) compared to the regional and national rates (142.2 and 129.2 per 100,000 respectively). The percentage of physically active adults in KMBC is also significantly lower (at 54.2%) than the regional and national values, which are 64.5% and 65.9%. Numerous other health indices in KMBC score worse than the regional and national averages, including the percentage of adults classified as overweight or obese, hospital admissions for intentional self-harm and the estimated dementia diagnosis rate (aged 65 and over).

Employment

- 6.82 There is no employment on the Site currently.
- 6.83 In the year ending December 2021, there were 71,500 residents in the KMBC area who were classified as economically active (this includes all those people in employment or available to work, for example the unemployed). This is equivalent to 78% of all 16 to 64 year olds in the KBMC area, which is slightly higher than the average for the NW region (77%) but slightly below the average for England (79%).
- 6.84 Of those economically active KMBC residents, 68,900 were in employment which is equivalent to 75% of all 16 to 64 year olds; higher than the average for the NW region (73%) and equivalent to the national average (75%). The remaining 2,600 economically active KMBC residents were unemployed. This represents an unemployment rate of 3.7%, which is lower than the NW regional average (4.7%) and the national average (4.6%).

- 6.85 Whilst not a measure of total unemployment, Claimant Count data provides a count of the number of people in the Study Area claiming JSA, National Insurance (NI) Credits or Universal Credit (UC) principally for the reason of being unemployed. Table 6.11 presents Claimant Count data for the Study Area, KMBC area, NW region and England in February 2020 (pre-COVID) and May 2022 (latest data available at time of writing and impacted by COVID).

Table 6.11: Claimant Count

		Study Area	KMBC area	NW region	England
February 2020	Number of claimants	315	4,370	167,055	1,050,875
	Claimants as % of residents aged 16-64 years	2.8	4.6	3.7	3.0
May 2022	Number of claimants	350	4,930	203,005	1,388,160
	Claimants as % of residents aged 16-64 years	3.0	5.2	4.4	3.9

Source: ONS, [downloaded from NOMIS 20 June 2022]

- 6.86 In February 2020, 315 residents of the Study Area were claiming unemployment related benefits, which was equivalent to 2.8% of all residents aged 16 to 64 years; lower than the KMBC area average (4.6%), NW region (3.7%) and national average (3.0%).
- 6.87 As a result of the current COVID-19 pandemic, unemployment has increased. This is a trend seen nationally. In May 2022, 350 residents of the Study Area were claiming unemployment related benefits. This is equivalent to 3.0% of all residents aged 16 to 64 years which remains lower than the average for the KMBC area (5.2%), NW region (4.4%) and England (3.9%).
- 6.88 In May 2022, 540 residents of the KMBC area were claiming JSA, 50 of whom were resident in the Study Area. Of those claiming JSA in the Study Area, 60% were seeking employment in sales related occupations with the remainder in unknown occupations.
- 6.89 The KMBC area is a net exporter of labour, which means there are more residents aged 16 to 64 years than there are jobs. Jobs' density data from the ONS identifies that in 2020 there were 73,000 jobs in the KMBC area. Expressed as proportion of residents aged 16 to 64 years, the KMBC area has a jobs' density of 0.77 which means there is approximately 0.77 of a job for every resident of working age. The jobs' density for the NW region is 0.82.
- 6.90 Data from the ONS, 2020 BRES, identifies that there are 4,250 jobs in the Study Area which represents 6% of jobs in the KMBC area (69,000 jobs). As stated in the Assessment Methodology section of this chapter, the BRES data excludes those who are self-employed, government-supported trainees and HM Forces and therefore the number of jobs reported by BRES is lower than the number reported by the Jobs' density data. Nonetheless, the BRES

data provides an indication of the industrial sector of employment. Table 6.12 provides a breakdown of the industries people are working within in the Study Area, the KMBC area, NW region and England.

Table 6.12: Workplace-based Employment by Industrial Structure (%)

Industry	Study Area	KMBC area	NW region	England
Education (P)	21%	6%	9%	9%
Manufacturing (C)	17%	16%	10%	8%
Business administration & support services (N)	15%	9%	8%	9%
Health (Q)	15%	25%	14%	13%
Accommodation & food services (I)	7%	3%	7%	7%
Arts, entertainment, recreation & other services (R,S,T and U)	6%	3%	4%	4%
Retail (Part G)	6%	10%	11%	9%
Construction (F)	4%	4%	4%	5%
Professional, scientific & technical (M)	3%	7%	9%	9%
Information & communication (J)	2%	1%	3%	5%
Transport & storage (inc postal) (H)	2%	5%	5%	5%
Wholesale (Part G)	2%	3%	4%	4%
Motor trades (Part G)	2%	1%	2%	2%
Public administration & defence (O)	1%	3%	5%	4%
Property (L)	0%	1%	2%	2%
Mining, quarrying & utilities (B,D and E)	0%	1%	1%	1%
Financial & insurance (K)	0%	1%	3%	4%
Agriculture, forestry & fishing (A)	0%	0%	0%	1%
Total	100%	100%	100%	100%

Source: ONS, 2020 BRES [downloaded from NOMIS 20 June 2022]

All figures have been rounded and may not sum.

- 6.91 Table 6.12 shows that within the Study Area there is a comparatively high proportion of employment in the education sector (21%) compared to the KMBC area (6%), NW region (9%) and England (9%). The Study Area also has a high proportion of employment in the manufacturing sector (17%) and business administration & support services (15%) in comparison to the KMBC area, NW region and England.
- 6.92 The BRES data identifies that there is a construction workforce, significant in size, already working within proximity of the Site, with the number of people working in the construction industry totalling 3,000 in the KMBC area, of which 150 are working in the Study Area.
- 6.93 Travel to work statistics from the 2011 Census reveal that 38% of jobs in the KMBC area are taken up by residents who live in the KMBC area. The remaining 62% of jobs in the KMBC area are taken up by residents who live outside of the KMBC area. Those local authority districts providing a large proportion of the KMBC area's workforce are Liverpool (23%); St. Helens (12%); and Sefton (8%).

Likely Significant Effects

Construction Phase

Effects on Employment

- 6.94 The construction phase of the Development will generate jobs across all construction disciplines from ground workers to construction management. Populating the LFT with the assumptions set out earlier in this chapter in the assessment methodology section, it is anticipated that the Development will produce direct employment for an average of 40 (FTE) workers, over the 35-month construction period (February 2023 to January 2026).
- 6.95 In addition to jobs created as a direct effect of the construction and management of the Development, further indirect employment will be experienced in the supply-chain as a result of the spin-off and multiplier effects. It is calculated that there will be a further 39 indirect jobs created during the construction phase (=40 direct jobs x 0.97 ONS Type 1 multiplier).
- 6.96 In the context of the construction workforce in the KMBC area currently (3,000 workers) as identified in the baseline assessment, the Development is considered to have a temporary, **minor beneficial** effect on employment during the construction phase at the Borough level.

Effects on Wider Human Health

- 6.97 In the absence of mitigation, residents living in proximity of the Site in the construction phase would be affected by construction traffic, noise, dust, emissions and visual disturbance from the presence of construction machinery and plant (refer to Chapter 5 for the construction programme and activities). This would have the potential to have adverse effects on mental and physical health and the quality of life over the construction period. Whilst temporary in nature, effects would be felt over the whole construction phase such that they could be **Moderate adverse to negligible** at a local level, particular for residents in close proximity to the Site, such as those at Croftwood Grove, as well as residents near to the construction traffic route.
- 6.98 Assessment of effects of the Development on air quality and landscape and visual effects, which have a bearing on human health have been identified elsewhere in this ES (Chapters 7 Landscape and Visual Effects and Chapter 10 Air Quality). A summary of the likely significant effects from the construction phase in respect to these topics is set out in Table 6.13 below.
- 6.99 Although scoped out of this ES, potential effects from construction noise and vibration has

been identified within the Noise and Vibration Monitoring report submitted in support of the planning application. These reports have identified the potential effects during construction and recommended appropriate mitigation measures to reduce the effects to an appropriate level.

- 6.100 Further information on how anticipated effects on wider human health are addressed in the construction phase is included within Appendix 6.1.

Table 6.13: Effects during Construction – Wider Human Health

Effect	Significance of Effect
Landscape and Visual Effects	
Landscape Character – Site Level	Moderate adverse (not significant in Landscape Assessments)
Open Space	Negligible
Public Rights of Way	Negligible
Air Quality	
Result of Earthworks on Human Health	Minor adverse
Result of Construction dust on Human Health	Minor adverse
Result of dust emissions from trackout on human health	Minor adverse

Operational Phase

Effects on Housing Delivery

- 6.101 The Development will provide 120 new homes. Table 6.14 details an indicative housing mix for the Development which illustrates that the Development is providing homes across a range of types (houses/apartments), tenures (market and affordable) and size (2 to 4-bed). 10% of the Development's homes (12 units) will be delivered as affordable homes which is in line with the local policy requirement.

Table 6.14: Indicative Housing Mix for the Development

Number of bedrooms	Tenure		Total
	Private	Affordable	
2-bed	18	12	30
3-bed	68	0	68
4-bed	22	0	22
Total	108	12	120

- 6.102 The provision of 120 homes will increase the Study Area's housing stock by 1.4% and the KMBC area's housing stock by 0.2%. Furthermore, the 12 affordable homes provided by the Development will provide homes for some of the 2,896 households currently on the KMBC housing waiting list.

- 6.103 The KMBC Local Plan 2016 identifies a need for 8,100 net additional homes in the KMBC area over the period 2010 to 2028. This equates to 450 additional homes per annum. The Development's provision of 120 homes will contribute 1.5% of the KMBC area's total housing requirement over the period 2018 to 2028.
- 6.104 On the basis of the Development providing an additional 120 homes in the KMBC area across a range of tenures and sizes comprising 10% affordable homes and contributing 1.5% of KMBC's total housing requirement over the Local Plan period, it is considered that the Development will provide a permanent, **minor beneficial effect** on housing at the Borough level.

Effects on Early Years Education

- 6.105 KMBC's School Organisation Strategy 2019-2029^x reports that every 100 new households leads to an additional 19 primary aged pupils (equivalent to 0.19 children per new household). Applying KMBC's pupil yield multiplier for primary education of 0.19 per new household to the 120 homes proposed by the Development, it is estimated that the Development will yield a need for 23 additional primary school places. As stated in the assessment methodology, in the absence of a yield multiplier specifically for early years education, the primary multiplier has been used as a proxy for the demand created for additional early years places.
- 6.106 Baseline conditions identified a total of eight non-domestic, registered early years and childcare providers within the Study Area that provide a total of 446 early years/childcare places. The capacity position of the existing early years provision is not known. However, it is common practice for early year providers to operate a waiting list and therefore future residents of the Development will be able to join a waiting list in the same way that existing residents of the Study Area can. On this basis, it is considered that the Development would have a **negligible effect** on early years education at the local level.

Effects on Primary Education

- 6.107 As identified above for early years education, it is calculated that the Development's 120 homes will create a need for 23 additional primary school places.
- 6.108 Baseline conditions identified a current surplus of 243 primary school places within the Central East Primary Planning Area, with DfE forecasts indicating that by 2025/26 (the academic year in which the Development is anticipated to be completed) the number of available primary school places could be 238.

- 6.109 The 23 additional primary school places required by the Development could be accommodated within the forecast surplus capacity of places within Central East Primary Planning Area in 2025/26 (238 places), and on this basis it is considered that the Development will have a **negligible** effect on primary education at the local level.

Effects on Secondary Education

- 6.110 KMBC's School Organisation Strategy 2019-2029^x reports that every 100 new households leads to an additional 16 secondary aged pupils (equivalent to 0.16 children per new household). Applying KMBC's pupil yield multiplier for secondary education of 0.16 per new household to the 120 homes proposed by the Development, it is estimated that the Development will yield a need for 20 additional secondary school places.
- 6.111 Baseline conditions identified a current surplus of 519 secondary school places within the Knowsley Central Secondary Planning Area, with 315 of these places within the secondary school located closest to the Site (Saint Edmund Arrowsmith Catholic Academy). DfE forecasts indicate that by 2025/26 (the academic year in which the Development is anticipated to be completed) the number of available secondary school places in the Knowsley Central Secondary Planning Area is expected to have reduced to 169 places.
- 6.112 Despite the forecast reduction in secondary school places in the Knowsley Central Secondary Planning Area over the coming years, the number of additional secondary school places required by the Development (20 places) could be accommodated within the forecast availability (169 places in 2025/26).
- 6.113 On this basis, it is considered that the Development will have a **negligible** effect on secondary education at the local level.

Effects on GP Provision

- 6.114 Applying the average household size for the KMBC area in the anticipated year of the Development's completion (2026) of 2.36 persons per household, to the number of homes proposed by the Development (120 homes), it is estimated that the Development will provide homes for approximately 284 people.
- 6.115 As outlined in the assessment methodology section of this chapter, to assess a worst-case, it is assumed that all 284 future residents of the Development will be new to the area and therefore will need to register with a local GP. On this basis, the Development is expected to create a need for 284 additional GP places.

- 6.116 Baseline conditions identified that within the GP provision located in the Study Area, there is no capacity to accommodate any new patient registrations when assessed against the HUDU capacity benchmark.
- 6.117 The additional GP places required by the Development cannot therefore be accommodated within the existing GP provision and therefore it considered that the Development will have an adverse effect on GP Provision. The demand for 284 places created by the Development will require the need for an additional 0.2 FTE GP. The need for an additional 0.2 FTE GP is considered minor. On this basis, it is considered that the Development will have a **minor adverse** effect on GP provision at the local level, which is not considered significant.

Effects on Wider Human Health

- 6.118 Assessment of effects of the Development on landscape and visual and air quality, all of which have a bearing on human health and wellbeing have been identified through this ES (Chapter 7 Landscape and Visual Effects and Chapter 10 Air Quality).
- 6.119 A summary of the likely significant effects of the Development during operation is set out in Table 6.15 below. Without mitigation, the Development could result in minor adverse effects on the Site level landscape character, as well as human exposure to NO₂ emissions which can adversely affect human and health and wellbeing. Exposure to PM₁₀ and PM_{2.5} is considered to be negligible, and the Development is anticipated to result in minor beneficial effects on open space and Public Rights of Way. All of these anticipated effects are not considered significant.
- 6.120 Further information on how anticipated effects on wider human health are addressed in the operational phase is included within Appendix 6.1.

Table 6.15: Significance during Operation – Wider Human Health

Effect	Significance of Effect
Landscape and Visual Effects	
Landscape Character - Site Level	Minor adverse
Open Space	Minor beneficial
Public Rights of Way	Minor beneficial
Air Quality	
Operational NO ₂ exposure on Human Health	Minor adverse
Operational PM ₁₀ exposure on Human Health	Negligible
Operational PM _{2.5} exposure on Human Health	Negligible

Effects on Resident Labour Supply

- 6.121 The Development will provide homes for 284 people, a proportion of whom will be

economically active and in employment.

- 6.122 Baseline conditions identified that there are 71,500 residents in the KMBC area who are economically active, which is equivalent to 78% of all 16 to 64 year olds or 47% of the total population. Applying the 47% to the total population of the Development, it is calculated that 134 of the 284 future residents of the Development are likely to be economically active.
- 6.123 Similarly, baseline conditions identified that of those 71,500 residents, 68,900 were in employment which is equivalent to 75% of all 16 to 64 year olds or 45% of the total population. Applying the 45% to the total population of the Development, it is calculated that 128 future residents of the Development are likely to be in employment.
- 6.124 The Development will therefore increase the resident population who are economically active or in employment in the KMBC area by 0.2%, thereby having a **minor beneficial** effect on resident labour supply at the Borough level.

Mitigation Measures

Construction Phase

- 6.125 No adverse effects have been identified during the construction phase in relation to population and human health and therefore no mitigation is required. In regard to human health however, a Construction and Environmental Management Plan (CEMP) will be secured through a planning condition and will set out measures to mitigate fugitive dust emissions during construction. The CEMP will mitigate potential effects on human health by reducing dust exposure through measures such as recording and responding to all dust and air quality pollutant emissions complaints, locating machinery and dust generating activities away from human receptors and turning off construction vehicles when not in use. The CEMP will also screen the construction site to soften the impact on the site level landscape character.

Operational Phase

- 6.126 No significant adverse effects during the operational phase have been identified and therefore no mitigation is required. A minor adverse effect on GP provision has been identified, which is not considered significant and therefore no mitigation is required. However, a financial contribution may be requested by the local Clinical Commissioning Group (CCG) to increase GP provision in the Study Area. Furthermore, in relation to human health, the Development will provide new areas of open space and new pedestrian routes, including a link to the wider countryside to the east of the Site. An operational Travel Plan, to be secured by a planning

condition, will also encourage more active and sustainable modes of travel for new residents, reducing the effect of air quality emissions.

Residual Effects

Construction Phase

- 6.127 This assessment has identified that the Development will not result in any significant adverse effects during the construction phase. The residual effect on employment therefore remains **minor beneficial**. Residual effects on human health receptors due to exposure to air quality and dust emissions are **negligible**. Construction impacts on open space and Public Rights of Way are also negligible. The effect of construction on Site level landscape character is **moderate adverse**, however this is not considered significant.

Operational Phase

- 12.109 This assessment has identified that the Development is not expected to result in any significant adverse effects during the operational phase. Therefore, the residual effect on housing remains **minor beneficial** at the borough level; early years education remains **negligible** at the local level; primary education remains **negligible** at the local level; secondary education remains **negligible** at the local level; GP provision remains **minor adverse** at the local level; wider human health remains **minor adverse to minor beneficial** at the local level; and resident labour supply remains **minor beneficial** at the borough level.

Cumulative Effects

- 6.128 Consideration has been given to the cumulative developments described within Chapter 2: EIA Methodology of the ES for the potential to have likely significant cumulative effects on population and human health when combined with the Development.

Construction Phase

Effects on Employment

- 6.129 The cumulative developments will generate employment during the construction phase across all construction disciplines from ground workers to construction management. It is unknown whether the construction period of the cumulative developments will overlap with the Development. If the construction periods do not overlap, then there is the potential for the same construction workforce to work on the construction of the Development and the

cumulative developments. However, given the totality of the cumulative developments, there will be a need for a greater construction workforce than assessed for the Development. Should the construction periods not overlap, the cumulative effect on employment during the construction phase is expected to be **moderate beneficial** at the borough level (slightly greater than the effect assessed for the Development). However, if the construction periods do overlap, then there is the potential for an even greater additional construction employment thereby creating a **moderate-major beneficial** effect on employment during the construction phase at the borough level.

Effects on Wider Human Health

- 6.130 All cumulative developments are likely to require a CEMP to be secured by planning condition. Standard mitigation measures for reducing construction phase effects are tried and tested and are likely to reduce effects so that they are **minor adverse to negligible** and therefore not significant and temporary for receptors of each development. The developments are situated at a distance from each other such that significant cumulative effects are unlikely to result once CEMPs including CTMP are in place, should their construction phases be concurrent.

Operational Phase

Effects on housing delivery

- 6.131 In total, the cumulative developments and the Development combined are estimated to deliver up to 3,240 residential homes (of which 100 are homes for over 55s) The addition of 3,240 homes will provide 40% of KMBC's housing requirement over the period 2010 to 2028. On this basis, it is considered that the cumulative developments and the Development combined will provide a permanent, **major beneficial** cumulative effect on housing at the borough level for which mitigation is not required.

Effects on Early Years Education

- 6.132 Applying the same approach as used to assess the demand for additional early years places from the Development (a yield multiplier of 0.19 places per home), it is estimated that the cumulative developments and the Development combined will yield a need for 597 additional early years places (excluding yield from the 100 homes for over 55s because professional judgement assumes that no children will be generated from these units).

- 6.133 Baseline conditions identified eight non-domestic, registered early years and childcare providers within the Study Area that provide a total of 446 early years/childcare places. Future residents of the cumulative developments and the Development will be able to apply for a place at existing facilities in the same way that existing residents of the Study Area are able to. However, the cumulative demand for early years places is greater than the number of early years/childcare places provided within the Study Area. The shortfall is equivalent to 151 places, which is considered minor. On this basis, it is considered that the cumulative developments and the Development combined will have a **minor adverse** cumulative effect on early years education at the local level for which mitigation is not required.

Effects on Primary Education

- 6.134 Applying the same approach as used to assess the demand for additional primary school places from the Development (a yield multiplier of 0.19 places per home), it is estimated that the cumulative developments and the Development combined (excluding the 100 homes for over 55s) will yield a need for 597 additional primary school places.
- 6.135 Baseline conditions identified a current surplus of 243 primary school places within the Central East Primary Planning Area which is forecast to reduce to a surplus of 238 places by 2025/26. However, the number of primary school places required by the cumulative developments and the Development cannot be accommodated within the forecast surplus capacity of places within the Central East Primary Planning Area, and therefore it is considered that the cumulative developments and the Development combined, will have an adverse cumulative effect on primary education. The shortfall is 359 places which is equivalent to 1.7 Form of Entry (FE) of primary education provision. On this basis, it is considered that the cumulative developments and the Development combined will have a **moderate adverse** cumulative effect on primary education at the local level for which mitigation is required. It is assumed that each of the cumulative developments will mitigate the impact of their own development in the form of a financial contribution and following mitigation, the residual effect on primary education will be negligible at the local level.

Effects on Secondary Education

- 6.136 Applying the same approach as used to assess the demand for additional secondary school places from the Development (a yield multiplier of 0.16 places per home), it is estimated that the cumulative developments and the Development (excluding the 100 homes for over 55s) will yield a need for 503 additional secondary school places.

6.137 Baseline conditions identified a current surplus of 519 secondary school places within the Knowsley Central Secondary Planning Area which is forecast to reduce to a surplus of 169 places by 2025/26. However, the number of secondary school places required by the cumulative developments and the Development cannot be accommodated within the forecast surplus capacity of places within the Knowsley Central Secondary Planning Area, and therefore it is considered that the cumulative developments and the Development combined, will have an adverse cumulative effect on secondary education. The shortfall is 350 places which is equivalent to 2.3 FE of secondary education provision. On this basis, it is considered that the cumulative developments and the Development combined will have a **moderate adverse** cumulative effect on secondary education at the local level for which mitigation is required. It is assumed that each of the cumulative developments will mitigate the impact of their own development in the form of a financial contribution and following mitigation, the residual effect on secondary education will be negligible at the local level.

Effects on GP Provision

6.138 Applying the same average household size as used to calculate the total population yield from the Development (2.36 persons per household) to the cumulative developments and the Development's 3,240 homes combined, it is calculated that the cumulative population yield is 7,647 people.

6.139 Assuming that all residents of the new homes provided by the cumulative developments and the Development are new to the area and not already registered with a GP (a worst-case scenario), the cumulative demand for GP places will be 7,647 places.

6.140 Baseline conditions identified that within the GP provision located in the Study Area, there is no capacity to accommodate any new patient registrations when assessed against the HUDU capacity benchmark.

6.141 The cumulative demand for additional GP places (7,647 places) will require the need for an additional 4.3 FTE GP. The need for an additional 4.3 FTE GP is considered major. On this basis, it is considered that there will be a **major adverse** cumulative effect on GP provision at the local level for which mitigation is required. It is assumed that each of the cumulative developments will mitigate the impact of their own development in the form of a financial contribution and following mitigation, the residual effect on GP provision will be negligible at the local level.

Effects Wider Human Health

- 6.142 The traffic data utilised for the Transport, Air Quality and Noise assessments already includes cumulative developments and therefore, no additional significant cumulative effects are anticipated with regards to the interface between these specific disciplines and human health. More generally for the cumulative development, it is assumed that each of the cumulative developments will be designed to a high-quality, making the best use of the land to create healthy, vibrant developments that will benefit the local area for where the Site and sites of the cumulative developments are located. Therefore, the cumulative effect on wider human health will be **minor beneficial**.

Effects Resident Labour Supply

- 6.143 Applying the same economic activity and employment assumptions as used to calculate resident labour supply from the Development, it is estimated that 3,594 of the cumulative developments and the Development's 7,647 residents will be economically active, with 3,441 of those in employment. The cumulative increase in the KMBC area's resident population who are economically active or in employment is 10.7%. On this basis, there will be a **major beneficial** cumulative effect on resident labour supply at the borough level for which mitigation is not required.
- 6.144 The cumulative development on the Former Site of Cronton Colliery (Ref: 20/00494/HYB) will also create employment opportunities during the operational phase through the delivery of 161,900 sq ft of storage and distribution space. Similarly, employment opportunities will also be created by the cumulative development at Prescott Park Way (Ref: 20/00767/REM) through the delivery of up to 929 sqm of commercial and industrial buildings. The level of employment has not been quantified in any of the publicly available planning application materials. Further employment opportunities will also be created on the wider Halsnead Garden Village Sustainable Urban Extension (SUE) site as the Local Plan Policy requirement (Policy SUE2c) requires the site to deliver at least 22.5 hectares of logistics, storage and distribution uses or other appropriate employment uses.

Summary

- 6.145 An assessment has been made of the likely significant effects of the Development during the construction and operational phase in respect of issues related to the population; particularly the impact on housing delivery, early years education, primary education, secondary education, GP provision, wider human health, and employment/resident labour supply.

- 6.146 There is no housing or employment on the Site currently.
- 6.147 Construction of the Development will create an average of 40 FTE direct jobs across all construction disciplines from ground workers to construction management over the 35-month construction period. A further 39 FTE indirect jobs will also be supported through supply chain linkages. In the context of 3,000 construction workers in the KMBC area currently, the Development is considered to have a temporary, **minor beneficial** effect on employment at the borough level.
- 6.148 For human health, construction of the Development will have a **moderate adverse** effect on the landscape character at a Site level, however this is not considered significant. Construction impacts will be appropriately mitigated in a CEMP, which when implemented results in **negligible** air quality impacts.
- 6.149 The Development will deliver 120 homes, of which 10% are affordable homes. The homes will contribute 1.5% of KMBC's total housing requirement over the Local Plan period 2010 to 2028 and therefore will have a permanent, **minor beneficial** effect on housing at the borough level.
- 6.150 The Development's future population will generate a need for 23 early years education places. Assessment has identified that there are 446 early years places provided in the Study Area currently. Future residents of the Development will be able to join a waiting list to access the existing places in the same way that existing residents of the Study Area can, and on this basis, it is considered that the Development will have a **negligible** effect on early years education at the local level.
- 6.151 The Development's future population will generate a need for 23 primary school places which can be accommodated within the 238 places forecast to be available in 2025/26 (the **academic** year in which the Development is anticipated to be completed). On this basis, it is considered that the Development will have a **negligible** effect on primary education at the local level.
- 6.152 The Development will generate a need for 20 secondary school places which can also be accommodated within the 169 places forecast to be available in 2025/26. On this basis, it is considered that the Development will have a **negligible** effect on secondary education at the local level.
- 6.153 The Development is estimated to have a population of 284 people. It is assumed that in a worst-case scenario all future residents of the Development will need to register with a local GP. Assessment has identified that there is no capacity within the existing GP provision in

the Study Area to accommodate the additional demand arising from the Development. An additional 0.2 FTE GP will be required to meet the demand. On this basis, it is considered that the Development will have a **minor adverse** effect on GP provision at the local level, which is not considered significant and therefore mitigation is not required. However, there is the potential for the local Clinical Commissioning Group to request a financial contribution towards enhancing local GP services.

6.154 During operation, the Development will provide open space to meet policy requirements, as well as new pedestrian routes across the Site which will include a link to the countryside to the east. This will result in a **minor beneficial** effect on human health. Operational road traffic emissions associated with the Development will have **minor adverse-negligible** effects on human health. Additionally, the effect on the Site level landscape character is considered **minor adverse** and not significant.

6.155 It is estimated that 134 of the Development's 284 future residents will be economically active, and of those, 128 are likely to be in employment. The Development will therefore increase the resident population who are economically active or in employment in the KMBC area by 0.2%, thereby having a **minor beneficial** effect on resident labour supply at the borough level.

6.156 Table 6.16 contains a summary of the likely significant effects of the Development.

Table 6.16: Table of Significance – Population and Human Health

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*								Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L		
Construction												
Employment	Temporary	Minor beneficial	Not required						X		Minor beneficial	
Wider Human Health	Temporary	Moderate adverse-minor adverse	Implementation of a CEMP							X	Moderate adverse-negligible	
Completed Development												
Housing Delivery	Permanent	Minor beneficial	Not required						X		Minor beneficial	
Early Years Education	Permanent	Negligible								X	Negligible	
Primary Education	Permanent	Negligible								X	Negligible	
Secondary Education	Permanent	Negligible								X	Negligible	
GP Provision	Permanent	Minor adverse	Not required. However, a financial contribution may be requested							X	Minor adverse	
Wider Human Health	Permanent	Minor beneficial-minor adverse	Framework Travel Plan New pedestrian routes Open Space							X	Minor beneficial-minor adverse	
Resident Labour Supply	Permanent	Minor beneficial	Not required						X		Minor beneficial	
Cumulative Effects												
Construction												
Employment	Temporary	Moderate-Major beneficial	Not required						X		Moderate-Major beneficial	

Wider Human Health	Temporary	Moderate-minor adverse	Implementation of a CEMP								X	Minor adverse to negligible
<i>Completed Development</i>												
Housing Delivery	Permanent	Major beneficial	Not required								X	Major beneficial
Early Years Education	Permanent	Minor adverse	Not required								X	Minor adverse
Primary Education	Permanent	Moderate adverse	Each development to mitigate their own impact with a financial contribution								X	Negligible
Secondary Education	Permanent	Moderate adverse	Each development to mitigate their own impact with a financial contribution								X	Negligible
GP Provision	Permanent	Major adverse	Each development to mitigate their own impact with a financial contribution								X	Negligible
Wider Human Health	Permanent	Negligible	Travel Plans New pedestrian routes Open Space								X	Minor beneficial
Resident Labour Supply	Permanent	Major beneficial	Not required								X	Major beneficial

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

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- ⁱⁱ MHCLG (various) Planning Practice Guide
- ⁱⁱⁱ Knowsley Council, Knowsley Local Plan Core Strategy, January 2016
- ^{iv} ONS, 2020 Mid-Year Population Estimates
- ^v ONS, 2018-based Sub National Population Projections for England
- ^{vi} ONS, 2018-based Household Projections for England
- ^{vii} ONS, 2011 Census, Tables KS401EW and KS402EW
- ^{viii} DLUHC (9 December 2021) Live Table 600
- ^{ix} Ofsted, Registered Childcare Providers and Inspections as of 31 March 2021
- ^x KMBC, Knowsley School Organisation Strategy 2019-2029
- ^{xi} DfE (March 2022) School Capacity: academic year 2020 to 2021
- ^{xii} DfE (March 2022) School Capacity: academic year 2020 to 2021, School Place Planning Estimates
- ^{xiii} NHS Digital, GP Workforce Statistics as of 31 May 2022
- ^{xiv} <https://www.who.int/data/gho/data/major-themes/health-and-well-being>
- ^{xv} MHCLG (September 2019) The English Indices of Deprivation 2019
- ^{xvi} ONS, Annual Population Survey, year ending December 2021 [downloaded from NOMIS on 20 June 2022]
- ^{xvii} ONS, Claimant Count, February 2020 and May 2022 [downloaded from NOMIS on 20 June 2022]
- ^{xviii} DWP, Jobseekers Allowance by occupation, February 2020 and May 2022 [downloaded from NOMIS on 20 June 2022]
- ^{xix} ONS, Jobs Density 2020 [downloaded from NOMIS on 20 June 2022]
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- ^{xxi} ONS, 2011 Census, Table WU01EW [downloaded from NOMIS on 20 June 2022]
- ^{xxii} CITB, Labour Forecasting Tool
- ^{xxiii} ONS (March 2019) Type 1 UK Employment Multipliers and Effects (reference year 2015)
- ^{xxiv} PHE Local Authority Health Profiles <https://fingertips.phe.org.uk/profile/health-profiles>

7.0 LANDSCAPE AND VISUAL EFFECTS

Introduction

- 7.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of identified Landscape and Visual receptors within the identified study area. In particular it considers the potential effects arising from the Development on the existing topography, land cover, vegetation, public rights of way, road and settlement patterns, landscape features, heritage assets, landscape character and visual receptors based on a series of representative viewpoints.

Policy Context

National Planning Policy Framework

- 7.2 The National planning policy for England is defined within the National Planning Policy Frameworkⁱ (herein referred to as the NPPF) that has distilled the content of previous Planning Policy Statements into one comprehensive document. The NPPF is the relevant national planning policy document against which to test the Development. A revised NPPF was issued by the Ministry of Housing, Communities & Local Government (now the Department for Levelling Up, Housing and Communities) on 20 July 2021.
- 7.3 As a central theme, the NPPF has a presumption in favour of sustainable development (para. 11) for which it defines three mutually interdependent objectives of sustainability (para. 8) to be jointly sought (economic, social and environmental). With relevance to landscape and visual matters the third objective states:

"an environmental objective – to contribute to protecting and enhancing our natural, built and historic environment; (...)"

- 7.4 The planning system is identified as the vehicle for guiding development to sustainable solutions but in doing so should take local circumstances into account, to reflect the character, needs and opportunities of each area.
- 7.5 Paragraph 20 discusses the role of strategic policies within the plan-making framework. It suggests that sufficient provision should be made for the: *"conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation."*

7.6 Section 12 of the NPPF, Achieving well-designed places, identifies that the creation of high-quality, beautiful and sustainable buildings and places is fundamental to what the planning and development process should achieve (para. 126) it states that policy should ensure that developments (para. 130):

- b) *"(...) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;*
- c) *are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);*
- d) *establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;*
- e) *optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; (...)"*

7.7 In regards to trees in new developments, paragraph 131 states:

"Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users."

7.8 Section 15 Conserving and Enhancing the Natural Environment identifies a requirement in favour of (para. 174):

- a) *"protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- b) *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, and of trees and woodland (...)"*

7.9 As listed in the NPPF, these valued landscapes include:

- National Parks;
- The Broads; and
- Areas of Outstanding Natural Beauty.

7.10 The Site is not located within any of the above mentioned valued landscapes.

7.11 For proposals affecting heritage assets, Section 16 Conserving and Enhancing the Historic Environment places a requirement on applicants to (para. 194):

"describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance"

Para. 195 also states:

"Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal."

Para. 197 states:

"In determining applications, local planning authorities should take account of:

- a) the desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;*
- b) the positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and*
- c) the desirability of new development making a positive contribution to local character and distinctiveness."*

It is also considered that:

"Not all elements of a Conservation Area or World Heritage Site will necessarily contribute to its significance."

Planning Practice Guidance

7.12 The NPPF is supported by the on-line resource Planning Practice Guidance (PPG)ⁱⁱ. There are a number of sections that relate to this chapter as set out below.

- 7.13 The PPG sets out guidance on Design: process and tools (updated on 1 October 2019) and the elements to be considered to achieve good design. Paragraph 001 under this section states that:

“Well-designed places can be achieved by taking a proactive and collaborative approach at all stages of the planning process, from policy and plan formulation through to the determination of planning applications and the post approval stage. This guidance explains the processes and tools that can be used through the planning system and how to engage local communities effectively.

To be read alongside this guidance, the National Design Guide sets out the characteristics of well-designed places and demonstrates what good design means in practice.

As set out in paragraph 134 of the National Planning Policy Framework, 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.

Good design is set out in the National Design Guide under the following 10 characteristics:

- *context*
- *identity*
- *built form*
- *movement*
- *nature*
- *public spaces*
- *uses*
- *homes and buildings*
- *resources*
- *lifespan*

The National Design Guide can be used by all those involved in shaping places including in plan-making and decision making.”

Local Planning Policy

- 7.14 The Site and the majority of the Study Area lies within the jurisdiction of Knowsley Metropolitan Borough Council (KMBC). A portion of the Study Area to the east of the Site is within the jurisdiction of St Helens Borough Council. Key local policies relating to landscape and visual matters are briefly outlined below.

Adopted Policy

7.15 Section 38(6) of the Planning and Compulsory Purchase Act 2004 places a requirement upon local authorities when determining planning applications to do so in accordance with the adopted development plan unless material considerations indicate otherwise.

7.16 The Development plan covering the study area therefore comprises:

- Knowsley Local Plan Core Strategy adopted (2016)ⁱⁱⁱ;
- Knowsley Replacement Unitary Development Plan (2006)^{iv}; and
- St Helen's Local Plan Core Strategy (2012)^v.

7.17 The relevant policies within the above noted documents are as follows:

7.18 Knowsley Local Plan Core Strategy was adopted in January 2016 and sets out the vision, objectives and policies which will guide development within Knowsley until 2028.

7.19 Policy SUE1 discusses Sustainable Urban Extensions and Safeguarded Land and states that:

"9 sites (referred to as Sustainable Urban Extensions) have been removed from the Green Belt and are allocated to provide additional land to meet development requirements up to 2028 and beyond. These sites and their proposed primary uses are listed below:

(..) h) South of Whiston (residential) (...)

(...) Revisions to Green Belt boundaries to accommodate the Sustainable Urban Extensions and safeguarded land referred to in sections 1 and 2 above (and which ensure that the revised boundaries in these locations follow clearly defined physical features) are defined by the Policies Map (see Sustainable Urban Extension Allocation Profiles at Appendix E). Any detailed Green Belt boundary changes elsewhere in the borough will be defined by the Local Plan: Site Allocations and Development Policies.

Guidance concerning the development of these locations is set out in Policies SUE2 and SUE2a to SUE2c.(...)"

7.20 Policy SUE2 sets out Development Principles for Sustainable Urban Extensions and states that:

"Application of the Development Principles

- 1) Development within the Sustainable Urban Extensions must (in no order of priority):*
 - a. deliver sustainable development;*

- b. demonstrate a comprehensive approach to the development of the relevant Sustainable Urban Extension and to infrastructure provision (including, subject to the requirements of Policy CS27: Planning and Paying for Infrastructure, provision of an appropriate proportion of financial and/or 'in kind' contributions towards strategic and/or local infrastructure required to enable the comprehensive development of the sites);*
- c. be of a high design quality which enhances local distinctiveness and identity (incorporating localised design features where appropriate) and provides high levels of physical and visual integration and connectivity with adjacent urban development (see Policy CS19: Design Quality and Accessibility in New Development);*
- d. be carried out in accordance with the development principles and using any appropriate development assessment tools as required by Policy CS2: Development Principles;*
- e. deliver development (including the principal uses defined in Policy SUE1: Sustainable Urban Extensions) which will help to meet borough-wide and local needs;*
- f. include appropriate provision for public open space (POS), walking and cycling routes as part of the Green Infrastructure network integrating with existing POS, recreational assets and areas of ecological value (see Policy CS8: Green Infrastructure and Policy CS21: Greenspaces and Trees);*
- g. provide good transport linkages within the relevant Sustainable Urban Extension and with surrounding areas (see Policy CS7: Transport Networks);*
- h. Protect or enhance historic and architectural assets where appropriate (see Policy CS20: Managing the Borough's Historic Environment);*
- i. Address flood risk by locating development in areas of low probability of flooding and including flood mitigation measures where necessary (see Policy CS24: Flood Risk); and*
- j. Provide a clearly defined edge to the developed area.*

Site-specific Requirements

- 2) Indicative considerations applicable to the sustainable development of each SUE are listed at Appendix E: Sustainable Urban Extension Allocation Profiles.*
- 3) For each of the locations referred to in Policies SUE2a to SUE2c) (Knowsley Lane, Huyton; East of Halewood; and South of Whiston and Land South of M62), the Council will prepare a Supplementary Planning Document, which will provide a proposed spatial development framework for the site together with further details of development and infrastructure requirements.*
- 4) Proposals for development within each of these locations will only be granted planning permission where they are consistent with a single detailed master plan for the whole of the Sustainable Urban Extension which is approved by the Council. The master plan should accord with development plan policy and any associated Supplementary Planning Document and may be submitted prior to or with the application. Planning*

permissions must be linked to any necessary legal agreements for the improvement, provision, management and maintenance of infrastructure, services and facilities, open spaces and other matters necessary to make the development acceptable and which facilitate comprehensive delivery of all phases of development within the Sustainable Urban Extension in accordance with the single detailed master plan"

7.21 Policy SUE2c sets out site specific development requirements for the Sustainable Urban Extension - South of Whiston and Land South of M62 within which the Site is located. It states that:

"Overall development strategy

- 1) *The comprehensive development of Land South of Whiston and Land South of the M62 will be supported. The sites are allocated for:*
 - a. *New housing development (north of the M62) comprising approximately 1,500 dwellings, to provide a wider choice of housing;*
 - b. *New employment development (south of the M62) comprising at least 22.5 hectares of logistics, storage and distribution uses (within Use Class B8) or other appropriate employment uses within the Liverpool City Region key economic sectors subject to application of the sequential and impact tests (where required under Policy CS4); and*
 - c. *A country park within the broad extent of the former Cronton Colliery including public open space and the creation of associated footpaths, cycle ways and bridleways.*

Specific Development Requirements

- 2) *In addition to meeting the generic guidance in Policy SUE2, proposals for residential and/or employment development at South Whiston and Land South of the M62 should deliver (in no order of priority):*
 - a. *Safe and convenient highways access for the sites together with a well-connected internal road system and traffic mitigation measures, including any measures needed to address the impact of the development on traffic generation in the wider area;*
 - b. *Provision for public transport, walking and cycling, which enhance linkages within the area and surrounding areas including linkages to the former mineral railway line linking Cronton Colliery and Stadt Moers Park and to Whiston railway station;*
 - c. *Public Open Space (POS) within a wider Green Infrastructure network"*

7.22 Policy CS8 discusses the delivery of Green Infrastructure and states that:

"Maintenance and Enhancement of Knowsley's Existing Green Infrastructure"

- 1) *Knowsley's existing Green Infrastructure and its beneficial functions will be protected, managed and/or enhanced, primarily to:*
 - a. *Ensure more attractive and cleaner residential neighbourhoods;*
 - b. *Sustain and promote biodiversity (including designated sites, priority habitats and protected and endangered species) in accordance with importance and contribution to ecological networks;*
 - c. *Preserve the character and function of historic environments and valued landscapes;*
 - d. *Mitigate the effects of climate change and flood risk;*
 - e. *Mitigate air, water and noise pollution;*
 - f. *Provide local opportunities for sport, recreation and allotments; and*
 - g. *Provide sustainable transport linkages between residential neighbourhoods and easy access to employment and services.*
- 2) *To achieve the above, planning powers and other interventions will be used to:*
 - a. *Protect and enhance strategically important areas of greenspace;*
 - b. *Ensure an appropriate quantity and improved quality of locally important open spaces, including outdoor sports provision (and ancillary facilities of appropriate scale);*
 - c. *Promote effective movement of wildlife through a network of strategic green links, by protecting, maintaining and improving existing and new open spaces, water courses (including water quality) and biodiversity assets;*
 - d. *Protect, enhance and/or introduce biodiversity into existing areas of Green Infrastructure, through integration into the design of new development and public realm projects;*
 - e. *Improve accessibility for communities to greenspace offering leisure and recreation opportunities;*
 - f. *Protect and where possible improve green paths and cycleways linking residential areas, existing strategic areas of greenspace, employment locations, local community services and leisure facilities;*
 - g. *Work in partnership with other districts and relevant bodies at a landscape scale to minimise the impact of development upon Knowsley's existing biodiversity and geological assets, and sustain the protection afforded to internationally important sites, including supporting habitat, for biodiversity outside of the borough; and*
 - h. *Deliver new integrated and functional Green Infrastructure that helps to mitigate and adapt to climate change, such as sustainable drainage systems, carbon capture and storage, soft landscaping and green roofs.*
- 3) *Site allocations for greenspace will be identified in the Local Plan: Site Allocations and Development Policies document, with further guidance set out in the Developer Contributions Supplementary Planning Document or future Supplementary Planning Document as appropriate.*

Strategic Green Links

- 4) *Knowsley's strategically important green links are:*
- a. *Alt Corridor (Huyton) – stretching from Huyton Village through South Alt Park, Alt Park, Alt Meadows and into Stockbridge Village;*
 - b. *Valley Corridor (Kirkby) – stretching through Valley Meadow, St. Chad's Park, Millbrook Park, Millennium Green and Mill Dam;*
 - c. *Whiston to Cronton Corridor – stretching through Cronton, Stadt Moers Park and Whiston Greenway;*
 - d. *Halewood Triangle – Halewood Park linkage with the Trans-Pennine Trail and to the national cycle network;*
 - e. *M57 Green Belt Corridor; and*
 - f. *Knowsley Hall Estate – including Knowsley Safari Park and Local Wildlife Sites.*

Green Infrastructure within the Liverpool City Region

- 5) *Knowsley Council will work with partners to help deliver local and sub-regional programmes, initiatives and strategies to enhance Green Infrastructure. Approach to Green Infrastructure and New Development*
- 6) *New development must be served by Green Infrastructure to meet the needs of residents and the local environment, in a manner which will:*
- a. *Contribute to the creation of a high quality residential environment;*
 - b. *Provide access to high quality open space for leisure and recreational purposes;*
 - c. *Seek to protect, maintain and where possible enhance biodiversity within and around new developments according to their designation and significance to provide space for nature; and*
 - d. *Provide adequate mitigation and/or, as a last resort, compensation for Green Infrastructure or biodiversity loss, in circumstances where harm resulting from the development is otherwise unavoidable."*

7.23 Policy CS20 relates to managing the KMBC's historic environment and states that:

- 1) *"Development proposals in Knowsley should preserve or enhance the borough's historic and architectural assets, including Listed Buildings, Conservation Areas, Historic Parks and Gardens and archaeological remains, together with other local areas, buildings and structures of historic importance. The Council will:*
- a. *Require preservation of the local distinctiveness and character of historic assets through sensitive design of new development, including appropriate integration with their setting and immediate landscape;*
 - b. *Prevent demolition and/or development which would result in substantial harm or the loss of a designated historic asset or its setting, unless the proposal would result in substantial public benefits which clearly outweigh the harm or loss;*

- c. Where a development proposal will result in less than substantial harm to a designated heritage asset or its setting, assess such harm against the benefits of the proposal;*
 - d. Facilitate long term conservation and enhancement of local assets and areas of historic importance, including through the preparation of Conservation Area Management Plans.*
- 2) The re-use of vacant and underused historic assets will be encouraged, with favourable consideration given, where appropriate, to proposals which will:*
 - a. Enable a use for a purpose sympathetic to its conservation;*
 - b. Retain or introduce public access; and*
 - c. Enhance the importance of the asset for local tourism, leisure or the economy.*
- 3) Development proposals on sites which include, or are considered to have the potential to include, heritage assets or comprising archaeological interest, should be accompanied by heritage impact statement.*
- 4) Locally important historic assets which are not subject to statutory designation will be identified in a local list and will be afforded consideration in the decision making process."*

7.24 Policy CS21 is concerned with greenspaces and trees and states that:

"Greenspace protection

- 1) In supporting the wider Green Infrastructure functions of urban greenspace in accordance with Policy CS8, the Council will provide and maintain quantitative, qualitative and accessibility standards for different types of public open space.*
- 2) New development which would result in the loss of urban greenspace, will not be permitted unless at least one of the following criteria are met:*
 - a. A surplus of provision for all types of greenspace would be maintained relative to local standards;*
 - b. The land is considered unsuitable in terms of size, location or character to prevent or address individual deficiencies of different types of greenspace relative to local standards;*
 - c. Appropriate mitigation is provided through replacement facilities of at least an equal quantity, quality and accessibility;*
 - d. The development is required to improve greenspace provision or for ancillary facilities to support sport or recreation; or*
 - e. Where the proposal relates to the loss of indoor or outdoor sports provision, and there is no evidence of future or continuing need for sports use, or alternatively only land incapable of forming a playing pitch or sporting facility is affected and its release accords with either clause 2)a) or 2)b).*
- 3) Irrespective of whether criteria in 2) are met, unless the benefits of a proposal clearly outweigh the loss of urban greenspace, development will be resisted where it would*

significantly harm any existing or potential special qualities of greenspace in the area in terms of:

- a. Visual amenity;*
 - b. Residential amenity;*
 - c. Biodiversity and environmental benefits;*
 - d. Historical, cultural or community value;*
 - e. Recreational benefits; or*
 - f. Physical and/or visual linkages between adjoining urban greenspaces.*
 - g. Local Greenspace Standards*
- 4) *The quantitative and accessibility standards for the provision of public open spaces within Substantial Residential Areas are set out in Table 9.1: Substantial Residential Area (SRA) Standards for Greenspace Quantity and Accessibility for the following greenspace typologies:*
- a. Park and Garden;*
 - b. Amenity Greenspace;*
 - c. Provision for Children and Young People; and*
 - d. Allotments.*
- 5) *The Council's quantitative standards for Outdoor Sports Provision are set out in Table 9.2: Community Area Standards for Outdoor Sports Provision Quantity and Accessibility and seek to maintain an appropriate range of sites and address quantitative needs for individual sports at a Community Area level.*
- 6) *The Council will keep the standards of provision referred to above under review and if necessary, publish revised standards in a future Local Plan document or Supplementary Planning Document.*

Accessible and Quality Greenspaces

- 7) *The Council will support improvements to existing and new areas of greenspace in accordance with best practice standards 127, to achieve the following requirements:*
- a. Accessible, safe and secure locations for all members of the community to use;*
 - b. Clean and well maintained facilities, equipment and open spaces; and*
 - c. Conservation of natural features, wildlife, fauna, landscapes, buildings and other structural features, as appropriate.*
- 8) *When considering proposals for new residential development, the Council will seek enhancements to greenspaces via on-site provision, new off-site provision or enhancement of existing off site provision through developer contributions secured by legal agreement in accordance with Policy CS27: Planning and Paying for New Infrastructure, the Developer Contributions Supplementary Planning Document and/or a Community Infrastructure Levy Charging Schedule, as appropriate.*

Local Green Spaces

9) *Any Local Green Spaces Designations which are formally designated will be identified in the Local Plan: Site Allocations and Development Policies or future Neighbourhood Plans (if applicable). This designation will only be used where the greenspace concerned is:*

- a. Reasonably close to the community it serves;*
 - b. Demonstrably special to a local community and holds a particular local significance, for example because of its beauty, historic significance, recreational value (including as a playing field), tranquillity or richness of its wildlife; and*
 - c. Local in character and not an extensive tract of land.*
- Enhancement of Natural and Semi-Natural Greenspace and Tree Protection*

10) *The Council will encourage proposals for new development to incorporate:*

- a. Retention of existing trees, woodland, vegetation and other habitat features which offer a positive contribution to the local environment in terms of visual amenity, recreation value or biodiversity/wildlife interest;*
- b. Appropriate planting of trees, other soft landscaping and installation of habitat features for the benefit of biodiversity; and*
- c. Adequate replacement provision where tree loss is unavoidable, comprising two additional trees for every tree lost and taking account of species and size."*

7.25 Knowsley Replacement Unitary Development Plan (2006) contains a number of policies which continue to be saved, those pertinent to the Site and Study Area include:

- Policy DQ5 Development Affecting Conservation Areas.

7.26 St Helen's Local Plan Core Strategy was adopted in 2012 and covers a portion of the Study Area to the east of the Site. Policies pertinent to this portion of the Study Area include:

- Policy CSS 1 Overall Spatial Strategy;
- Policy CQL 3 Biodiversity and Geological Conservation; and
- Policy CQL 4 Heritage and Landscape.

Assessment Methodology**Guidance and Publications**

7.27 This assessment has been carried out in light of the latest relevant guidance as set out in 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA3)^{vi}, published by the

Landscape Institute and the Institute of Environmental Management and Assessment (2013), and 'Landscape Character Assessment: Guidance for England and Scotland' published by the Countryside Agency and Scottish National Heritage (2002)^{vii}. These documents do not set out a prescriptive approach to how assessments or assessments should be undertaken, but rather identify key principles and good practice.

7.28 Whilst this methodology refers to landscape assessments, the same general principles are also applicable in townscape settings. Further guidance on townscape assessment is given at page 74 of GLVIA3.

7.29 The following guidelines and publications have also been considered when producing this assessment:

- 'Seeing the History in the View: A Method for Assessing Heritage Significance within Views' (English Heritage; 2011)^{viii};
- 'The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition)' (Historic England; 2017)^{ix};
- 'Visual Representation of Development Proposals - Technical Guidance Note 06/19' (Landscape Institute; 2019)^x;
- Knowsley Local Plan Core Strategy adopted (2016);
- Knowsley Replacement Unitary Development Plan (2006);
- St Helen's Local Plan Core Strategy (2012); and
- Landscape Character Assessment: Guidance for England and Scotland (2002).

7.30 The assessment comprises the following stages:

- A summary of the relevant aspects of extant and emergent landscape planning policies;
- A definition the scope of the assessment, Site reconnaissance and desktop background research;
- A description of the existing conditions in respect of the landscape baseline (dealing with matters of current landscape character and existing landscape resources), and the visual baseline (dealing with matters relating to the visibility of the Site);
- Summary of key landscape and visual sensitivities relating to the Site and surrounding land;
- A description of the Development proposed on the Site;
- An assessment of landscape effects;
- An assessment of visual effects;

- Indicates the measures proposed over and above those designed into the scheme to prevent/avoid, reduce, offset, remedy, compensate for the effects (mitigation measures) or which provide an overall landscape and visual enhancement;
- Sets out any assumptions considered throughout the assessment of effects; and
- Sets out the residual and cumulative effects.

Baseline Assessment Methodology

7.31 The following specific desk-based tasks have been undertaken:

- A review of the planning policy relevant to the Site;
- A review of any existing landscape character assessments relating to the study area;
- A review of landscape designations from the English Heritage database and local authority sources; and
- Identification of landscape character and key landscape elements.

7.32 The baseline description in this assessment comprises two separate elements:

- a. Landscape Baseline; and
- b. Visual Baseline.

7.33 In this assessment, a distinction has been drawn between the study area and the Site. The Site is the area proposed for development whilst the study area takes in the wider surrounds of the Site. The determination of the study area has been informed by desk top studies of maps and aerial photographs to assess how topography, vegetation and built form in the area surrounding the Site were likely to control views towards the Site.

7.34 This work was followed by Site visits to determine the potential visibility of the Site. The study area boundaries were then set to ensure that all relevant areas of potential visibility were assessed. In general terms, it is assumed that the extent of visibility of the Site (and ultimately of Development upon it) will not exceed a 2km radius.

The Landscape Baseline

7.35 The Landscape Baseline comprises two elements: the existing Landscape Character and the existing Landscape Resource.

7.36 Landscape Character is defined in GLVIA3 as *"a distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse."* As such, character is influenced by the physical constituent components of the landscape including geology, soils, topography, vegetation, water features, land utilisation and built elements. Landscape Character Assessment is the process of identifying variation and change in the landscape and using that information to assist in managing future landscape change (arising from development or other factors). Landscape Character Assessments – at differing scales – have typically been prepared by, or on behalf of, national and local government or agencies, and provide a starting point for the consideration of landscape character. As a generality, the more detailed the existing Landscape Character Assessment, the more relevant it will be to the specific Site and/ or the development proposal. There are four main levels at which landscape character assessment has been, or may be carried out, as follows:

- i) National Level (the National Character Area Profiles prepared by Natural England);
- ii) Regional Level (typically produced for Natural England or a regional grouping of local authorities);
- iii) Local Authority Level (normally at a County, or District level, or for a number of Districts (or specific parts thereof)); and
- iv) Local Level (typically of a settlement or a group of settlements within a local authority).

7.37 In addition to referencing these published documents, a local level character assessment of the Site and its surrounding has been undertaken which describes, in summary, the following elements:

- i) Existing Land Use;
- ii) Adjoining Land Uses;
- iii) Topography;
- iv) Vegetation; and
- v) Public Rights of Way.

7.38 The Landscape Resource baseline considers two separate aspects; landscape condition – the physical state of the landscape – and landscape value – how different areas of landscape are valued by society. The following criteria have been used to categorize landscape condition, which is described in the assessment text. The typical examples given provide an indication of the likely landscape condition but it does not necessarily follow that because a Site is within a specific designated area that the categorisation of landscape condition will automatically follow; much will depend on specific Site conditions.

Table 7.1: Landscape Condition

Category	Criteria
Exceptional	i. Strong landscape structure, characteristic patterns, balanced combination of landform and landcover; ii. Appropriate management for land use and landcover; iii. Distinct features worthy of conservation; iv. Sense of place; v. No/ negligible detracting features vi. Internationally or nationally recognised e.g. all or the great majority of which would be World Heritage Site, National Park or Area of Outstanding Natural Beauty (AONB)
High	i. Strong landscape structure, characteristic patterns, balanced combination of landform and landcover; ii. Appropriate management for land use and landcover but potentially scope to improve; iii. Distinct features worthy of conservation; iv. Sense of place; v. Occasional detracting features vi. Nationally or regionally recognised e.g. parts of National Park or AONB, all or the great majority of Area of Great Landscape Value (AGLV)
Good	i. Recognisable landscape structure, characteristic patterns and combinations of landform and cover are still evident; ii. Scope to improve management for land use and landcover; iii. Some features worthy of conservation; iv. Sense of place; v. Some detracting features vi. Generally un-designated
Ordinary	i. Distinguishable landscape structure, characteristic ii. Patterns of landform and landcover often masked by land use; iii. Scope to improve management of vegetation; iv. Some features worthy of conservation; v. Some detracting features vi. Generally un-designated
Poor	i. Weak landscape structure, characteristic patterns of landform and landcover are often masked by land use; ii. Lack of management and intervention has resulted in degradation; iii. Frequent detracting features iv. Un-designated
Very poor	i. Degraded landscape structure, characteristic patterns and combinations of landform and landcover are masked by land use; ii. Lack of management / intervention has resulted in degradation; iii. Extensive detracting features
Damaged	i. Damaged landscape structure; ii. Disturbed or derelict land requires treatment; iii. Detracting features dominate
Derelict	i. Land so damaged by industrial or other development that it is incapable of beneficial use without treatment

7.39 The following criteria have been used to categorise the landscape value of the Site. The categories of Exceptional and High are informed directly by reference to development plan documents; the other categories entail a judgement in respect of the attributes of the area / locality or may be informed by published landscape character assessments.

Table 7.2: Landscape Value

Value	Typical Criteria	Typical Scale	Typical Example
Exceptional	Very high importance (or Quality) and Rarity. No or extremely limited potential for substitution	International, National	World Heritage Site, National Park or AONB
High	High Importance (or Quality) and Rarity. Limited potential for substitution	National, Regional, Local	National Park, AONB, AGLV, Areas of Local Landscape Importance (ALLI)
Good	Medium Importance (or Quality) and Rarity. Limited potential for substitution	Regional, Local	Undesignated but value perhaps expressed through non-official publications or demonstrable use
Ordinary	Low Importance (or Quality) and Rarity	Local	Areas identified as having some redeeming feature or features and possibly identified for improvement
Poor	Low Importance (or Quality) and Rarity	Local	Areas identified as having few redeeming features and lots of scope for improvement
Very poor	Low Importance (or Quality) and Rarity	Local	Areas identified for recovery

- 7.40 From these separate assessments of landscape character and the landscape resource, the overall sensitivity of landscape receptors – defined as those aspects of the landscape that have the potential to be affected by the Development - is determined.

The Visual Baseline

- 7.41 The extent of visibility of the Site, and of the Development, is determined by the buildings/development surrounding the Site, as well as by existing vegetation and topography. An initial assessment was made, using OS mapping and aerial photographs of potential locations from where the Site might be seen by visual receptors - defined as individuals or groups who have the potential to be affected by the Development. Potential locations that are identified include residential and commercial properties, roads, Public Right of Way (PRoW), and areas of public open space/ recreational land.
- 7.42 A field visit was carried out in July 2022. The Site was viewed from the surrounding area from a range of locations, including those identified through the desk study and other locations that became apparent from the field assessment. At the time of the field assessment vegetation was fully in leaf and thus visibility in summer months – i.e. usually taken to be the 'average' - was assessed. In the assessment the potential visual receptors are identified on plan and described in tabular form, which categorizes the receptor by type (i.e. residential property etc.) and distance from the edge of the Site (using the terms set out in Table 7.3).

Table 7.3: Distance of Views

Distance of Views	Definition
Adjoining	On the edge of the Site
Close	Less than 250m from the edge of the Site
Middle	From 250m to 500m from the edge of the Site
Long	500m or greater from the edge of the Site

7.43 From the field assessment, a number of viewpoints have been identified which are representative of visual receptors in proximity. The viewpoints selected essentially cover three types of views:

- Representative viewpoints: typical of a particular type of visual receptor, e.g. certain points along a PRoW;
- Specific Viewpoints: a key or promoted viewpoint within the landscape possibly related to local visitor attractions or associated with a designated landscape or a cultural landscape; and
- Illustrative Viewpoints: where a particular effect may only be available from certain locations.

7.44 Not all of these types of viewpoints will necessarily be present or need to be considered in all assessments. Generally, but not exclusively, the majority of viewpoints identified will be representative viewpoints. All of the viewpoints identified are public viewpoints. Whilst private locations, such as houses, were not visited during the field assessment, an assessment of the likely views from these properties and their visual context was made from nearby locations. The EIA Scoping Report which was submitted to KMBC on the 29th June 2022 (Appendix 2.1), included the key viewpoints to be assessed.

7.45 Viewpoint locations are shown in plan form and the views available from the selected viewpoints shown as photographs in the assessment (Refer to Appendix 7.1, Figures 7.9 and 7.10).

Assessment of Landscape and Visual Effects – General Approach

7.46 As defined in GLVIA3, landscape effects are those effects on the landscape as a resource in its own right, and visual effects are those effects on specific views and on the general amenity as experienced by people. The judgement made in respect of both landscape and visual effects is a combination of an assessment of the sensitivity of the receptor against the magnitude of the landscape or visual effect.

- 7.47 The judgement to be made in respect of sensitivity is a combination of the susceptibility of those receptors to the specific change occasioned by the Development (for both landscape and visual receptors) along with the value attached to that receptor (again for both landscape and visual receptors). Similarly, the judgement to be made in respect of the magnitude of landscape and / or visual effects is derived from a combination of the size or scale of the effect(s); the duration of the effect(s); and whether such effect(s) is / are reversible (or not). The assessment of landscape and visual effects give rise to separate considerations and these are set out in more detail below.

Assessment of Landscape Effects

- 7.48 In respect of the judgment to be made of the sensitivity of landscape receptors, the susceptibility to specific change for each landscape receptor is categorized as set out in the following tables.

Table 7.4: Susceptibility of Landscape Receptors to Change

Receptor	Susceptibility of Receptor to Change		
	High	Medium	Low
Landscape Character	A highly distinctive and coherent landscape character, with an absence of detracting or intrusive elements. Low or no capacity to accept change.	Distinctive character, with a general consistency, notwithstanding the presence of some detracting or intrusive elements. Some capacity to accept change.	Mixed character, where there is a lack of coherence and detracting or intrusive elements have become dominant or have eclipsed original character. Significant capacity to accept change.
Designated Areas	National designated Landscape such as National Park and AONB	Local landscape designations (e.g. AGLV/Areas of Local Landscape Importance (ALLI) (or similar)	Not designated
Landscape Features	Largely or completely intact, in good condition	Largely in moderate condition – may be in process of improvement	Undesignated but value perhaps expressed through non-official publications or demonstrable use.
Aesthetic / Perceptual Aspects	Recognised formally as a coherent area/ feature of aesthetic attraction	Some areas/ features of aesthetic attraction	Not noted for aesthetic qualities

- 7.49 The value for each landscape receptor is taken from Table 7.2 above. The overall sensitivity of each receptor is then categorised on a High/ Medium / Low/ Negligible basis. In respect of the magnitude of landscape effects, Table 7.5 sets out the judgements to be made, and the categories adopted in respect of the separate considerations of scale, geographic extent, duration.

Table 7.5: Magnitude of Landscape Effects

Type of Effect	Magnitude of Effects			
Size/Scale	Major Total loss of, or major alteration to key elements/ features/ characteristics of the Site and/ or the introduction of elements totally uncharacteristic to the receiving landscape	Moderate Partial loss of or alteration to one or more key elements/ features/ characteristics of the Site and/or introduction of elements that would be evident, but not necessarily uncharacteristic to the receiving landscape	Minor Limited loss of or alteration to one or more key elements/ features/ characteristics of the Site and/or introduction of elements characteristic with the receiving landscape.	Negligible /None Very minor or no loss or alteration to one or more key elements/ features / characteristics of the Site and/ or introduction of elements characteristic within the surrounding landscape – approximating to a “no change” situation.
Geographic Extent	Extensive Effects would be experienced over many landscape character types or area	Major Effects would extend over the major part of the landscape character type or area	Localised Effects would be confined to the immediate setting of the Site	Restricted Effects would not extend beyond the Site
Duration	Long Over 15 years after completion of construction works	Medium 5-15 years after completion of construction works	Short 0-5 years after completion of construction works	Construction Stage Restricted to construction stage (explain likely length of construction and any key stages)

7.50 The overall magnitude of landscape effects is then described on the basis of professional judgement on a High / Medium / Low / Negligible basis. The separate assessments in respect of sensitivity and magnitude have been drawn together in the assessment in a single tabular form. An overall conclusion in respect of landscape change – the likely significant landscape effects - is set out in the assessment text. That overall conclusion is expressed by reference to the terms set out in the matrix at Table 7.6, showing the interrelationship between sensitivity of the landscape receptor and the magnitude of landscape effect. The principal conclusions deriving from the tabular presentation are then summarised in the assessment text.

Table 7.6: Landscape Effects

		Sensitivity of Receptor		
		High	Medium	Low
Magnitude of Effects	Large	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial
	Medium	Major - Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
	Small	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible

		Sensitivity of Receptor		
		High	Medium	Low
	Negligible	Negligible	Negligible	Negligible

7.51 In Table 7.6 the terms used to describe overall landscape effects are taken to have the following meanings, particularly in respect of the purpose of the Assessment to identify likely significant environmental effects:

- Major: Would fundamentally change the existing landscape and would thus constitute a significant environmental effect.
- Major / Moderate: Would substantially change the existing landscape and would thus constitute a significant environmental effect.
- Moderate: Would bring about some change to the existing landscape but would not constitute a significant environmental effect.
- Minor: Would entail only limited change to the existing landscape and would not constitute a significant environmental effect.
- Negligible: Would entail negligible change to the existing landscape and would not constitute a significant environmental effect.
- Neutral: Would be approximate to a no-change situation.

Assessment of Visual Effects

7.52 In respect of the judgment to be made of the sensitivity of visual receptors, the susceptibility to specific change for each landscape receptor is categorised as set out below.

Table 7.7: Susceptibility of Visual Receptors to Change

Type of Visual Receptor	Susceptibility of Specific Change	Notes
Residential Property	High	Residential properties are considered the most sensitive of potential visual receptors and are thus accorded a high susceptibility. It is an established tenet that the planning system does not serve to protect private interests; the issue is not whether owners and occupiers of neighbouring properties would experience financial or other loss (including visual effect) from a particular development but whether such development would unacceptably affect amenities and the existing use of land and buildings which ought to be protected in the public interest. Thus, in seeking to assess the visual effects of development, account should be taken of the effects on residential property, but it is pertinent to note that purely private interests may carry less weight than public interests.
Commercial Property / Places of Employment	Low to Medium	Indoor workers are likely to have a Low susceptibility; outdoor workers (e.g. in agriculture) a medium susceptibility.

Type of Visual Receptor	Susceptibility of Specific Change	Notes
Public Roads	Low to Medium	The degree of susceptibility will vary according to the nature of the road and its primary purpose for users. Motorways and trunk roads are taken to have a Low susceptibility; A class roads a Low to Medium susceptibility, and all other roads a medium susceptibility.
Public Rights of Way / Cycleways	High	The degree of susceptibility will vary according to the nature of the PRoW and its primary purpose for users. Bridleways and PRoW designated locally as specific routes are taken to have a high susceptibility.
Informal Paths	Medium to High	Informal paths have been taken to have a Medium to High susceptibility.
Public Open Space	High	Users of areas of POS are likely to be at leisure, and thus such areas are taken to have a high susceptibility.
Cultural Heritage Sites	High	Users of areas of cultural heritage sites are likely to be at leisure, and thus such areas are taken to have a high susceptibility.
Recreational Land	Medium	Users of recreational land are likely to be at leisure but are taken to be focussed primarily on the recreational activity, and thus such areas are taken to have a medium susceptibility.

7.53 The value of views is categorised as set out below:

Table 7.8: Criteria for Value of Views

Magnitude	Criteria
High	A unique or identified view (e.g. shown as such on OS map or marked on a tourist map) or one noted in literature
Medium	A typical and/ or representative view from a particular receptor type
Low	Undistinguished or unprepossessing view

7.54 In respect of the magnitude of visual effects, Table 7.9 below sets out the judgements to be made, and the categories adopted in respect of the separate considerations of scale, geographic extent, duration, and reversibility.

Table 7.9: Criteria for Determination of Visual Effect

Type of Effect	Magnitude of Effects			
Size/Scale	Major	Moderate	Minor	Negligible /None
	The Development forms a significant and immediately apparent part of the view that will change its overall character.	The Development will form a visible and recognisable new element within the overall view and will be readily noticed by the observer.	The Development constitutes only a minor component of the wider view, which might be overlooked by the casual observer. Awareness of the Development will not have a marked effect on the overall quality of the view.	Only a very small Part (or no part) of the Development will be discernible and / or it will be at such a distance that it will be scarcely appreciated, and consequently it will have very little/ no effect on the view.
	Extensive	Major	Localised	Restricted

Type of Effect	Magnitude of Effects			
Geographic Extent	Effects would affect all the visual receptor/ and/ or would be seen at close distance.	Effects would extend over the major parts of the visual receptor and/ or would be seen at medium distance.	Effects would be confined to part/s of the visual receptor and/ or would be seen at long distance.	Effects would be confined to edges of/ glimpse views from the visual receptor and/ or would be seen at long distance.
Duration	Long	Medium	Short	Construction Stage
	The visual effect, even considering mitigation works, will still obtain 15 years after completion of construction works	The visual effect, taking into account mitigation works, will obtain for between 5-15 years after completion of construction works	The visual effect, taking into account mitigation works, will obtain for up to 5 years after completion of construction works	Restricted to construction stage (explain likely length of construction and any key stages)
Reversibility	Irreversible		Reversible	
	The Development will entail a permanent effect on the view.		If the Development was de-constructed/ demolished the existing view (i.e. without development) would be returned.	

7.55 The overall magnitude of visual effects is then described on the basis of professional judgement on a High / Medium / Low / Negligible basis. The separate assessments in respect of visual sensitivity and magnitude have been drawn together in the assessment in a single tabular form. An overall conclusion in respect of visual change – the likely significant visual effects - is set out in the assessment text. That overall conclusion is expressed by reference to the terms set out in the matrix at Table 7.10, showing the interrelationship between sensitivity of the visual receptor and the magnitude of visual effect. The principal conclusions deriving from the tabular presentation are then summarised in the assessment text.

Table 7.10: Visual Effects

		Sensitivity of Receptor		
		High	Medium	Low
Magnitude of Effects	Large	Major Adverse/Beneficial	Major - Moderate Adverse/Beneficial	Moderate - Minor Adverse/Beneficial
	Medium	Major - Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
	Small	Moderate - Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
	Negligible	Negligible	Negligible	Negligible

7.56 In Table 7.10 the terms used to describe overall visual effects are taken to have the following meanings, particularly in respect of the purpose of the Assessment to identify likely significant environmental effects:

- Major: Would fundamentally change the existing view and would thus constitute a significant environmental effect.
- Major/ Moderate: Would substantially change the existing view and would thus constitute a significant environmental effect.
- Moderate: Would bring about some change to the existing view but would not constitute a significant environmental effect.
- Minor: Would entail only limited change to the existing view and would not constitute a significant environmental effect.
- Negligible: Would entail negligible change to the existing view and would not constitute a significant environmental effect.
- Neutral: Would be approximate to a no-change situation.

Overall Assessment of Landscape and Visual Effects

- 7.57 The separate conclusions in respect of likely significant landscape and visual (as described above) are set out in the assessment text.

Visual Baseline Conditions

- 7.58 The following specific desk-based tasks have been undertaken:
- Consultation with KMBC within the detailed study area, regarding methodology, key views and viewpoint locations.
 - Identification and field assessment of potential receptors within the visual envelope and an assessment of their sensitivity.
 - Appreciation of the nature and importance of existing views experienced by the identified receptors.
- 7.59 The visual assessment involved an initial desk-based review of OS mapping to establish the wider context within which views initially appear to be set, followed by Site surveys to establish the form and nature of specific views and the role of the Development area in such views.

Methodology for Preparation of Photographs

- The Site survey includes a photographic record of the viewpoints. At each of the viewpoints the following details are recorded;
 - The grid reference (of the viewpoint);

- The viewer height (measured to the lens of the camera);
- The date (of survey); and
- The distance to the Development (from the viewpoint).

7.60 The photographs have been taken using a digital SLR camera with a 50mm fixed focal length lens, giving a focal length equivalent to 75mm on a 35mm film camera. The photographs were taken in accordance with guidance outlined in the document 'Visual Representation of Development Proposals - Technical Guidance Note 06/19'.

Limitations and Assumptions

- 7.61 During the field work, access to portions of Fox's Bank Lane were limited due to on-going highway construction works.
- 7.62 This assessment assumes that the landscape proposals of any phase of the Development would be implemented between the construction and operational stages and therefore this assessment has been taken as a worst-case scenario.

Consultation Undertaken to Date

- 7.63 A Scoping Opinion Request Report was submitted to KMBC on 29th June 2022, which included the approach to the assessment, the key landscape and visual receptors to be considered and the key viewpoints to be assessed. KMBC responded with an EIA Scoping Opinion on 18th August 2022 which agreed with the approach to the assessment set out in the EIA Scoping Report.

Baseline Conditions

- 7.64 This section describes the landscape within the study area and the Site as it appears at the time of writing (July 2022). The extent of the study area has been determined by the desk and field studies and extends to 2km from the centre of the Site. The supporting plans are set out at Appendix 7.1.

Contextual Landscape Receptors

Landscape Designations (Appendix 7.1, Figures 7.2 and 7.4)

- 7.65 There are limited landscape designations present within the study area. The designations present include two areas of ancient woodland, to the south west of the Site and to the north

and south of the M62 known as the Old Wood. Although not formally considered a landscape designation, portions of the study area to the south and east of the Site are within a wider tranche of land designated as Green Belt. There are no landscape designations which directly affect the Site.

Settlement Pattern

- 7.66 The town of Whiston is the principal settlement within the study area, extending over much of the northern and central portions of the study area. The outlying areas of which are principally residential. Residential areas of the village Rainhill also extend across the north east portion of the study area. An area of industrial and business facilities extends to the north of the M62 / M57 junction to the south west of the study area.
- 7.67 Beyond the principal settlements, occasional farmsteads are interspersed within the agricultural landscape and the nucleated village Cronton is located to the south east of the study area.

Heritage Assets (Appendix 7.1, Figures 7.2)

- 7.68 There are approximately 26 Listed Buildings; 1 Scheduled Ancient Monument associated with Rainhill Farm; and Cronton Conservation Area within the study area. The closest listed building to the Site is the Grade II Sandfield House which is located approximately 90m to the north east of the Site. The Site is located within Halsnead Park, a designed parkland landscape, which is locally regarded as a non-designated heritage asset.

Topographic Context (Appendix 7.1, Figures 7.7)

- 7.69 The main topographic feature locally is the rising ridgeline associated with Blundell's Hill and the settlement of Rainhill to the north east of the study area. Landform within the study area is broadly lowland and gently rolling, rising to a high point of approximately 80m Above Ordnance Datum (AOD) within Rainhill to the north east of the Site from a low point of approximately 10m AOD near Cronton Road to the south west of the study area.

Landscape Features

- 7.70 The key landscape features within the study area are the gently rolling agricultural landform; Blundell's Hill; the woodland blocks and tree belts of Parren's Covert, Whiston Woods, the Old Wood and Fox Clump; the designed landscape and sandstone wall boundaries of Halsnead

Park; Stadt Moers Country Park and the settlements of Whiston and Rainhill. The linear transport corridors of the M62 and the M57/A5300 are also prominent, detracting elements in the study area.

Land use

- 7.71 The areas to the south and east of the Site are largely agricultural consisting of large sized, arable fields interspersed with farmsteads. The settlements of Whiston and Rainhill lie to the north and north east respectively, with a golf course and further rising agricultural land associated with Blundell's Hill providing a green corridor between the two settlements. The residential areas of Dines Green and Comer Gardens lie directly to the south and east of the Site respectively. There are areas of current and former mineral extraction, to the south of the M62.

Open Space (Appendix 7.1, Figures 7.4)

- 7.72 The primary areas of open space local to the Site is the Stadt Moers Country Park, within Whiston, to the north west of the Site. There are also a range of further areas of open space and urban green space both formal and incidental throughout Whiston of varying sizes.

Public Rights of Way (Appendix 7.1, Figures 7.3)

- 7.73 There are approximately 45 PRoW within the study area representing a valuable recreational resource, and permitting a degree of accessibility for local communities and visitors to the local countryside. There are, however, limited routes within the immediate area surrounding the Site. The closest to the Site is Footpath Knowsley WH 10/1 within Whiston approximately 585m to the north west of the Site, connecting Fisher Avenue through to Dragon Lane. There are no PRoW within the Site.

Landscape Character Context (Appendix 7.1, Figures 7.5 and 7.6)

- 7.74 The assessment of landscape character is a method of understanding the particular attributes or factors that have influenced the historic development, current and future features of an area, and what makes that area distinctive from other areas. Natural England describes landscape character assessment as a:

"...systematic way of analysing and describing landscape identifying areas of distinctive character, classifying and mapping them. The process involves identifying the patterns, elements and features that

give landscapes homogeneity and make them different from each other.”

- 7.75 Landscape characterisation is a process which has been developed extensively by local authorities to assist them in the planning process. Published studies of landscape character provide a source of information to enable the fuller understanding of landscape character – whether at a regional or national scale or at a local district scale; it is of course possible to carry through the process of analysis to individual sites or parts of sites. Typically, the published assessments provide character descriptions of specific areas and consider factors likely to influence future character and / or set out prescriptions for change.
- 7.76 There is a range of published assessments at national, regional, and local levels relevant to the Site. Each is considered below. That at a national level pre-dated the guidance set out in the ‘Landscape Character Assessment; Guidance for England and Scotland (2002)’ – widely regarded as the definitive guidance on the subject. That said, it is important to recognise that these assessments are purely assessments of landscape character; they are not, and are not intended to be, the development plan, and thus what the documents may say about the potential effects of development in any location cannot of itself be considered determinative as a matter of policy.

National Landscape Character Assessment

- 7.77 At a National level, the Site lies within NCA 56 - Lancashire Coal Measures. The key characteristics of the NCA pertinent to the study area and Site are described as:
- *"Fragmented landscape created by a complex pattern of mining and industrial activity intermixed with housing; this is a densely populated area with a scattered settlement pattern.*
 - *Gentle hills and valleys run from the north-west to the south-east, creating a soft but varied topography.*
 - *The area is underlain by Coal Measures, which are buried under a patchy layer of glacial deposits, subsequently affected by a long history of mineral working.*
 - *Woodland cover is limited across most of the area (covering 9 per cent), except to the north-west of Wigan. Community woodlands have been established on many post-industrial sites, and bring multiple benefits, including for public access and nature conservation.*
 - *Some large tracts and isolated pockets of agricultural land remain within the urban fabric, principally used for permanent grassland or cereal production, although horse grazing and stabling are also common.*
 - *Field patterns are predominantly medium to large and rectangular, mostly resulting from 18th-century and later change, with field boundaries defined by poorly managed hedges or post-and-wire fencing.*

- *Widespread ground subsidence, caused by coal mining activities, has resulted in the formation of subsidence flashes. These have created many areas of open water and wetlands, while scattered ponds and fragmented pockets of semi-natural habitat re-main elsewhere.*
- *The area has an increasingly recognised strong cultural and industrial heritage, associated with heavy industry and mineral extraction – particularly south of Wigan – while the majority of the pits, spoil heaps and open cast sites have now been re-claimed and landscaped.*
- *The area is significantly influenced by transport and utilities infrastructure, with motorways, major roads and rail lines criss-crossing the landscape."*

7.78 A portion of the study area to the west of the Site is located within NCA 58 - Merseyside Conurbation. The key characteristics of the NCA pertinent to this portion of study area are described as:

- *"A low-lying but gently rolling platform punctuated by low ridges; however, the extensive urban development generally dominates the topography.*
- *Woodland cover is significant in such a heavily urban area, with new community woodland being created, while urban parks, cemeteries and suburban street plans provide trees and, in some cases, wooded habitats.*
- *Pockets of mainly versatile and good-quality farmland remain on the fringes of urban areas, often arable or horticultural.*
- *Field boundaries are generally hedgerows, sometimes marked by drainage ditches with grassy banks.*
- *Green infrastructure is interspersed through the urban fabric, while pockets of 'encapsulated countryside' provide important wildlife refuges and opportunities to link local people to the natural world.*
- *Renowned for its strong maritime heritage, there is much industrial archaeology, along with Victorian public parks and designed gardens.*
- *The built environment is characterised by a mix of red brick and sandstone within the city and a diverse range of modern materials in the outlying suburbs.*
- *Distinct urban centres have amalgamated to form the Merseyside conurbation, surrounding the larger dominant centre of the city of Liverpool, but split by the river Mersey.*
- *Dense settlement pattern with extensive areas of housing and industry.*
- *Extensive transport infrastructure of motorways and railway lines, while the ports provide for significant international trade and cruise liners, as well as international and local passenger ferries."*

7.79 A limited portion of the study area to the south of the Site is located within NCA 60 - Mersey Valley. The key characteristics of the NCA pertinent to this portion of study area are described as:

- *"The landscape is low-lying, focusing on the broad linear valley of the river Mersey; it is estuarine in the west and has extensive areas of reclaimed mossland in the east.*
- *The Mersey Estuary is a defining element in the landscape, with expansive intertidal mudflats/sand flats and low exposed cliffs.*
- *The river Mersey flows from east to west, joined by associated tributaries, although the Mersey itself is often obscured from view.*
- *Trees and woodland are mainly associated with settlements, occasional parkland and isolated woodland blocks; and in recent years new community woodlands have been planted.*
- *Large-scale, open, predominantly flat, high-quality farmland occurs between developments, with primarily arable farming to the north of the valley and a mixture of arable and dairying to the south.*
- *The field pattern is regular and large scale, often defined by hedgerows with isolated hedgerow trees; many hedgerows are intermittent and have been replaced by post-and-wire fencing, while field boundaries on the mosses are marked by ditches.*
- *A range of important wetland habitats remain, including estuarine mudflats/sand flats and fringing salt marshes in the west, remnants of semi-natural mosslands and pockets of basin peats in the east, with the broad river valley in between.*
- *The predominant building material is red brick though some sandstone construction remains, and some survival of earlier timber frame.*
- *There are densely populated urban and suburban areas, with major towns particularly at the river crossings, including Runcorn, Widnes and Warrington.*
- *There is large-scale, highly visible industrial development, with docks, chemical works and oil refineries.*
- *The river valley has a dense communication network with motorways, roads, railways and canals running east-west, and power lines are also prominent."*

County / Local Landscape Character Assessment

- 7.80 KMBC published their Landscape Character Assessment in 2007^{xi}. The Assessment identifies seven landscape character areas in Knowsley, the Site is located within the area described as Halsnead Estate. Key characteristics of this area pertinent to the Site and Study Area include:

"The character of this area is strongly influenced by the former Halsnead Estate that existed to the south of Whiston. The character is defined by the existence of remnants of the former Estate, including long sections of the sandstone boundary wall, a gate house, and small woodland clumps. The M62 motorway dissects the former estate and has a negative influence on the character of the area. It is both a visual and physical intrusion, with noise pollution being a major distraction.

Coal mining activity occurred south of the M62 at the former Cronton Colliery. The spoil heap from this colliery still remains, but its presence and visual intrusion has been masked by reclamation and tree planting carried out in the 1990s.

The area is gently rolling lowland, rising gradually to Prescot and Rainhill in the North. Arable fields are medium sized with either degraded hedgerows or no defined field boundaries. Some enclosure occurs from the proximity of wooded shelter belts on field margins. Tree cover is restricted to small woodland clumps, isolated trees and shelterbelts, often located around dwellings and along roads and tracks. There is a dispersed pattern of farmsteads and wayside dwellings. These are predominately red brick with slate roofs, but there are also properties with either red sandstone or white render.

Key Summary

Topography - Rolling lowland

Geology - Glacial drift overlying sandstone (Carboniferous and Triassic) and undivided cyclic sedimentary rocks (Carboniferous)

Soil Types Sandy Clay – well drained

Land Use - Mainly agricultural cereal cropping with some amenity use (caravan park, cemetery)

Tree Cover - Generally deciduous woodland in clumps or shelterbelts following dwelling boundaries or tracks. Some newly planted woodland planting on pockets of reclaimed land.

Settlement - Isolated farmsteads and residential dwelling with some in small clusters. Mainly red brick with pitched grey slate roofs, but also some red sandstone and white render.

Other Distinguishing Features

- *Remnants of the old Halsnead Estate.*
- *Urban influences such as the M62, residential dwellings and overhead power lines.*
- *Liverpool is visible in the background to the west and to the east there is a golf course on the rising ground to the south of Rainhill."*

Table 7.11: Contextual Landscape Receptors and Value

Landscape Receptors	Value
Landscape Designations	Medium
Landscape Setting to Heritage Assets	High
Topography	Medium
Vegetation	Medium-high
Land Use / Settlement Pattern	Low-medium
Open Space	Medium-high
Public Right of Ways	Medium-high
Landscape Character - National	Medium
Landscape Character - County / Local	Medium

Site Level Landscape Receptors

Landscape Character – Site Level

- 7.81 The landscape character at the Site level is formed by a series of landscape elements which together give rise to two distinct character areas as follows:
- The mature wooded area within the northern portion of the Site; and
 - The area of rough grassland, scrub and individual trees within the southern portion of the Site.
- 7.82 Beyond the Site, the immediate character setting to the north is currently formed by mature woodland and the residential area of Whiston Lane Ends; to the east by arable farmland and the Fox's Bank Cemetery beyond; to the south by arable farmland and to the west by an area of scattered trees and scrub with agricultural land beyond.

Topography

- 7.83 The Site lies on the south facing slope of a minor ridgeline associated with Whiston to the north. Landform within the Site falls broadly from north to south, from a high point at approximately 51.0m AOD in the Site's north west corner near Lickers Lane to a low point of approximately of 46.4m AOD on the Site's southern boundary.

Land Use

- 7.84 The Site consists of a single field parcel with areas of rough grassland, scrub and scattered trees, predominately to Site boundaries. There is an area of dense mature woodland within the northern portion of the Site and beyond the Site to the north. There is a gated site access from Lickers Lane to the north and an informal footpath across the northern portion of the Site. The Site is bound by Lickers Lane and mature woodland to the north with residential areas of Whiston beyond, agricultural land to the south and east, and rough grassland, scrub and individual trees to the west. Halsnead Park caravan site, accessed from Main Drive is located to the south west.

Vegetation

- 7.85 An Arboricultural Impact Assessment and Method Statement has been carried out by E3P in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction'^{xii}.

The report, which has been submitted separately as part of the planning application, revealed the Site contains a total of 96 individual trees, 10 groups and 1 woodland. Of these there were:

Individual Trees:

- 3 category 'A' trees;
- 48 category 'B' trees;
- 36 category 'C' trees; and
- 8 category 'U' trees.

Groups:

- 3 category 'B';
- 6 category 'C'; and
- 1 category 'U'.

Woodland:

- 1 category 'A'.

- 7.86 The recorded tree species are typically characteristic of an agricultural and urban fringe landscape. Species include; Ash, Beech, Blackthorn, Elderberry, Goat willow, Hawthorn, Oak, Rowan, Silver birch, Sycamore, Wild plum and Yew.
- 7.87 The report identifies that a number of the trees and the woodland are subject to Tree Preservation Orders, (TPOs). It notes that clarification should be sought with KMBC regarding the extent of the TPOs prior to the scheduling or carrying out of any works to trees on Site (to be secured by planning condition).
- 7.88 The principal arboricultural features of good to fair health are formed by the individual trees, woodland and boundary groups. These trees are prominent within the Site and form a strong green infrastructure to the Site particularly to its northern boundary.

Built Form

- 7.89 Built form on the Site is limited to a short section of parkland wall and associated gates adjacent to Lickers Lane and a line of overhead electrical cables to the Site's western boundary.

Landscape Features

- 7.90 Landscape features within the Site are limited to the existing woodland, individual trees, scrub, rough grassland, the short section of boundary wall and the associated gate.

Table 7.12: Site Level Landscape Receptors and Value

Landscape Receptors	Value
Landscape Character – Site Level	Medium
Topography	Medium
Land Use	Medium-high
Vegetation	Medium-high
Built Form	High

Visual Baseline

- 7.91 The visual assessment was carried out on 4th July 2022 (Refer to Appendix 7.1, Figures 7.9 and 7.10, Table 7.1 and Viewpoints 1-17) identifying a series of key representative view-points. Views may be more apparent during the winter months as a result of reduced foliage.
- 7.92 Table 7.13 summarises the key external views, which are shown in Appendix 7.1, Figures 7.9 and 7.10, and sets out the visual receptor value. These represent a range of representative views from roads/lanes, PRoW, recreational open spaces and publicly accessible locations near to existing dwellings.

Table 7.13: Visual Receptors (external views), Summary Description, Value

VP	Description	Value
1	View looking south towards the Site from Lickers Lane. There are open views of the Site access gate on Lickers Lane mature vegetation on the Site boundary from this location. Further views in to the Site are truncated by the intervening mature vegetation lining Lickers Lane to the north of the Site.	Medium
2	View looking south west towards the Site from the junction of Lickers Lane and Manorwood Drive. There is a partial glimpsed view of the mature vegetation near the entrance gate from Lickers Lane from this location. Further views in to the Site are truncated by the intervening mature vegetation lining Lickers Lane to the north of the Site.	Medium
3	View looking west towards the Site from the junction of Fox's Bank Lane and Blundell's Lane near Knowsley Cemetery. Views of the Site are truncated due to the intervening mature vegetation.	Medium
4	View looking north west towards the Site from Fox's Bank Lane near the North East Lodge to Halsnead Park. There is a partial glimpsed view to vegetation within the southern portion of the Site, through the intervening iron gates. Further views of the Site are truncated due to the intervening mature vegetation and built form.	Medium
5	View looking north west towards the Site from the junction of Fox's Bank Lane and Footpath Knowsley CR1/1. Views of the Site are truncated due to the intervening built form and mature vegetation.	Medium

VP	Description	Value
6	View looking north east towards the Site from Main Drive. There are partial views of vegetation within the southern portion of the Site from this location. Further to the northern portion of the Site are truncated due to the intervening mature vegetation.	Medium
7	View looking east towards the Site from Windy Arbor Road near St Nicholas Church. Views of the Site are truncated due to the intervening mature vegetation and built form.	Medium
8	View looking east towards the Site from the junction of Windy Arbor Road and Willis Lane. Views of the Site are truncated due to the intervening mature vegetation.	Medium
9	View looking south east towards the Site from the junction of Lickers Lane and Penny Wood Lane. Views of the Site are truncated due to the intervening mature vegetation.	Medium
10	View looking south east towards the Site from Footpath Knowsley WH 7/1 within Stadt Moers Country Park. Views of the Site are truncated due to the intervening mature vegetation.	Medium
11	View looking south west towards the Site from the junction of Footpath St Helens 203 and Dee Road. Views of the Site are truncated due to the intervening mature vegetation.	Medium
12	View looking south west towards the Site from Footpath St Helens 201 within Blundell's Hill Golf Club. Views of the Site are truncated due to the intervening mature vegetation.	Medium
13	View looking west towards the Site from Footpath St Helens 201 within Blundell's Hill Golf Club. Views of the Site are truncated due to the intervening mature vegetation.	Medium
14	View looking west towards the Site from Blundell's Lane. Views of the Site are truncated due to the intervening mature vegetation.	Medium
15	View looking north west towards the Site from Penny Lane. Views of the Site are truncated due to the intervening mature vegetation and landform.	Medium
16	View looking north east towards the Site from the junction of Footpath Knowsley TA 9/1 and Dacre's Bridge Lane. Views of the Site are truncated due to the intervening mature vegetation and built form.	Medium
17	View looking north east towards the Site from the junction of Windy Arbor Lane and Fallows Way. Views of the Site are truncated due to the intervening mature vegetation.	Medium

Sensitive Receptors

7.93 The following are considered to be the key sensitive landscape and visual receptors, refer to Tables 7.14 and 7.15 for the full assessment of effects on each of the landscape and visual receptors:

- Existing land use;
- Existing open space in close proximity to the Site including those accessed from Lickers Lane;
- Existing vegetation;
- Site landform;
- Existing landscape character within and in close proximity to the Site;
- Residents of dwellings including those on Lickers Lane, Fox's Bank Lane, and Main Drive;
- Users of the local PrOW network;

- Users of the local road network including those using Lickers Lane, Fox's Bank Lane, and Main Drive; and
- Setting of local heritage assets including the non-designated Halsnead Park, Sandfield House, North East Lodge and the Gate Piers Beside.

Future Baseline

- 7.94 If the Development were not to be built out, it is assumed that landscape uses would continue on-site and that no significant change to the landscape or landscape character would occur.
- 7.95 Change is already occurring to the land use context to the south and west of the Site as consented schemes progress associated with the wider Halsnead Garden Village Masterplan, these include the consented developments of Land North of M62 Motorway, Off Windy Arbor Road (Halsnead), Whiston, Knowsley Ref. 18/00283/HYB; Land South Of Lickers Lane And Site Of Former Saunder's Nursery, Windy Arbor Road, Halsnead Garden Village, Whiston Ref. 20/00399/OUT; Fox's Bank, Halsnead Garden Village, Land West Of Fox's Bank Lane And North Of M62, Whiston, Knowsley Ref. 20/00417/FUL; and the Former Site of Cronton Colliery, Cronton Road, Halsnead Garden Village, Knowsley Ref. 20/00494/HYB.

Likely Significant Effects

Construction Phase

Landscape Setting to Heritage Assets

- 7.96 Sandfield House, a grade II Listed Building, lies to the north east of the Site. The building is assessed as being of high value and high sensitivity. During the enabling and construction phase, there is not considered to be a change to the setting of this heritage asset due to the presence of the mature intervening woodland.
- 7.97 To the south east of the Site there are two further Listed Buildings; the North East Lodge to Halsnead Park and the associated set of gate piers. Again these are considered to be of high value and high sensitivity. During the construction phase there will be a negligible change to the wider landscape setting of a single aspect of these heritage assets. The distant western landscape setting of the North East Lodge to Halsnead Park and the associated set of gate piers will include the emerging built form, set at a distance of 330m to the north west. This change will result in a negligible magnitude of change and will see the commencement of a permanent change in the setting, resulting in an effect of **negligible adverse** significance

on the landscape setting of the western elevations only.

- 7.98 The Site is located within Halsnead Park, a non-designated heritage asset. The construction phase will see a change to this portion of the park to a construction site, emerging built form and green infrastructure resulting in a low medium magnitude of change, with an effect of **minor adverse** significance on this portion of the non-designated heritage asset.

Topography

- 7.99 The Site's topography is considered to be of ordinary value and medium sensitivity to the proposed works. The construction stage will see the removal of the existing grass and the topsoil to the areas to receive the Development platforms; and adjustment to cater for the proposed road network. All surplus material will be removed off-site. This will result in a series of minor topographic change to selected areas of the Site; however, the overall profile will largely remain. The magnitude of change is therefore considered to be low resulting in a **negligible-minor adverse** effect overall.

Settlement Pattern

- 7.100 The Site enabling and construction phase of the Development will see the elements of new built form extending south into the southern portion of the Site but the built form within the surrounding area will remain unchanged. The change is anticipated to result in a **minor adverse** effect on the settlement pattern locally.

Land Use

- 7.101 The Site is currently largely unused and is considered to be of medium value, with a medium sensitivity to the proposed changes. During the construction phase, the land use within the Site will change to that of a construction site, new emerging built form and associated areas of green infrastructure. This change will result in a medium magnitude of change, with an effect of **moderate adverse** significance on the existing land use, as it will see the commencement of the removal of the existing rough grassland, scrub and individual trees which are not readily replaceable.

Open Space

- 7.102 In terms of open space, the Site is currently not formally accessible to the public. Effects at the enabling and construction phase will therefore be **negligible**.

Public Right of Ways

- 7.103 There are no PRow's within or in close proximity to the Site and the construction of the Development is not anticipated to have an effect on the PRow as a landscape resource within the study area. Effects at the enabling and construction phase will therefore be **negligible**.

Landscape Character – National and Regional

- 7.104 The Site lies within NCA 56: Lancashire Coal Measures at the national level. At the regional level the Site is within the Halsnead Estate Character Area. The landscape character at the national and regional level is considered to be of medium value and medium sensitivity to the proposed change.
- 7.105 During the construction phase, no significant change to the national or regional level character areas is expected, as the Site forms a small part of the wider character area. The magnitude of change is considered to range from negligible on the national level character area and low on the county level character area, resulting in an effect of **negligible to minor adverse** significance.

Landscape Character – Site Level

- 7.106 At the Site level the landscape character comprises two distinctive areas. It is considered that the value of the Site's landscape character is medium; and the sensitivity of the Site's landscape character is also medium. The enabling and construction phase will see a wholesale change to the southern character area within the Site, removing the open field unit and a number of internal trees to facilitate the Development and replacing with an emerging built form, areas of green infrastructure and a new road network, resulting in a high magnitude of change and consequently a **moderate adverse** effect.

Vegetation

- 7.107 The vegetation within the Site is assessed as having a medium-high value, medium susceptibility and medium-high sensitivity to the Development. During the Site enabling and construction phase, those principle arboricultural features together with the majority of the existing vegetation to be retained will be protected by fencing. A number of internal trees are however proposed to be removed, in order to construct the Development. These do not include any trees subject to a TPO. Overall, the magnitude of change is assessed as medium, and effects are considered to be of **moderate adverse** significance.

Built Form

- 7.108 Existing built form within the Site boundary is limited to a short section of parkland wall and associated gates adjacent to Lickers Lane and a line of overhead electrical cables to the Site's western boundary. The existing wall is considered to be of high value and will be retained as part of the Development resulting in a **negligible** effect on built form during the construction phase.

Visual Receptors

Residential Receptors

- 7.109 The Site is visible by residential receptors in the immediate environs for residents of properties on limited sections of Lickers Lane, Croftwood Grove, Sherwood Drive and Manorwood Drive directly adjacent to the Site (representative views - viewpoints 1 and 2) and at greater distances from the Site for residents within the Halsnead Park caravan park accessed from Main Drive (representative view - viewpoint 6) and a small number of dwellings on the Fox's Bank Lane including North East Lodge and Cherry Tree Farm (representative views - viewpoint 4).
- 7.110 A small number of dwellings immediately adjacent to the northern boundary with Lickers Lane (representative view - viewpoint 1) will have open views to a small section of the Site enabling, construction works and the solid Site hoarding. Views from dwellings at greater distances on small portions of Croftwood Grove, Sherwood Drive and Manorwood Drive, Halsnead Park caravan park and Fox's Bank Lane (representative view - viewpoints 2, 4, and 6) may experience partial or partial glimpsed views and often oblique, towards the construction works. The character and amenity of the view will change from views over the field parcel, Site vegetation and vegetated boundaries to that of construction activities and associated features (such as cranes) and an emerging built form set within a retained vegetated structure.
- 7.111 These receptors are considered to have a high value and a high sensitivity overall. The magnitude of change is assessed as being low to negligible as views are generally largely filtered by intervening boundary trees and mature vegetation. There will be a small change to the character and amenity of the view, resulting in a direct, permanent, and **negligible to minor adverse** effect on this group of receptors.

Receptors using the road network

- 7.112 Views from receptors using the portion of Lickers Lane are affected by the Development in close proximity to the Site (representative views - viewpoints 1 and 2). There are also limited partial and partial glimpsed views to the Site at greater distances from portions of Main Drive and Fox's Bank Lane (representative views - viewpoints 4 and 6).
- 7.113 At the Site enabling and construction phase, the character and amenity of the view will change from field parcel and mature Site boundary vegetation to that containing construction activities beyond the retained boundary vegetation. These transient receptors are considered as being of medium value, whereby the views of the Site form a small part of their journey through the area with a medium sensitivity overall. The construction phase will see the introduction of cranes and the formation of new buildings, though these will be set back behind a buffer of green infrastructure to the north of the Site, incorporating the boundary trees, giving a medium magnitude of change and a permanent, **negligible to minor adverse** effect overall.

Receptors using the public rights of way network

- 7.114 There are not anticipated to be any views to the Site for users of the PRoW network within the study area. Therefore, effects are anticipated to be **negligible** for this group of receptors during the construction phase.

Receptors using areas of open space

- 7.115 There are anticipated to be partial views of the Site available from the receptors using the St Leo's Park, to the northwest of the Site and Fox's Bank Cemetery to the east of Site (representative views - viewpoints 1 and 3). The character and amenity of the view of the Site is informed principally by the boundary vegetation which in turn allows partial views to the northern access to Lickers Lane from St Leo's Park or potentially to the internal field parcel within the Site from Fox's Bank Cemetery.
- 7.116 The character and amenity of the view will change from the vegetated boundaries and glimpses of the internal field to that of construction activities and an emerging built form evident over the existing boundary vegetation. This receptor is considered to have a high value and a high sensitivity. The magnitude of change is assessed as being Low, as views are largely filtered by the intervening mature vegetation and boundary trees. There is anticipated to be a limited change to the character and amenity of the views, resulting in a direct, permanent and **negligible to minor adverse** effect on this receptor.

Receptors at place of work

- 7.117 There are partial views of the Site for workers and visitors to Lickers Lane Shop and Knowsley Seventh Day Adventist Church. These receptors are considered to have a medium value, giving a medium sensitivity. There will be a limited change to the character and amenity of these views, where views over boundary vegetation will change to that of boundary vegetation with construction activities and an emerging built form within the retained landscape framework resulting in a direct, permanent, and **negligible to minor adverse** effect.

Operation Phase (Year 1)

Landscape Setting to Heritage Assets

- 7.118 During the operational phase at Year 1, the western setting to North East Lodge to Halsnead Park and the associated set of gate piers will see a further change from that of a construction site beyond the Site boundary to that of a residential development incorporating supplementary planting. Effects are considered to be **negligible** on a single aspect of the Listed Building, reducing over time as the new planting matures.
- 7.119 No additional effects are anticipated at the operational phase, which will see the completion of the areas of green infrastructure and the additional proposed planting implemented. Effects are considered to be **negligible** and will reduce with time as the additional planting matures.

Topography

- 7.120 During Year 1 of the operational phase, there would be no further changes to the topography, therefore the magnitude of further change would be negligible, with effects as **negligible** overall.

Land Use

- 7.121 No additional effects are anticipated at the operational phase, which will see the completion of the areas of green infrastructure and the additional proposed planting implemented. Effects are considered to reduce to **minor adverse** at the operational phase, as effects reduce with the maturation of the proposed planting within the Site.

Open Space

- 7.122 At the operational phase the proposed public open space, which meets the open space policy requirement to serve the Development will be completed. Therefore, the effects on open space are anticipated to be **minor beneficial**.

Public Right of Ways

- 7.123 At the operational phase, new routes are provided across the Site, providing a link through the Site to the wider countryside to the east. The magnitude of change is therefore considered to be small, resulting in a **minor beneficial** effect.

Landscape Character – National and Regional

- 7.124 During the operational phase the built form will have been extended locally to the south and east but not beyond the existing southern and eastern extremities of Whiston. The setting back of Development from the northern Site boundaries and the inclusion of green infrastructure and a landscape buffer to these boundaries will assist to moderate the effects of the Development as the proposed planting matures. The characteristic element of the existing landscape, including the boundary trees belts will also be retained. Therefore, the magnitude of change at the operational phase is considered to be low with a **negligible** effect on national and regional level landscape character respectively at year 1.

Landscape Character – Site Level

- 7.125 At Year 1 of the operational phase, the Site landscape character will have wholly changed from a construction site to that of a residential development set within a landscape structure, accommodating open space and areas of new native tree planting. The magnitude of change at Year 1 is considered to reduce to medium, resulting in a **minor adverse** effect on the existing Site character.

Vegetation

- 7.126 During Year 1 of the operational phase, the proposed landscape scheme will have been implemented, which will include new tree planting, areas of native shrub and wildflower meadow, creating new and supplemented vegetated edges to the Development and the existing vegetated structure to the Site. This will result in a small magnitude of change, resulting in an overall **minor beneficial** effect on the tree resource within the Site.

Built Form

- 7.127 During Year 1 of the operational phase, the new built form of the residential development will emerge resulting in a new network of buildings across the Site, the scale and extent of which is a significant addition to the existing built form. Effects on the built form element are therefore considered to be **minor beneficial**.

Visual Receptors

Residential Receptors

- 7.128 Year 1 of the operational phase will have seen the completion of the new built form and the implementation of the additional buffer planting. Residents of dwellings within portions of the Halsnead Park caravan park and Fox's Bank Lane will see built form and buffer planting as a new element within the view.
- 7.129 Effects are considered to remain **negligible to minor adverse**, reducing over time as the supplementary boundary planting matures.

Receptors using the road network

- 7.130 The operational phase will have seen the additional planting of buffer vegetation along the northern boundary therefore, magnitude of change is considered to remain low, with a **negligible to minor adverse** effect on this group of receptors.

Receptors using the public rights of way network

- 7.131 At the operational phase, there are not anticipated to be any views to the Site for users of the PRoW network within the study area. Therefore, effects as a result of the Development are anticipated to be **negligible** for this group of receptors.

Receptors using areas of open space

- 7.132 Year 1 of the operational phase will see the implementation of the additional buffer planting to the Site boundaries, however effects on receptors using the area of public open space at St Leo's Park or Fox's Bank Cemetery in close proximity and at middle distances to the Site are considered to remain **negligible to minor adverse**, reducing over time as the supplementary boundary planting matures.

Receptors at place of work

- 7.133 During the operational phase, the additional planting of buffer vegetation along the northern boundary will have been implemented, the magnitude of change is considered to remain low, with a **negligible to minor adverse** effect on receptors at their place of work.

Embedded Mitigation

- 7.134 The landscape proposals within the Development have been designed to ensure that the existing landscape features and constraints are considered. Areas of green infrastructure are proposed within the Development at key locations to maintain the existing vegetation and to set the Development into a landscape structure. Key existing landscape features are proposed to be retained, namely the boundary vegetation to a large proportion of the north of the Development.
- 7.135 The location and height of the built form within the Development has been landscape driven in order not to expand the existing visual envelope in views from the immediate, local, and wider landscape. The Development has been set at a maximum of three storeys across the Site.
- 7.136 The location is illustrated on the landscape proposals plan (Appendix 3.2) relative to the retention of the existing trees and is proposed to meet the policy requirement to serve the Development. It is anticipated that these spaces will include tree planting and will be designed to be multi-functional wherever possible.
- 7.137 The proposed building facades will comprise materials, finishes and hues which are evident in the local landscape and townscape (as set out within the Design and Access Statement submitted as part of the planning application).
- 7.138 A Landscape Management Plan will be produced subject to a planning condition to ensure the landscape proposals and existing landscape features are maintained throughout the lifetime of the Development. The landscape management plan will be a starting point for an evolving document and is to be reviewed on an annual basis and is also to be reviewed as each phase is developed.
- 7.139 The installation of lighting in certain areas is likely to be required to provide a safe and secure night time environment, whilst ensuring that the lighting design respects the setting of the surrounding area and minimises the effect on sensitive receptors where practicable. The detailed lighting design will take into account the surrounding sensitivities including existing

neighbouring residential properties and sensitive ecological areas and will be based on the use of low light pollution installations.

Additional Mitigation Measures

7.140 Additional mitigation measures relating to the construction phase are set out below.

During Site Enabling and Construction Phase

7.141 The first effects to occur on the landscape and visual receptors will relate to the Site enabling works.

7.142 This will involve the erection of Site security hoarding or fencing to the perimeter of the enabling work area, together with protective fencing (to BS5837, 2012, 'Trees in Relation to Construction') to the existing trees and planting areas to be retained; creating a haul route, which will also form the proposed access roads; setting up the contractors compound; removal of the existing vegetation; and the stripping of grass and topsoil for the Development platforms. The location, extent and height of the contractor's compound / office is yet to be determined in consultation with the contractor and landscape consultant, in order to reduce the landscape and visual impact of these elements as much as possible.

7.143 All cabins and storage mounds will be as low as possible to minimise the visual effects of these elements. The contractor's cabins are to be of a muted and visually recessive colour to minimise the visual effect of these temporary elements in localised views. The above is to be agreed with KMBC prior to the commencement of construction as part of a Construction Environmental Management Plan (CEMP) and as part of the discharge of planning conditions.

7.144 It is anticipated that the contractor's compound and working area would be lit. The lighting of the compound is to be low level and directional into the working area.

Residual Effects

Construction

7.145 Following the implementation of the above additional mitigation measures proposed during the site enabling and construction phase, there are anticipated to be the following residual effects.

- 7.146 The effect on the landscape setting of heritage assets is anticipated to remain **negligible adverse**. Effects on settlement pattern are anticipated to remain **minor adverse**. Following the implementation of the agreed recommendations of the CEMP the effect on land use is anticipated to reduce to **minor adverse** and the residual effect on the Site topography is anticipated to reduce to **negligible**. Effects on open space, PRoW, Landscape Character at the National level and built form are anticipated to remain **negligible**. The effect on Landscape Character at the Regional / County level is anticipated to remain at **minor adverse** and Landscape Character at the Site Level and Site vegetation are expected to remain **moderate adverse**.

Operation (Year 15)

Landscape Setting to Heritage Assets

- 7.147 The residual effects of the Development on the existing heritage assets are considered to be direct, permanent, long-term and of **negligible** significance.

Landscape Character

- 7.148 At a local level there would be a direct permanent and long-term direct residual effect of **minor adverse** significance on a small part of the Site level landscape character during the operational stage, and **negligible** for national/county landscape character.

Topography

- 7.149 The residual effects of the Development on the existing topography are considered to be direct, permanent, long-term and of **negligible** significance.

Land Use

- 7.150 The residual effects of the Development on the existing land use are considered to be direct, permanent, long-term and of **minor adverse** significance.

Settlement Pattern

- 7.151 The completion of the Development is anticipated to result in a **minor beneficial** overall residual effect on the settlement pattern at the local level.

Vegetation

- 7.152 The new native tree and shrub planting will enhance the existing mature vegetation and strengthen the green and networks within the Site resulting in residual effect of **negligible** significance.

Built Form

- 7.153 The residual effects of the Development on the existing built form are considered to be direct, permanent, long-term and of **minor beneficial** significance due to the introduction of new development within the Site.

Open Space

- 7.154 Following the implementation of the proposed additional areas of open space within the Development residual effects on open space within the study area are anticipated to remain **minor beneficial**.

Public Rights of Way

- 7.155 There are anticipated to be negligible effects on PRow within the study area as a result of the Development. New routes within the Development will further facilitate pedestrian and cyclist connectivity, the effects are therefore assessed as of **minor beneficial** significance. Residual effects on all other footpaths are **negligible** as no further changes will have occurred.

Visual Public Receptors

Residential / Transport Corridors / Public Open Space/ Employment

- 7.156 The residual effects on visual receptors from dwellings to the north and east of the Site will remain direct, permanent, long-term and range from **negligible to minor adverse** due to some residual partial views of the Site at the operational stage.
- 7.157 The sensitivity of users of areas of public open space to the north and east will range from medium-high, and the magnitude of change negligible to low, given the potential for planting within and around the Development to soften views of the built form. The effects would be direct, permanent, long-term and of **negligible to minor adverse** significance.

7.158 The sensitivity of employees and visitors to Lickers Lane Shop and Knowsley Seventh Day Adventist Church will be medium with a magnitude of change being low following the implementation of the mitigation within the Development. Therefore, the effects on the visual receptors to the north and east will be direct, permanent, long-term and of **negligible to minor adverse** significance due to the change of partial views of boundary vegetation and a field parcel to that of built form and its associated retained and new landscape infrastructure.

Cumulative Effects

7.159 The following applications for cumulative developments have been recently made in close proximity to the Site, most of which form part of the wider Halsnead Garden Village allocated through policy SUE1:

- Land North of M62 Motorway, Off Windy Arbor Road (Halsnead), Whiston, Knowsley Ref. 18/00283/HYB;
- Former Site of Cronton Colliery, Cronton Road, Halsnead Garden Village, Knowsley Ref. 20/00494/HYB;
- Land South of Lickers Lane and Site of Former Saunder's Nursery, Windy Arbor Road, Halsnead Garden Village, Whiston Ref. 20/00399/OUT;
- Fox's Bank, Halsnead Garden Village, Land West of Fox's Bank Lane and North Of M62, Whiston, Knowsley Ref. 20/00417/FUL;
- Sustainable Urban Extension - South of Whiston and Land South of M62;
- Construction of a multi-use path and associated ground works including the facilitation of a rising main associated with the proposed residential development of the adjoining land on disused railway land extending from the M62 Motorway, extending north through Halsnead Park and to the rear of Cronton Avenue, Whiston Ref. 19/00651/FUL;
- Country Park development on land adjacent to Cronton Road and Fox's Bank Lane Ref. 20/00578/FUL; and
- Parcel C At Prescott Cables Site Prescott Park Way Knowsley, Application for Approval of Reserved Matters Pursuant to Outline Planning Permission 15/00022/Out Ref. 20/00767/REM.

Landscape Resources

7.160 Cumulatively it is assumed that the above schemes will seek to retain a large percentage of the existing vegetation structure, woodlands and landscape features within and on the boundaries of each scheme. However, it is anticipated that any loss of trees and vegetation

due to construction will be fully mitigated with the implementation of new tree and shrub planting throughout the schemes. The footpath network will remain to ensure access to the wider countryside within the study area is maintained and improved. Where relevant, proposals are anticipated to comply with the requirements of Knowsley Halsnead Garden Village: Masterplan Supplementary Planning Document (SPD)^{xiii}. Therefore, it is considered the cumulative effects on landscape resources would be of **negligible** significance.

Landscape Character

- 7.161 The combined effect of the above cumulative schemes would be minor negative when considering the landscape character in the wider context. The mitigation proposed as part of each scheme will maintain key elements of the landscape character such as trees, hedgerows, and woodland. Therefore, the cumulative effect on the landscape character will be **minor adverse**.

Visual Receptors

- 7.162 There is anticipated to be a degree of intervisibility between elements of the consented Land South of Lickers Lane and Site of Former Saunder's Nursery, Windy Arbor Road, Halsnead Garden Village, Whiston, elements of the Sustainable Urban Extension - South of Whiston, Land South of M62 and the consented Fox's Bank, Halsnead Garden Village, Land West of Fox's Bank Lane. There are also anticipated to be locations where the Site is visible in the same view from portions of Fox's Bank Lane, Main Drive and Halsnead Park caravan site.
- 7.163 There is also anticipated to be limited intervisibility between the Site and the consented scheme North of M62, Whiston, Knowsley Ref. 20/00417/FUL Land North of M62 Motorway Off Windy Arbor Road (Halsnead) Whiston scheme and the Site. There are, however, not anticipated to be any locations where the Site is visible in the same view with this consented scheme.
- 7.164 Overall, the cumulative effects of the scheme are anticipated to range from **minor adverse to negligible** on a small number of receptors.

Summary

- 7.165 The Landscape and Visual Impact Assessment has been prepared on the Third Edition of the Guidelines for Landscape and Visual Impact Assessment by the Landscape Institute and the Institute of Environmental Management and Assessment.

- 7.166 There are no national landscape, ecological or heritage designations within the Site. There are, however, a number of landscape, ecological and heritage designations in the local landscape beyond the Site. These include areas of ancient woodland, Green Belt and a country park to the north west of the Site. The Grade II Listed Building of Sandfield House lies to the north east of the Site. The Site has been identified in the Knowsley Local Plan Core Strategy as an area allocated for Sustainable Urban Extension as a part of a wider allocation under Policy SUE1.
- 7.167 The Site is bound by Lickers Lane and mature woodland to the north with residential areas of Whiston beyond, agricultural land to the south and east, and rough grassland, scrub and individual trees to the west. Halsnead Park caravan site, accessed from Main Drive is located to the south west.
- 7.168 The Site lies on the south facing slope of a minor ridgeline. The landform within the Site slopes broadly from north to south towards the southern boundary. The Site consists of a single field parcel with areas of rough grassland, scrub and scattered trees, predominately to Site boundaries. There is an area of dense mature woodland within the northern portion of the Site and beyond the Site to the north. Vegetation is largely limited to the Site boundaries and comprises either scrub, trees, or woodland. A tree survey has been carried out and concludes that there are 3 category A grade trees and 1 woodland; 48 individual category B trees and 3 groups; 36 individual category C trees and 6 groups. Tree species include Ash, Beech, Blackthorn, Elderberry, Goat willow, Hawthorn, Oak, Rowan, Silver birch, Sycamore, Wild plum and Yew. There are no Public Rights of Way within or in close proximity to the Site.
- 7.169 Views of the Site are limited to portions of Lickers Lane, Croftwood Grove, Sherwood Drive and Manorwood Drive immediately to the north of Site (where there are a range of open and partial views), and portions of Fox's Bank Lane and Main Drive to the south east and south west of the Site respectively.
- 7.170 The Development comprises residential development, associated open space, tree and shrub planting and a new road network. The layout and design of the Development has been subject to iterative design process and has considered the physical Site constraints and opportunities; the landscape and visual sensitivities; the retention of the inherent local landscape characteristics; discussions with KMBC officers; and to comply with local planning policy and guidance.
- 7.171 Landscape mitigation measures have been designed into the Development and include the inclusion and retention of a broad landscape zone along the northern edge of the Site to maintain the character of the views approaching Whiston from the south. As a result, the

Development provides the opportunity to supplement the existing boundary planting, setting the Development into a well treed structure which in the long term will provide a soft, vegetated edge. Further mitigation measures have also been identified in terms of addressing detailed design points (such as the height and colour of contractor's cabins; protective fencing; and lighting) but have not been included in the assessment of effects.

7.172 Tables 7.14 and 7.15 contain a summary of the likely significant effects on Landscape and Visual receptors of the Development.

7.173 The Development will see the expansion of Whiston, but not beyond the existing southern and eastern extremities associated with the developed edge of the settlement. There will be a change in the character and amenity of the views from a limited number of visual receptors to the Site, where the Development will either form a new element in the view or will bring development forward in the view. It is considered that this will result in a negligible to minor adverse effect, on a limited number of receptors, largely in the immediate setting of the Site. Therefore, the Development will not significantly increase the existing visual envelope associated with this edge of the settlement. In the long term, views of the Development will diminish as the proposed planting matures.

7.174 As with any greenfield development, a number of impacts arise from the Development during the construction and first year of operation. These range from negligible / minor adverse to minor beneficial on the contextual landscape receptors; moderate adverse to minor beneficial on the Site landscape receptors; and negligible through to minor adverse on a limited number of visual receptors as a result of the change in the character and amenity of the view (from greenfield to that of development). Effects on visual receptors will diminish over time as the planting within the green infrastructure areas matures.

7.175 In summary, it is considered that the Site has an existing relationship with the developed edge of Whiston and that on balance the proposed residential development will, whilst wholly replacing the central and southern portion of the landscape character at the Site level, sit within the existing retained landscape character elements at the Site level and the landscape character at the regional and district level. Whilst some negative landscape and visual effects will arise from the Development as it emerges through the construction period, the Development forms a logical expansion to the settlement. Furthermore, the landscape and visual effects are limited to the Site and district level receptors only as identified in this chapter. The effects will essentially reduce over time as the proposed planting matures. The provision of open space areas within the Development will be of benefit to the existing local and new community. New tree planting and a vegetation strategy is to be considered for

long term replacement and reinforcement of existing networks, ensuring the longevity and vigour of the existing vegetation is maintained on Site.

Table 7.14: Table of Significance – Landscape Effects

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Landscape Receptors											
Landscape Setting to Heritage Assets	Local / Site level / Temporary	Negligible Adverse	Implementation of CEMP			X					Negligible Adverse
Topography	Site Level/ Temporary	Negligible to Minor Adverse	N/A							X	Negligible
Settlement Pattern	Local / Temporary	Minor Adverse	N/A							X	Minor Adverse
Land use	Site Level / Temporary	Moderate Adverse	Implementation of CEMP							X	Minor Adverse
Open Space	Local / Temporary	Negligible	N/A							X	Negligible
Public Right of Ways	Local / Temporary	Negligible	N/A							X	Negligible
Landscape Character – National	Local / Temporary	Negligible	Implementation of CEMP			X					Negligible
Landscape Character – Regional / County	Local / Temporary	Minor Adverse	As above					X			Minor Adverse
Landscape Character – Site Level	Site level / Temporary	Moderate Adverse	As above							X	Moderate Adverse
Vegetation	Site level / Temporary	Moderate Adverse	Protection of landscape features, implementation of CEMP							X	Moderate Adverse
Built Form	Site level / Temporary	Negligible	N/A							X	Negligible

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Completed Development - Year 15											
Landscape Setting to Heritage Assets	Local / Site Level / Long term / Permanent	Negligible	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme			X					Negligible
Topography	Site Level / Long term / Permanent	Negligible	N/A							X	Negligible
Vegetation	Site Level / Long term / Permanent	Negligible	Retention of landscape features, implementation of landscape scheme							X	Negligible
Settlement Pattern	Local / Long term / Permanent	Minor Beneficial	Siting of built form							X	Minor Beneficial
Land Use	Site level / Long term / Permanent	Minor Adverse	Retention of landscape features, implementation of landscape scheme							X	Minor Adverse
Open Space	Local / Site Level / Long term / Permanent	Minor Beneficial	Implementation of landscape scheme						X		Minor Beneficial
Public Right of Ways	Local / Long term / Permanent	Minor Beneficial	Inclusion of new routes							X	Minor Beneficial

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	
				I	UK	E	R	C	B	L		
Landscape Character - National	Local / Long term / Permanent	Negligible	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme		X							Negligible
Landscape Character - County / Local	Local / Long term / Permanent	Negligible	As above					X				Negligible
Landscape Character – Site Level	Site level / Long term / Permanent	Minor Adverse	As above							X		Minor Adverse
Built Form	Site level / Long term / Permanent	Minor Beneficial	Siting of built form							X		Minor Beneficial
Cumulative Effects												
Construction												
Landscape Resources:	Local / Long term / Permanent	Negligible	Implementation of CEMP							X		Negligible
Landscape Character	Local / Long term / Permanent	Minor Adverse								X		Minor Adverse
Completed Development												
Landscape Resources:	Local / Long term / Permanent	Negligible	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme							X		Negligible
Landscape Character	Local / Long term / Permanent	Minor Adverse								X		Minor Adverse

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

Table 7.15: Table of Significance – Visual Effects

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Construction											
Adjoining / Close Views											
Residential Receptors	Local / Temporary	Negligible to Minor Adverse	Implementation of CEMP							X	Negligible to Minor Adverse
Receptors using the road network	Local / Temporary	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors using areas of open space	Local / Temporary	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors at place of work	Local / Temporary	Negligible								X	Negligible
Middle Distant Views											
Residential Receptors	Local / Temporary	Negligible to Minor Adverse	Implementation of CEMP							X	Negligible to Minor Adverse
Receptors using the road network	Local / Temporary	Negligible to Minor Adverse								X	Negligible

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Receptors using the public rights of way network	Local / Temporary	Negligible								X	Negligible
Receptors using areas of open space	Local / Temporary	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors at place of work	Local / Temporary	Negligible								X	Negligible
Long Distant Views											
Residential Receptors	Local / Temporary	Negligible	Implementation of CEMP							X	Negligible
Receptors using the road network	Local / Temporary	Negligible								X	Negligible
Receptors using the public rights of way network	Local / Temporary	Negligible								X	Negligible
Receptors using areas of open space	Local / Temporary	Negligible								X	Negligible
Receptors at place of work	Local / Temporary	Negligible								X	Negligible
Completed Development – Year 15											
Adjoining / Close Views											
Residential Receptors	Local / Long term / Permanent	Negligible to Minor Adverse	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme							X	Negligible to Minor Adverse
Receptors using the road network	Local / Long term / Permanent	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors using areas of open space	Local / Long term / Permanent	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors at place of work	Local / Long term / Permanent	Negligible								X	Negligible

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Middle Distant Views											
Residential Receptors	Local / Long term / Permanent	Negligible to Minor Adverse	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme							X	Negligible to Minor Adverse
Receptors using the road network	Local / Long term / Permanent	Negligible to Minor Adverse								X	Negligible to Minor Adverse
Receptors using the public rights of way network	Local / Long term / Permanent	Negligible								X	Negligible
Receptors using areas of open space	Local / Long term / Permanent	Negligible								X	Negligible
Receptors at place of work	Local / Long term / Permanent	Negligible								X	Negligible
Long Distant Views											
Residential Receptors	Local / Long term / Permanent	Negligible	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme							X	Negligible
Receptors using the road network	Local / Long term / Permanent	Negligible								X	Negligible
Receptors using the public rights of way network	Local / Long term / Permanent	Negligible								X	Negligible
Receptors using areas of open space	Local / Long term / Permanent	Negligible								X	Negligible
Receptors at place of work	Local / Long term / Permanent	Negligible								X	Negligible
Cumulative Effects											
Construction											
Visual Receptors	Local / Long term / Permanent	Negligible to Moderate Adverse	Implementation of CEMP							X	Negligible to Minor Adverse
Completed Development											

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Neg ligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Visual Receptors	Local / Long term / Permanent	Negligible to Moderate Adverse	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme							X	Negligible to Minor Adverse

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

- ⁱ National Planning Policy Framework (NPPF) (Revised 2021)
- ⁱⁱ Planning Practice Guidance (PPG) (Updated 2019)
- ⁱⁱⁱ Knowsley Local Plan Core Strategy adopted (2016)
- ^{iv} Knowsley Replacement Unitary Development Plan (2006)
- ^v St Helen's Local Plan Core Strategy (2012)
- ^{vi} Guidelines for Landscape and Visual Impact Assessment third edition, published by the Landscape Institute (LI) (2013)
- ^{vii} Landscape Character Assessment: Guidance for England and Scotland, published by the Countryside Agency and Scottish National Heritage (2002)
- ^{viii} Seeing the History in the View: A Method for Assessing Heritage Significance within Views (English Heritage; 2011)
- ^{ix} The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Second Edition) (Historic England; 2017)
- ^x Visual Representation of Development Proposals - Technical Guidance Note 06/19 (Landscape Institute; 2019)
- ^{xi} Landscape Character Assessment of Knowsley Metropolitan Borough (2007)
- ^{xii} BS 5837:2012 'Trees in relation to design, demolition and construction' (2012)
- ^{xiii} Knowsley Halshead Garden Village: Masterplan Supplementary Planning Document (2017).

8.0 BIODIVERSITY

Introduction

- 8.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect to Ecology.
- 8.2 The following reports are appended which provide details of the ecology works undertaken:
- 80-571-R2 – Preliminary Ecological Appraisal (Appendix 8.1);
 - 80-571-R3- Biodiversity Net Gain Assessment (Appendix 8.2);
 - 80-571- L1 – eDNA Survey Results (Appendix 8.3);
 - 1349/05-20/LO – Extended Phase 1 Habitat Survey - Cheshire Ecological Services in 2020 (Appendix 8.4); and
 - KN21-032 Merseyside Environmental Advisory Service Pre-App (Appendix 8.5).

Policy Context

National Planning Policy Framework

- 8.3 The National Planning Policy Framework (NPPF) (2021)ⁱ sets-out national planning policy, including policies of relevance to conserving and enhancing the natural environment. The Policy of relevance to the proposed development has been summarised below:

Policy 15. Conserving And Enhancing The Natural Environment

- 8.4 Paragraph 174 states that *"Planning policies and decisions should contribute to and enhance the natural and local environment by:*
- *protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan); and*
 - *minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;"*
- 8.5 Paragraph 175 states that *"Plans should:*
- *distinguish between the hierarchy of international, national and locally designated sites;*

- *allocate land with the least environmental or amenity value, where consistent with other policies in this Framework;*
- *take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and*
- *and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries."*

Habitats And Biodiversity

8.6 Paragraph 179 states that *"To protect and enhance biodiversity and geodiversity, plans should:*

- *Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation; and*
- *promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity."*

8.7 Paragraph 180 states that *"When determining planning applications, local planning authorities should apply the following principles:*

- *if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*
- *development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- *development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*
- *development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around*

developments should be encouraged, especially where this can secure measurable net gains for biodiversity."

8.8 Paragraph 181 requires that *"The following should be given the same protection as habitats sites:*

- *"potential Special Protection Areas and possible Special Areas of Conservation;*
- *listed or proposed Ramsar sites; and*
- *sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites."*

8.9 Paragraph 182 notes that *"the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site."*

Biodiversity Action Plan (UK)

8.10 The UK BAPⁱⁱ requires the Secretary of State to publish a list of habitats and species which are of principle importance for the conservation of biodiversity in England when carrying out their normal functions. Habitats and species included on the S41 list are those found in England which were identified as requiring action under the former UK BAP.

8.11 The UK BAP is now focused at a country-level rather than at UK-level and was succeeded by the UK Post-2010 Biodiversity Framework in July 2012. For England, priority habitats and species are now covered in Section 41 of the NERC Actⁱⁱⁱ.

8.12 The NERC uses the UKBAP list of priority species and habitats as an important reference source; the list has been used to draw up the NERC species and habitats of principal importance in England. The list will be the focus for conservation action across the UK over the next decade and therefore "UK Priority Habitats" still acts as an important reference.

Local Planning Policy – Knowsley Local Plan Core Strategy^{iv}

8.13 The following policies within the Knowsley Local Plan Core Strategy (2016) are of relevance to this assessment:

8.14 Policy CS2: Development Principles of Knowsley Local Plan Core Strategy 2016-2028 states that: *"Principle 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and distinctiveness of places and landscapes, by: Maintaining or enhancing the quantity and quality of biodiversity and habitats, including potential impacts on nationally and internationally important sites for biodiversity."*

8.15 Policy CS8: Green Infrastructure: The policy seeks to maintain and enhance Knowsley's existing Green Infrastructure as follows:

- *"Protect and enhance strategically important areas of greenspace;*
- *Ensure an appropriate quantity and improved quality of locally important open spaces, including outdoor sports provision (and ancillary facilities of appropriate scale);*
- *Promote effective movement of wildlife through a network of strategic green links, by protecting, maintaining and improving existing and new open spaces, water courses (including water quality) and biodiversity assets;*
- *Protect, enhance and/or introduce biodiversity into existing areas of Green Infrastructure, through integration into the design of new development and public realm projects;*
- *Improve accessibility for communities to greenspace offering leisure and recreation opportunities;*
- *Protect and where possible improve green paths and cycleways linking residential areas, existing strategic areas of greenspace, employment locations, local community services and leisure facilities;*
- *Work in partnership with other districts and relevant bodies at a landscape scale to minimise the impact of development.*
- *To manage the natural assets better – to protect the integrity of nature sites of international importance, and to protect the city region's nature and geodiversity assets; and to make sure there is no net loss of these natural assets and to extend and enhance the city region's Ecological Network and natural assets."*

8.16 Policy CS21: Greenspaces and Trees of the aforementioned Knowsley Local Plan states that:

"The Council will encourage proposals for new development to incorporate... Retention of existing trees, woodland, vegetation and other habitats which offer a positive contribution to the local environment in terms of visual amenity, recreation value or biodiversity/wildlife interest; Appropriate planting of trees, other soft landscaping and installation of habitat features for the benefit of biodiversity; and Adequate replacement provision where tree loss is unavoidable, comprising two additional trees for every tree lost and taking account of species and size."

Legislative Context

- 8.17 The Conservation of Habitats and Species Regulations^v consolidate the Conservation of Habitats and Species Regulations^{vi} with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites ('Natura 2000 Sites termed Special Areas of Conservation (SACs) or Special Protection Areas (SPAs)). The Regulations designate these sites as being important for either habitats or species (listed in Annexes I and II of the Habitats Directive respectively).
- 8.18 National legislation for the special protection of selected species is provided in the Wildlife and Countryside Act^{vii} (WCA) and the Habitats Regulations.
- 8.19 Under Section 1(1) and 1(2) of the WCA, all British bird species, their nests and eggs (excluding some pest and game species) are protected from intentional killing, injury or damage. Under Sections 1(4) and 1(5), special penalties are applied to bird species included in Schedule 1 of the WCA and protection is extended for these species to disturbance to birds whilst building, in or near a nest and disturbance to dependant young. Schedule 5 provides special protection to selected animal species other than birds, through Section 9(4) of the WCA, against damage to *"any structure or place which any [wild animal included in the schedule] uses for shelter and protection"* and against disturbance whilst in such places.
- 8.20 Non-native invasive plants are listed in Schedule 9 of the WCA which makes it an offence to spread or enable them to be spread in the wild. The list includes species such as Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*).
- 8.21 A number of animals, known as European Protected Species (EPS), are provided full protection through inclusion in Schedule 2 of The Habitats Regulations. The Habitats Regulations provide protection against deliberate disturbance to those animals wherever they are present and provides tests against which the permission for a development (that may have an effect on a Schedule 2 protected species) must be assessed before permission can be given.
- 8.22 In addition to species protection, the WCA and Habitats Regulations also set out requirements/procedures for the notification, designation and protection of a range of statutory site designations in order to preserve important nature conservation resources.

- 8.23 All public authorities have a requirement to pay due regard to the conservation and enhancement of habitats and species through Section 41 of the NERC Act. Section 41 states, *"Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity"*. To this end, Section 41 of the NERC provides for the establishment of a list of habitat and species that are considered to be of *"principal importance for the conservation of biological diversity in England"*.

Assessment Methodology

- 8.24 The Ecological Impact Assessment (EcIA) is based on the standard best practice methodology provided by the Guidelines for Ecological Impact Assessment^{viii}. The assessment identifies important sites, habitats, species and other ecological features that are of conservation value based on factors such as legal protection, statutory or local site designations such as Sites of Special Scientific Interest (SSSI) or Local Wildlife Sites (LWS) or inclusion on Red Data Book Lists or Local Biodiversity Action Plans. The importance of an ecological feature is considered within a defined geographical context.

Zone of Influence

- 8.25 To define the total extent of the study area for this assessment, the proposed scheme was reviewed to establish the spatial scale at which ecological features could be affected. The appropriate survey radii for the various elements of the assessment (i.e. desktop study, field survey and species-specific surveys) have been defined in the relevant sections below. These distances are determined based on the professional judgement of the ecologist leading the appraisal, taking into account the characteristics of the Site subject to assessment, its surroundings and the nature of the Development.
- 8.26 Note: The following definitions are used throughout this chapter:
- Impact – Actions resulting in changes to an ecological feature.
 - Effect – Outcome to an ecological feature from an impact.
 - Residual Effect - The remaining effects of the Development assuming implementation of proposed mitigation.
 - Beneficial – a change that improves the quality of the environment e.g. by increasing species diversity, extending habitat or improving water quality. This may also include halting or slowing an existing decline in the quality of the environment.

- Adverse – a change which reduces the quality of the environment e.g. destruction of habitat, removal of foraging habitat, habitat fragmentation, pollution.

8.27 The significance categories arising from the CIEEM guidance have been assigned equivalence based on the criteria used within the ES (refer to ES Chapter 2: EIA Methodology), as detailed in Table 8.1 below.

Table 8.1 Significance Category Table

Significance Category	CIEEM Guidelines	Criteria
Major	International	Habitats An internationally designated site or candidate site (Special Protection Area (SPA), candidate SPA, Special Areas of Conservation (SAC), candidate SAC, Sites of Community Importance, Ramsar Site, Biogenetic/Biosphere Reserve, World Heritage Site) or an area that would meet the published selection criteria for designation. A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat, which are essential to maintain the viability of a larger whole. Species A sustainable population of an internationally important species i.e. a UK Red Data Book species or species listed as occurring in 15 or fewer 10km squares in the UK (categories 1 and 2 in the UK BAP) which is listed in Annex IV of the Habitats Directive, or as being of unfavourable conservation status in Europe, of uncertain conservation status or of global conservation concern in the UK BAP. Sites supporting a breeding population of such a species or supplying a critical element of their habitat requirements.
Major	National	Habitats A nationally designated site, SSSI, NNR, Marine Nature Reserve or a discrete area, which would meet the published selection criteria for national designation (e.g. SSSI selection guidelines). A sustainable area of a priority habitat identified in the UK BAP, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole. A large area of a Habitat of Principle Importance, Ancient Woodland or Wood Pasture and Parkland HPI. Species Any regularly occurring/large population of a nationally important species (e.g. England Red Data Book). A large population of a species identified as a Species of Principal Importance. A species population which would qualify for SSSI designation.
Major	Regional	Habitats Areas of internationally or nationally important habitats which are degraded but are considered readily restored;

Significance Category	CIEEM Guidelines	Criteria
		Viable areas of key habitat identified in Local BAPs, or smaller areas of such habitat which are essential to maintain the viability of a larger whole. Species A regularly occurring, locally significant number of a nationally important species.
Moderate	Local Authority wide area	Habitats Sites recognised by local authorities, e.g. LWSs. County sites that the designating authority has determined meet the published ecological selection criteria for designation. A diverse and/or hedgerow network comprised of mostly Important Hedges. Degraded areas of HPI (excluding Wood Pasture and Parkland HPI and Ancient Woodland Lowland Mixed Deciduous Woodland HPI which is Ancient Woodland). Species Any regularly occurring, locally significant population of a SPI or a species listed in a county/district BAP (where available). A regularly occurring, locally significant population of a county/district important species. Sites supporting populations of internationally/nationally/regionally important species that are not threatened or rare in the region or county, and not integral to maintaining those populations. Sites/features scarce in the county or that appreciably enrich the county habitat resource.
Moderate	Local (up to 2 km from the Site)	Habitats Areas of habitat that appreciably enrich the local habitat resource (e.g. species-rich hedgerows, ponds). Sites that retain other elements of semi-natural vegetation that, due to their size, quality or the wider distribution within the local area, are not considered for the above classifications. Species Populations/assemblages of species that appreciably enrich the biodiversity resource within the local context. Sites supporting populations of county/district important species that are not threatened or rare in the region or county, and are not integral to maintaining those populations.
Minor	Within the context of the Site	Habitats Common and widespread habitat, not meeting any of the above criteria. Areas of heavily modified or managed vegetation of low species diversity or low value as habitat to species of nature conservation interest. Species Common and widespread species, not meeting any of the above criteria.
Neutral/ Negligible	Negligible	N/A

8.28 Each ecological feature determined as 'important' will have potential impacts considered from the construction and operation phases of the Development. Considering whether the impact is:

- Beneficial or adverse: Whether the effect of the impact would result in net loss or degradation of an Important Ecological Feature or whether it would enhance or improve it. Impacts are considered to be adverse if the construction or operations cause: a detrimental effect on a vulnerable ecological receptor; a potential reduction in the conservation status/ecological value of a habitat/species population; and/or, a site's integrity to become compromised. Impacts are considered to be beneficial if the construction or operational activities cause: a non-valued ecological receptor to become valued; the restoration of favourable conservation status for a habitat/species population; and/or, the restoration of a site's integrity where previously it has been undermined.
- Extent: The spatial scope of the effect. For example: the physical area affected; or the geographical pattern of the effect.
- Magnitude: The size or intensity of the effect measured in relevant terms. For example: the number of individuals lost or gained; area of habitat lost or created; or the degree of change to existing conditions such as noise or lighting levels.
- Duration: The length of time over which the effect occurs.
- Timing and Frequency: Consideration of the timing of events in relation to ecological change. Some effects may be of greater significance if they take place at certain times of year, such as during the breeding bird season. The extent to which an effect is repeated may also be of importance.
- Reversibility: The extent to which effects are reversible, either spontaneously or through active mitigation.

Significance criteria

8.29 For the purpose of this EcIA, a 'Likely Significant Effect' is an effect that is sufficiently important to require assessment and reporting so that the ecological consequences of the project are understood. In broad terms, Likely Significant Effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution). Negligible describes where there is no likely significant residual effect. For the purposes of the current assessment, a significant effect has been defined as a moderate adverse or beneficial effect, or above. The level of significant effect is assigned once the extent, magnitude, duration, timing and frequency and reversibility has been determined.

Consultation

- 8.30 Halsnead Park SPD^{ix} states that all applications within the Halsnead Park Garden Village should be subject to Environmental Impact Assessment. The Development falls under Schedule 2 10 (b) of the EIA Regulations 2017 as an urban development project. Each planning application is required to assess the cumulative environmental effects of the Halsnead Garden Village development in addition to the individual Development.
- 8.31 An EIA Scoping Report (Appendix 2.1) was submitted to KMBC in June 2022 detailing the ecological surveys undertaken to date. Designated sites, habitats, amphibians, bats, breeding birds, brown hare, badgers, hedgehogs, invertebrates were scoped into the assessment.
- 8.32 Pre-Application advice was provided by Merseyside Environmental Advisory Service on behalf of KMBC (Appendix 8.5). The following concerns were raised during consultation:
- Designated sites: Local Wildlife Sites present adjacent to the Site and within the local area.
 - Habitats Regulation Assessment: Direct impacts can be discounted, Potential indirect impacts including increased visitor pressure on the designated sites. Cumulative effects possible within the Liverpool city region.
 - Preliminary Ecological Appraisal required and the requirement for further surveys identified and undertaken.
 - Biodiversity Net Gain Calculation required demonstrating any net loss and opportunities to achieve biodiversity net gain.

Desk Study

- 8.33 The following sources of information and ecological records were consulted:
- MAGIC – A web-based interactive mapping system, on which geographic information regarding key environmental schemes and designations are collated, including details of statutory conservation sites, consulted in August 2021;
 - Aerial mapping and ordnance survey maps; and
 - Local data records, including The Merseyside BioBank (MBB), the biodiversity information service for North Merseyside, which covers Liverpool, Knowsley, Sefton and St Helens.
- 8.34 The desk study data was taken from the Biodiversity Statement produced by Cheshire Ecological Services in 2020 (Appendix 8.4), as the data covers the same search area as the Site, the data was still valid at the time of writing. A 2.5 km search area was utilised for the

data search, with this being deemed an appropriate distance for the zone of influence of the Site, due to the size of the Site and the surrounding habitat.

- 8.35 The data search included a request for details of protected and notable species of flora and fauna within 2.5 km of the central grid reference of the Site. In addition, a request was made for any non-statutory designated sites within 1 km of the Site boundary. Please note that a lack of up-to-date records does not confirm absence of a species from the area. Lack of records may simply be a result of a lack of protected species surveys being undertaken within the local area.

Field Survey

Preliminary Ecological Appraisal

- 8.36 A Preliminary Ecological Appraisal of the site was undertaken on 26th August 2021. The weather was warm and sunny with light winds. An updated Preliminary Ecological Appraisal was undertaken on 14th April 2022 to survey the updated boundary of the Site. The weather was overcast with light winds.
- 8.37 The walkover survey was undertaken to the standard methodology as detailed by the Joint Nature Conservation Committee (JNCC)^x. The assessment follows the methodology as per "Guidelines for Preliminary Ecological Appraisal"^{xi}.
- 8.38 A vegetation and habitat plan has been produced for the Site and the immediate surrounding area. The mapping is based on the JNCC Phase I Habitat Survey Methodology.
- 8.39 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the Wildlife and Countryside Act 1981 and species which are indicators of important and uncommon plant communities. All plant nomenclature follows Stace^{xii}.
- 8.40 Searches were carried out for the presence of invasive species, including those listed on the revised Wildlife and Countryside Act^{xiii} including but not limited to Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*).
- 8.41 A thorough search of the Site for signs of protected species of fauna was undertaken during the Site walkover. These searches considered the following:

- Suitability of any ponds to support notable amphibians, and the suitability of the Site's terrestrial habitats to support amphibians.
- Suitability of the Site to support reptiles by way of habitat structure and refuge piles, as well as links to the wider landscape.
- Signs of badgers, by way of setts, mammal paths, foraging signs or latrines to indicate usage of the Site by the species.
- Search of any watercourses for signs or suitability for water vole and otter by way of burrows, resting places, holts and foraging signs.
- Suitability of the Site to support roosting, foraging and commuting bats.
- Suitability of the Site to support notable bird species.
- Suitability of the Site to support notable invertebrates.
- Search of the Site for any invasive species.

Great Crested Newt eDNA Surveys

- 8.42 The eDNA Survey (Appendix 8.3) was undertaken on 7th July 2022 by Olivia Mckechnie BSc (Hons) QCIEEM who holds a Natural England Great Crested Newt Licence (2021-10014-CL08-GCN). The survey comprised a water sample extraction and lab analysis for GCN eDNA following the protocol set out in Appendix 5 of the DEFRA WC1067 Technical Advice Note. All waterbodies within 250 m of the Site were tested.

Biodiversity Net Gain Assessment

- 8.43 A Biodiversity Metric Calculation and Impact Assessment was undertaken to meet the following objectives:
- Identify percentage change in on-site habitat;
 - Identify the number of habitat units lost/gained on-site, and
 - Determine the need for a conservation offset payment or off-site habitat creation.
- 8.44 Department for Environment, Food and Rural Affairs' (DEFRA) Biodiversity Metric 3.1 2022 version was used to undertake the metric calculation. The metric was undertaken following guidance as detailed within The Biodiversity Metric 3.1 User Guide (Natural England, 2022), the Biodiversity Metric 3.1 Technical Supplement (Natural England, 2022) and the Biodiversity Metric 3.1 – Summary of Changes (2022).

Limitations and Assumptions

- 8.45 A Preliminary Ecological Appraisal does not constitute a full botanical survey. Instead, key species are identified to give a representative description of each habitat type. This survey was undertaken in August 2021, which is an appropriate time of year to undertake ecological surveys. However, some species of flora may have been missed or misidentified. It is possible that some invasive/non-native species could have been missed during the survey. Due to the habitats present on-site, this is not considered to be a major constraint. Areas of woodland and scrub were overgrown at the time of the survey and could not be thoroughly searched; therefore, signs of badgers may have been missed. These constraints have been taken into consideration.
- 8.46 The GCN eDNA surveys were undertaken seven days outside of the advised survey season. However, research undertaken to date has shown that great crested newt eDNA can be effective outside of the timings outlined by Natural England and there would be cause to extend the survey period^{xiv}. As such the survey timings is not thought to invalidate the survey results.

Baseline Conditions

Existing conditions

Wider Ecological Context/ Designated sites

- 8.47 The Site is located within the Impact Risk Zone of Mersey Estuary Site Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar, located approximately 6.8 km south of the Site boundary. The Mersey Estuary is designated as it is an internationally important site for wildfowl and consists of large areas of intertidal sand and mudflats. The Site also includes an area of reclaimed marshland, salt-marshes, brackish marshes and boulder clay cliffs with freshwater seepages.
- 8.48 The site is also easily accessible (by car and public transport) from the following designated sites:
- Sefton Coast SAC (17.5km northwest). The primary reasons for site designation include embryonic shifting dunes, shifting dunes along the shoreline with *Ammophila arenaria*, fixed coastal dunes with herbaceous vegetation, dunes with *Salix repens ssp. Argentea* and humid dune slacks.

- Ribble and Alt Estuaries SPA and Ramsar (17.5km northwest). The site consists of extensive areas of sand and mudflats and large areas of saltmarsh. Saltmarshes and coastal grazing marshes support high densities of wildfowl and these, together with intertidal sand and mudflats throughout, are used as high tide roosts. The site supports internationally important populations of waterbirds in winter, including swans, geese, ducks and waders. It is also of major importance during migration periods. The larger expanses of saltmarsh and areas of coastal grazing marsh support breeding birds, including large concentrations of gulls and terns. These seabirds feed both offshore and inland, outside the SPA. Several species of waterfowl (notably Pink-footed Goose *Anser brachyrhynchus*) utilise feeding areas on agricultural land outside the SPA boundary.

8.49 The following Local Wildlife Sites (LWS) and two Local Geological Sites (LGS) were located within the search area:

- Woodland, Sandfield Park LWS, located adjacent to the Site boundary.
- Lickers Lane Wood LWS, located approximately 100 m west of the Site.
- Parrens Covert LWS, located approximately 270 m north-east of the Site.
- Blundell Hills Golf Course LWS, located approximately 560 m south-east of the Site.
- Big Water and Big Water Wood, Halsnead LWS, located approximately 580 m south-west of the Site.
- The Old Wood, North LWS, located approximately 730 m south-west of the Site. This LWS contains an Ancient Woodland.
- Stadt Moers Q4 LWS, located approximately 820 m west of the Site.
- Stadt Moers Park LGS, located approximately 850 m north-west of the Site.
- The Old Wood, South LWS, located approximately 945 m south-west of the Site. This woodland contains an Ancient Woodland.
- Cronton Mineral Line, Windy Arbor, Whiston LGS, located approximately 1 km south-west of the Site.
- Tushingham's Pond, Stadt Moers Country Park LWS, located approximately 1.1 km west of the Site.
- Strettles Bog, Tarbock LWS, located approximately 1.1 km south-west.
- Stadt Moers Q2 and visitor centre LWS, located approximately 1.3 km north-west of the Site.
- Stadt Moers Q3 LWS, located approximately 1.5 km west of the Site.
- Coppice Lane Council Depot, Huyton LWS, located approximately 1.5 km south-west of the Site.

Habitats

8.50 The Site was found to comprise the following habitats with associated descriptions as follows:

- Broadleaved woodland - The majority of the northern area of the Site comprised a mature broadleaved woodland dominated by beech (*Fagus sylvatica*) and pedunculate oak (*Quercus robur*). Rowan (*Sorbus aucuparia*), silver birch (*Betula pendula*), sweet chestnut (*Castanea sativa*), holly (*Ilex aquifolium*), hazel (*Corylus avellana*) and ash (*Fraxinus excelsior*) were also present in small numbers. The understorey was dominated by rhododendron (*Rhododendron ponticum*) and bramble (*Rubus fruticosus agg.*).
- Dense Scrub - The dense scrub was situated on the edge of the broadleaved woodland and extended southwards away from the Site boundary. The scrub was dominated by bramble which showed signs of encroachment into the woodland and forming parts of the understorey. Common nettle (*Urtica dioica*) and rosebay willowherb (*Chamaenerion angustifolium*) was present in large numbers with ragwort (*Jacobaea vulgaris*), spear thistle (*Cirsium vulgare*) and redshank (*Persicaria maculosa*) also present.
- Semi-Improved Grassland - The majority of the southern area of the Site was made up of semi-improved grassland. The grassland was largely unmanaged with shorter mown areas used as footpaths by members of the public. Species present comprised redshank, ragwort, broad-leaved dock (*Rumex obtusifolius*), curled dock (*Rumex crispus*), rosebay willowherb, spear thistle (*Cirsium vulgare*), meadow foxtail (*Alopecurus pratensis*), perennial rye-grass (*Lolium perenne*), Yorkshire fog (*Holcus lanatus*), knapweed (*Centaurea nigra*), false oat-grass (*Arrhenatherum elatius*), michaelmas-daisy (*Aster schreberi*), greater plantain (*Plantago major*), corn spurrey (*Spergularia arvensis*), creeping buttercup (*Ranunculus repens*), meadow buttercup (*Ranunculus acris*), groundsel (*Senecio vulgaris*), common mouse-ear (*Cerastium fontanum*) and pineappleweed (*Matricaria discoidea*).
- Tall Ruderal - Patches of tall ruderal were present across the Site, largely associated with the boundary between the semi-improved grassland and arable and was also located close to areas of dense scrub. The tall ruderal were dominated by rosebay willowherb, with common nettle, ragwort, red campion (*Silene dioica*) and bush vetch (*Vicia sepium*) also present.
- Scattered Trees - Scattered trees were present across the Site ranging from young to semi-mature in age. The trees were largely present within the semi-improved grassland and around the Site boundary. Species present comprised elder (*Sambucus nigra*), grey willow (*Salix cinerea*), pedunculate oak, hawthorn (*Crataegus monogyna*) and plum species (*Prunus sp.*).
- Arable - A section of arable field was present along the southern and eastern Site boundary. The field was planted with a rye cover crop.

- Hardstanding - Lickers Lane, a hardstanding road with associated pavements formed the northern boundary of the Site.

Amphibians

- 8.51 Consultation with MBB identified a single record of Great Crested Newt (GCN) within the search area, located to the south of the Site, south of the M62. Consultation with MAGIC did not identify any great crested newt European Protected Species Licences within the 1 km search area. The closest licence was located approximately 3 km northwest of the Site, effective from 2017 to 2019 for the damage and destruction of a great crested newt resting place.
- 8.52 GCN eDNA surveys were undertaken by Cheshire Ecological Services Ltd 2017 and 2020 on all ponds within 250 m of the Site and across the wider Halsnead Garden Village North scheme. The eDNA test results all returned negative indicating that GCNs are absent within the Site. Updated GCN surveys were undertaken in July 2022 on two waterbodies with suitability to support GCN within 250 m of the Site. The results were also returned as negative.
- 8.53 Records of smooth newt (*Lissotriton vulgaris*), common frog (*Rana temporaria*) and common toad (*Bufo bufo*) were identified within the search area. The habitats on-site were assessed as being suitable for these species with the dense scrub, broadleaved woodland and tall ruderal providing suitable foraging and hibernation habitat and the waterbodies close to the Site providing suitable breeding habitat.

Bats

- 8.54 Numerous records of bats were located within the search area. Records included common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bat (*Myotis daubentonii*), whiskered/Brandt's (*Myotis mystacinus/brandti*), Nathusius's pipistrelle (*Pipistrellus nathusii*), noctule (*Nyctalus noctule*), brown long-eared bat (*Plecotus auratus*), and myotis species (*Myotis sp.*). Consultation with MAGIC identified one Natural England Bat Mitigation Licence within the search area, located approximately 1.7 km south-west of the Site, active between 2013 and 2014 for the destruction of a common pipistrelle, soprano pipistrelle, brown long-eared bat and natterer's bat (*Myotis nattereri*) non-breeding roost.
- 8.55 During the Site survey, an inspection of trees was undertaken as per guidance set out in Collins (2016), to assess the features for suitability for roosting bats. An arboricultural assessment has been undertaken on the trees within and adjacent to the Site (Ref: 80-571-R1-3 (submitted separately as part of the planning application)) and the tree numbering from this chapter is in

line with the report. Four trees were identified as having bat roosting potential, with Tree 38 and Tree 62 (T38 & T62) found to have High potential and Tree 25 and Tree 61 (T25 & T61) with Low potential.

Breeding Birds

- 8.56 Consultation with MBB identified numerous records of notable birds within the search area, including kingfisher (*Alcedo atthis*), little ringed plover (*Charadrius dubius*), corn bunting (*Emberiza calandra*), grey partridge (*Perdix perdix*), house martin (*Delichon urbicum*), house sparrow (*Passer domesticus*), lapwing (*Vanellus vanellus*), skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), starling (*Sturnus vulgaris*), swift (*Apus apus*), bullfinch (*Pyrrhula pyrrhula*), cuckoo (*Cuculus canorus*), dunnoek (*Prunella modularis*), grasshopper warbler (*Locustella naevia*), lesser redpoll (*Carduelis cabaret*), lesser spotted woodpecker (*Dendrocopos minor*), linnet (*Carduelis cannabina*), reed bunting (*Emberiza schoeniclus*), spotted flycatcher (*Muscicapa striata*), tree sparrow (*Passer montanus*), turtle dove (*Streptopelia turtur*), willow tit (*Poecila montanus*), yellow wagtail (*Montacilla flava*) and yellowhammer (*Emberiza citronella*).
- 8.57 During the site walkover, robin (*Erithacus rubecula*), blackbird (*Turdus merula*), great tit (*Parus major*), woodpigeon (*Columba palumbus*), buzzard (*Buteo buteo*), sparrowhawk (*Accipiter nisus*), grey wagtail (*Motacilla cinerea*), jay (*Garrulus glandarius*) and dunnoek were recorded.
- 8.58 The habitats within the Site are common within the local area and are anticipated to support passerine bird species within the broadleaved woodland, dense scrub and scattered trees.
- 8.59 The Site was assessed as having value for ground-nesting birds within the semi-improved grassland, due to the suitable sward length of the grassland providing optimal protection from predators. The arable field was also assessed as providing suitable habitat for ground nesting species including lapwing.

Brown Hare

- 8.60 Records of brown hare (*Lepus europaeus*) were identified within the search area associated with farmland off Windy Arbor Road. The section of arable field located along the southern and eastern Site boundaries was assessed as providing suitable habitat for brown hare due to providing the open habitat that the species favours.

Badgers

- 8.61 Numerous records of badger (*Meles meles*) were identified within the search area. A search for signs of badger was undertaken throughout the Site and within 30 m of the Site. No badger setts were recorded but evidence of badger in the form of snuffle holes was recorded on-site.
- 8.62 The wider landscape to the east and south of the site was assessed as having suitability for the species, due to the presence of broadleaved woodland and scrub. As such, badger may be present in the surrounding area.

Hedgehogs

- 8.63 Records of European hedgehog (*Erinaceus europaeus*) were located within the search area. The species is anticipated to be present within the Site, with the dense scrub, broadleaved woodland and tall ruderal providing optimal habitat for foraging, commuting and shelter.

Invertebrates

- 8.64 The data search identified numerous records of notable invertebrates within the search area including azure damselfly (*Coenagrion puella*), blue-tailed damselfly (*Ischnura elegans*), broad-bodied chaser (*Libellula depressa*), brown hawker (*Aeshna grandis*), migrant hawker (*Aeshna mixta*), southern hawker (*Aeshna cyanea*), wall (*Lasiommata megera*), alder leaf beetle (*Agelastica alni*) and buff ermine (*Spilarctia luteum*).
- 8.65 Due to the Site comprising lacking floristic diversity, notable invertebrates are not anticipated to be present on-site.

Future Baseline

- 8.66 There is no reason to expect major change in the ecological conditions within and adjacent to Site in the short to medium term in the absence of the Development. No planned changes in the land management would be anticipated.
- 8.67 Changes within the long term could be possible as a result of climate change, with the forecast of more frequent and prolonged summer droughts. This change could result in the dieback of areas of trees and scrub. These possible changes could have a negative impact on the species currently utilising the Site.

Likely Significant Effects

Construction Phase

Designated Sites

- 8.68 The Site is located within the Impact Risk Zone of Mersey Estuary SSSI, SPA and Ramsar, located approximately 6.8 km south of the Site boundary. Sefton Coast SAC and the Ribble and Alt Estuaries SPA and Ramsar is located 17.5km northwest of the site boundary.
- 8.69 Considering the reasons for its designation, it is deemed highly unlikely that the construction of the Development will have an impact on the designated sites due to the size of the Site, distance present between the Site and the SSSI/SPA Ramsars and the anthropogenic barriers, such as the built up areas of Liverpool and Widnes, between them. Furthermore, consultation with MAGIC identified that the Development does not meet the requirements that would justify further consultation with Natural England for the Development to proceed. Therefore, a **Negligible effect** is anticipated on the sites.
- 8.70 Woodland, Sandfield Park LWS is located adjacent to the Site and a further 12 LWS and two LGS lie within the wider search area, including Lickers Lane Woodland located 100m west of the Site. Two Ancient Woodlands lie in proximity to the Site, with the nearest being located approximately 730 m south-west of the Site.
- 8.71 Due to the presence of the LWSs and ancient woodland, there is the potential for the LWSs to be adversely affected during the proposed construction phase. Effects could be a result of damage to root protection areas during works, or pollution incidents. Effects could be both permanent and temporary depending on the level of disturbance. **Moderate adverse significant** effects are anticipated.

Habitats

- 8.72 A number of trees, dense scrub, semi-improved grassland, tall ruderal and arable land will require removal to facilitate construction works. Broadleaved woodland is listed as a BAP habitat, however only a very small areas of woodland will be removed to facilitate Development, which is restricted to 0.0038ha. As such permanent **Moderate adverse** effects are anticipated.
- 8.73 Flora of conservation interest: no records of locally valued flora of conservation interest have been reported during the numerous surveys undertaken on the Site to date. The majority of

the habitats to be affected by the Development comprise semi-improved grassland. As such effects on flora species are considered to be **Negligible**.

Amphibians

- 8.74 The Site may support small numbers of common amphibians within the broadleaved woodland, tall ruderal and dense scrub habitats on-site. As such construction works including vegetation clearance and remediation could result in the injuring or killing of common and widespread species of Amphibians. Permanent **Minor adverse** effects are therefore anticipated.

Bats

- 8.75 The Site was found to have value for foraging and roosting bats, with the broadleaved woodland and dense scrub providing suitable habitat for the species. It is understood that the majority of the broadleaved woodland will be retained with a small number of the associated trees requiring removal to facilitate Development. The removal of such a small number of trees would not significantly effect commuting and foraging behaviour of bats. The removal of scrub and grassland habitat within the Site will permanently reduce foraging opportunities for bat species. There is also potential for impacts on retained habitats in the form of lighting during construction which would be temporary. **Moderate adverse** effects are anticipated.

Breeding Birds

- 8.76 The Site was assessed as having value for passerine species within the dense scrub and broadleaved woodland. The Site was also assessed as being suitable for ground nesting birds within the semi-improved grassland and arable field. As such as a result of vegetation clearance and groundworks, nesting birds could be killed, injured or disturbed. Bird species present within the Site are anticipated to be common and widespread species. Therefore, temporary **Minor adverse** effects are anticipated.

Brown Hare

- 8.77 Brown hare could be present within the arable field margins, as such there is a small risk to killing and injuring young hare during ground works. Therefore, temporary **Minor adverse** effects are anticipated.

Badgers

- 8.78 No badger setts were located during the survey, though the habitats were identified as being suitable for the species. Badgers are highly mobile and can create new setts in a short period of time. In addition, badgers are anticipated to use the Site for foraging. As such during vegetation and groundworks there is a chance there could be disturbance to badgers. Therefore, temporary **Minor adverse** effects are anticipated.

Hedgehogs

- 8.79 The Site was assessed as having value for hedgehogs within the dense scrub and broadleaved woodland, and they are anticipated to utilise the Site. As such as a result of vegetation clearance and groundworks, hedgehogs could be killed, injured or disturbed during the construction phase. Therefore, temporary **Minor adverse** effects are anticipated.

Invertebrates

- 8.80 Common invertebrates are anticipated to utilise the Site, although no notable invertebrates are expected to be present. There will be minimal impacts on the woodland, as such effects are anticipated to be **Negligible**.

Invasive species

- 8.81 Rhododendron is present within the adjacent areas of woodland to the north of the Site, and within the Site boundary. The species is listed on Schedule 9 of the Wildlife & Countryside Act. No works are proposed within the woodland, and the habitat will be retained. It is considered unlikely that construction works at the Site would result in the spread of this species at the Site and as such the effects are anticipated to be **Negligible**.

Operational Phase

Designated sites

- 8.82 The Site is located within the Impact Risk Zone of Mersey Estuary SSSI, SPA and Ramsar, located approximately 6.8 km south of the Site boundary. Sefton Coast SAC and the Ribble and Alt Estuaries SPA and Ramsar is also located 17.5km northwest of the site boundary. During consultation with KMBC, recreational pressure from residential development has been identified as a Likely Significant Effect alone and in-combination within the Liverpool City Region. Recreational pressure is recognised in the formal statutory Conservation Advice Packages and

Site Improvement Plans 5&6 as Medium-High risk to qualifying features of the European sites. As such a permanent **Major adverse** effect is anticipated.

Habitats

- 8.83 The woodland habitats located adjacent the north of the Site are due to be retained. These areas of woodland will likely be regularly used by the new residents. It is likely that recreational pressure will increase when the Site is operational. Additional post-Development human interference may also include tipping of garden waste and in doing so may spread non-native horticultural species. Permanent **Minor adverse** effects are anticipated.

Amphibians

- 8.84 During occupation of the Development, drainage features, such as gully pots and hazards including vehicles moving around the Site could result in the capture and death of common amphibians. However, it is likely that the majority of common amphibians will be located in natural habitats away from developed and residential areas where hazards such as gully pots and moving vehicles will be present. Permanent **Minor adverse** effects are anticipated.

Bats

- 8.85 Effects on foraging and commuting bats from the occupation of the Site are considered to be associated with lighting effects. In the absence of suitably designed lighting near retained habitats, bats could discourage from utilising areas of the Site. As such, permanent **Moderate adverse** effects are anticipated.

Breeding Birds

- 8.86 During the occupational stage of the Development, bird species on-site could be subject to predation by domestic cats. During the breeding season this could cause the failure of a nest site as a worst-case scenario. Due to the retention of the majority of the woodland within the Site, it is anticipated there will be many areas of suitable habitat for these species to nest, forage and roost during occupation. As such, permanent **Minor adverse** effects are anticipated.

Brown Hare

- 8.87 As only a small area of arable land will be removed to facilitate the Development, and brown hare are not likely to reside within the Site, effects on brown hare are anticipated to be **Negligible**.

Badgers

- 8.88 The Development has retained areas of suitable habitat for badger including the area of broadleaved woodland within the north of the Site. Badgers potentially present within and adjacent to the Site have the potential to be affected by its occupation due to the increased risk of road casualties, disturbance from public and dog presence, and possible increase in persecution. As no badger setts were identified within or adjacent to the Site only permanent **Minor adverse** effects are anticipated.

Hedgehogs

- 8.89 The hedgehogs present within and adjacent to the Site have the potential to be affected by its occupation due to the increased risk of road casualties. In the absence of mitigation, permanent **Minor adverse** effects are anticipated.

Invertebrates

- 8.90 During the occupation of the Development, it is unlikely that invertebrates will be affected. As such, effects on invertebrates are considered to be **Negligible**.

Invasive species

- 8.91 Rhododendron is present within the adjacent areas of woodland to the north of the Site, and within the site boundary. The species is listed on Schedule 9 of the Wildlife & Countryside Act. It is considered unlikely that occupation at the Site would result in the spread of this species at the Site and as such the effects are anticipated to be **Negligible**.

Mitigation Measures

Construction Phase

Designated Sites

- 8.92 Due to the presence of the LWSs and ancient woodland, there is the potential for the LWSs to be adversely affected by the construction works. Therefore, it is recommended that the LWSs are retained and protected with a minimum 5 m buffer maintained throughout the works. In addition, all site operatives will be given a Toolbox Talk on the designated sites and its legal protection. Site operatives will be required to sign the Toolbox Talk in order to confirm they have understood the details provided and contact details of the ecologist will be provided.
- 8.93 The following Precautionary Working Methods will be outlined within a Construction and Ecological Management Plan (CEMP) (to be secured via planning condition) and should be adhered to for all works on-site:
- A Toolbox Talk will be given to all contractors on-site by the Ecological Clerk of Work (ECoW) and will be signed. During the talk, contractors will be made aware of the designated site and its ecological importance.
 - No works will be undertaken within 5 m of the designated site and no machinery will be tracked in this buffer area.
 - All excavations will be backfilled at the end of each day to ensure wildlife that may use the designated site do not become trapped in the excavations.
 - All site machinery and materials will be appropriately stored to avoid harm to wildlife.
 - Plant is to be turned off when not in use.
 - Measures to prevent pollutants from entering ground and surface water is standard practice. These measures should be underwritten by spill management plan to contain any accidental spillage within any part of the operational area.
 - During night hours, no lighting is to be located towards the designated site to ensure no wildlife are deterred from using it.
 - A 'Site Tidy' protocol is to be put in place on-site. All litter is to be appropriately controlled, whilst on-site materials are to be adequately stored over-night to ensure no harm to protected species.

Habitats

- 8.94 The habitats being retained will be protected throughout the construction works with fencing installed to preserve these habitats and protect the root protection zones associated with the retained areas of broadleaved woodland and scattered trees.

Amphibians

- 8.95 During the construction phase, a Toolbox Talk will be given prior to the commencement of works detailing the likely presence of amphibians within the Site. If amphibians are encountered, they will be moved by hand away from the construction activities to areas of retained habitat such as the broadleaved woodland in the northern area of the Site.

Bats

- 8.96 A Construction Lighting Plan will be produced detailing proposed bat friendly lighting throughout construction works, and areas to be maintained as dark corridors. No lighting will be directed at areas of retained habitat during night time hours. It is likely this will be a condition of the approved planning consent.

Breeding Birds

- 8.97 Where possible vegetation will be removed outside of the nesting bird season (March–September inclusive). Should any vegetation require removal within the nesting bird season a suitably qualified ecologist will inspect the area no more than 24 hours prior to the removal. Should any nests, or nests in construction be located, a suitable stand-off distance should be maintained until the young have fledged. The ecologist will advise on suitable stand off and provide a toolbox talk to all site contractors regarding their working limits and legal implications.

Brown Hare

- 8.98 A pre-commencement check for young hare, which may have been left in the arable field by mothers after the breeding season (February to September), will be undertaken. If any young hare are present, they will be left until they move on their own accord. Works can then proceed.

Badgers

- 8.99 Badgers are highly mobile and can create new setts in a short period of time. It is recommended that an updated site walkover prior to construction of the Development is carried out to identify any new badger setts. If a badger sett is located, a stand-off distance may be required as well as precautionary working methods. If the sett requires closure, a Natural England Badger Licence would be required. Please note that badger licences can only be obtained between July and November each year to avoid potential impact on pregnant females.
- 8.100 The following precautionary working methods will be adhered to during construction phase to ensure that no badgers within the local area are impacted by the Development:
- All site operatives will be inducted to the presence of the species and their working limits and legal responsibilities.
 - All site operatives will be inducted as to identifying potential badger setts and should be vigilant if they suspect they locate a new set during works and inform the project ecologist immediately.
 - All site machinery and materials will be appropriately stored to avoid harm to the species, notably between July and November each year when extra care is needed to avoid potential impacts on pregnant females.

Hedgehogs

- 8.101 During site clearance, the scrub and debris associated with the broadleaved woodland and dense scrub, should be demolished by hand (where removal is required) to ensure no sheltering hedgehogs are impacted by the works. If hedgehogs are located, they should be carefully moved by hand to an area outside of construction workings.

Invertebrates

- 8.102 No mitigation is proposed as it is considered to be unlikely that invertebrates will be affected.

Invasive species

- 8.103 Rhododendron is present within the adjacent areas of woodland to the north of the Site, and within the Site boundary. The species will be removed to enhance the woodland following best practice guidelines.

Operational Phase

Designated Sites

- 8.104 Information will be provided within sales packs, informing residents of the importance of the designated sites, the responsible user code and the location of Suitable Alternative Natural Green Spaces (SANGS). This measure is anticipated to mitigate for potential increased visitor pressure on the designated sites.
- 8.105 As part of the wider Halsnead Garden Village Masterplan, an area of green space will be provided which will provide alternative green spaces for the additional residents associated with the Development and the wider Masterplan area.

Habitats

- 8.106 A Habitat Management Plan (HMP) will be produced which will be implemented during the operational phase. The HMP will detail the management of the retained and proposed areas of habitat within the Site which can be secured through a planning condition. The HMP will detail any protected species constraints within the site, which should be considered during management.
- 8.107 Implementation of the landscape plan will ensure habitats are created within the Site post construction. Habitats will be implemented within an area of Public Open Space (POS) along the northern Site boundary, and will include tree planting, native shrub planting and wildflower meadow. These areas will provide foraging, commuting and shelter habitat for a wide range of species including amphibians, badgers, bats, birds and hedgehogs.

Amphibians

- 8.108 A hibernaculum will be installed within the Site, providing suitable refuge for amphibians. The location of the hibernaculum will be determined by the project ecologist based on the most suitable location within close proximity to waterbodies located to the north of the Site boundary.

Bats

- 8.109 The proposed lighting plan will consider the habitats of highest importance and maintain retained habitats as dark areas. Lighting is to be pre-fixed on the proposed buildings, located near retained habitats or proposed habitats, to minimise the impact of lighting. Lighting will

follow the protocols outlined in the Institute for Lighting Engineers document "Guidance for the Reduction of Obtrusive Lighting"^{xv} and BCT's "Bats and Artificial Lighting in the UK"^{xvi} to minimise disturbance and sky-glow off site.

- 8.110 Bat boxes will be erected on retained mature trees around the edge of the Site. At least three bat boxes will be integrated into the proposed on-site buildings to provide additional roosting opportunities within the Site.

Breeding Birds

- 8.111 A number of nest boxes will be erected onto retained mature trees on-site. In addition, a number of bird boxes will be integrated into the proposed buildings on-site. This will provide additional nesting opportunities for the species group.
- 8.112 Habitats proposed by the landscape plans will also provide additional nesting opportunities and provide a foraging resource within the tree planting and native shrub planting.

Badgers

- 8.113 A lighting plan will be produced to ensure the areas of retained habitat will be maintained as dark corridors.
- 8.114 A 20mph speed limit will be implemented within the Site to reduce the likelihood of road casualties.

Hedgehogs

- 8.115 Post-development, a series of hedgehog houses will be installed throughout the Site to enhance the Site's value for the species. In addition, gaps in residential fences will be provided to allow the species to commute though the Site.
- 8.116 A 20mph speed limit will be implemented within the Site to reduce the likelihood of road casualties.

Invertebrates

- 8.117 An insect hotel will be provided within the Site, at the edge of the retained woodland. This will provide opportunities for common invertebrate species.

Invasive species

- 8.118 A HMP will be produced (to be secured via planning condition) which will detail the control of invasive species if they colonise within the Site.

Residual Effects

Construction Phase

Designated sites

- 8.119 Based on the mitigation detailed within the above section, no residual effects are anticipated on the designated sites during the construction phase of works. As such, the residual effect will be **negligible**.

Habitats

- 8.120 Large areas of semi-improved grassland, dense scrub, tall ruderal and arable land will require removal to facilitate the geo environmental remediation and groundworks within the Site. The remaining habitats which are largely restricted to the area of broadleaved woodland to the north will be retained and protected during construction.
- 8.121 During construction, the habitats proposed in the Landscape plans will be created and monitored to ensure that they establish. As habitats will be removed, and new habitats being planted will not be established, there will be a transition period in which the habitats on-site will be of lower value than the habitats present prior to construction. The newly created habitats will eventually establish and meet their target condition however, this will not come into effect until post operation. As a result, there will be a **Minor adverse** residual effect on habitats during the construction phase.

Amphibians

- 8.122 Following the additional mitigation set out above, no amphibians are anticipated to be harmed or killed as a result of the construction works. There will be some loss of foraging habitat due to the loss of dense scrub, tall ruderal and semi-improved grassland. As a result, there will be a **Minor adverse** residual effect on habitats during the construction phase.

Bats

- 8.123 Following the additional mitigation set out above, no bats are anticipated to be affected by the construction works. There will be a minor loss of foraging habitat within the Site with the removal of dense scrub, tall ruderal and semi-improved grassland. The areas of broadleaved woodland to the north are being retained which are of higher value to bats than the habitats being lost.
- 8.124 The landscape plans propose tree planting, native shrub planting, proposed wildflower meadow and amenity grassland areas which are to be provided within an area of POS along the northern Site boundary. The habitats will be created during construction and provide additional foraging and commuting habitat for bats.
- 8.125 During the construction phase there is anticipated to be a **Minor adverse** residual effect on commuting bats.

Breeding Birds

- 8.126 Nesting birds are known to be present within the Site. Where possible any vegetation removal will be undertaken outside of nesting bird season, or nests will be buffered until any young have fledged as detailed above. As habitats will be removed and landscaping not immediately provided there will be a loss in nesting and foraging opportunities for the species group. As such the impacts during construction are anticipated to have a **Minor adverse** residual effect on breeding birds.

Brown Hare

- 8.127 Due to the limited likelihood of brown hare being present within the Site, and the limited arable land being removed to facilitate construction, the residual effects on brown hare are anticipated to be **Negligible**.

Badgers

- 8.128 No badger setts were identified within or adjacent to the Site although badgers are anticipated to be present within the local area. Based on the mitigation detailed above the residual construction effects on badger are anticipated to be **Negligible**.

Hedgehogs

- 8.129 Hedgehogs are likely to be present within and adjacent to the Site. There will be a temporary reduction in available foraging habitat, although higher value habitats are present within close proximity to the Site. As such the residual construction effects on badger are anticipated to be **Negligible**.

Invertebrates

- 8.130 No impacts on notable invertebrates are anticipated, as such residual construction effects will be **Negligible**.

Invasive species

- 8.131 As invasive species, rhododendron, will be removed from the Site, there is a **Minor beneficial** residual construction effect anticipated.

Operational Phase

Designated sites

- 8.132 Based on the mitigation detailed and successful implementation, residual effects on designated sites are anticipated to be **Negligible**.

Habitats

- 8.133 A Habitat Management Plan will be produced to ensure effective habitat management of the existing and proposed habitats throughout occupation.
- 8.134 Based on the results of the biodiversity metric calculations, there will be a loss of 17.33 habitat units. Therefore, the overall quality and condition of the habitats within the site during operation will be of lower value than the habitats within the site prior to demolition and construction. This is likely to therefore result in a **Moderate Adverse** Effect.

Amphibians

- 8.135 Hibernacula will be created within the Site, no breeding habitats will be lost as a result of Development. Habitats implemented as detailed within the landscape plans will provide

foraging opportunities for the species group. Therefore, residual effects are anticipated to be **Negligible**.

Bats

- 8.136 Bat roosting features will be provided. With reference to the mitigation provided, residual effects on roosting bats are anticipated to have a **Minor beneficial** effect as no roosts will be lost as a result of the Development.
- 8.137 While the Development design and embedded mitigation sought to retain the highest value habitat for foraging and commuting bats, namely the woodland to the north, there remains some possibility of an adverse effect on foraging bats due to the overall reduction of foraging habitat. Based on the mitigation detailed above, a **Minor adverse** residual effect is anticipated on foraging bats.

Breeding Birds

- 8.138 The increased presence of the public, and dogs/ cats during the occupation of the Development could have negative effects on nesting birds through disturbance and predation. Areas of habitat, including broadleaved woodland will be retained as part of the scheme design and embedded mitigation. Additional mitigation will include the provision of nesting boxes and landscape planting which will provide additional nesting and foraging resources. Due to the retention of habitats of highest value and proposed mitigation, the residual effects on nesting birds are anticipated to be **Negligible**.

Brown Hare

- 8.139 Due to the limited likelihood of brown hare being present within the Site, and the limited arable land being removed as a result of the Development, the residual effects on brown hare are anticipated to be **Negligible**.

Badgers

- 8.140 No badger setts were located on or adjacent to the Site, although badgers are anticipated to be present within the local area. The mitigation detailed above will reduce the effects on badger however a **Minor adverse** residual effect is still anticipated due to the increase in pressure from resident/ dog walkers and reduction of sett building opportunities at a Site level.

Hedgehogs

- 8.141 In addition to the mitigation outlined above, the embedded mitigation includes the retention of the woodland to the north of the Site, maintaining suitable habitats for the species. As such the residual effect on hedgehogs is anticipated to be **Negligible**.

Invertebrates

- 8.142 No impacts on notable invertebrates are anticipated, as such residual effects will be **Negligible**.

Invasive species

- 8.143 As invasive species will be monitored and controlled throughout occupation, the residual effect is considered to be **Minor beneficial**.

Cumulative Effects

- 8.144 Eight schemes have been identified which have the potential to cause cumulative effects, including the whole SUE development site. These are outlined in Table 2.5 in Chapter 2: EIA Methodology.

Construction Phase

Designated sites

- 8.145 **Negligible** cumulative effects on designated sites are anticipated during the construction phase. Standard working practices including pollution prevention measures at the construction phase will ensure the designated sites remain unaffected.

Habitats

- 8.146 The BAP lowland meadow grassland at the proposed development site North of the M62 Motorway totals approximately 2.5 ha. A total of 1.5 ha of this BAP / Priority grassland habitat is due to be lost. Compensation will be delivered on site via the retention of the remaining 1Ha of BAP grassland. This area will be managed to improve the condition of the grassland from 'Poor' to 'Good'. Provided that appropriate on-site compensation is delivered, development of the site will not contribute to any additive effects of development of these areas of BAP / Priority lowland meadow grassland at any other cumulative schemes.

- 8.147 Areas of grassland and open mosaic habitat are present at the former Cronton Colliery. The outline masterplan plans show that some of these areas will be lost, thus increasing the amount of BAP/Priority habitat that will be lost as a result of the cumulative schemes identified. Areas of broadleaved woodland are present at Former Saunder's Nursery, the majority of these areas will be retained and protected, although 0.3 ha of woodland is anticipated to be lost. Native species and wildlife friendly management is also proposed within the Site. Invasive species and noxious weeds will also be removed and managed. Due to the loss of areas of BAP Priority habitat, the Development could contribute towards cumulative effects of habitat loss. Permanent Moderate adverse effects would therefore be anticipated in the absence of mitigation.
- 8.148 The creation of a new Country Park to the south and east of this area is considered to have potential to contribute considerably towards compensating for the loss of these habitats. As the priority habitats within the Site will be retained, **Negligible** cumulative effects from the wider schemes are anticipated.
- 8.149 The Country Park Development will comprise landscaping, habitat creation, including wetland creation. Some areas of habitat will be impacted during earthworks. Areas of reedbed/swamp will be impacted. However, habitats will be restored and enhanced as part of the Country Park. The biodiversity metric for the Development shows there will be a loss of 17.33 habitat units. However, it is anticipated that the wider Garden Village Masterplan will include a long-term management Habitat Management Plan. The Development will offset habitat loss within the wider SUE. As such **Negligible** effects have been assumed on a precautionary basis.
- 8.150 Within the Fox's Bank scheme, the key existing habitats of value, including broad-leaved semi-natural woodland and ponds will be retained. Approximately 6.37 ha of green infrastructure are proposed as part of the Development. As such cumulative effects on habitats are anticipated to be **Negligible**.
- 8.151 The construction of the multi-use path will require the removal of 68 low or poor quality trees, and 4 moderate quality trees, with the majority of the trees being retained and the habitat corridor maintained. As part of the application, tree replacement planting will be provided and is conditioned as part of the Development. As such cumulative effects on habitats are anticipated to be **Negligible**.
- 8.152 The reserved matters application of the mixed use development could not be assessed in terms of cumulative impacts on habitats, as no ecology survey/ baseline habitat assessment is available on the planning portal.

- 8.153 The entire SUE development site details the retention of areas of broadleaved woodland and ancient woodland. Mitigation will be provided where tree removal is required with tailored made management regimes. A strong commitment to green infrastructure has been made which will include integrated buffer zones around woodland groups to enhance habitat value. Additional commitments have been made including incorporation, enhancement and creation of notable habitat, management and creation of new habitats, management to contain the spread of invasive species and minimising impacts on retained habitats and watercourses within the wider area. As such, **Negligible** cumulative impacts are anticipated.

Amphibians

- 8.154 Common amphibians are likely to be present within cumulative schemes identified, due to the suitable habitat available. If the above mitigation measures are adhered to, **Negligible** cumulative effects are anticipated.

Bats

- 8.155 The habitats within the cumulative schemes identified also provide valuable foraging and commuting habitat for bats. The Developments' aim to maintain green corridors and Priority habitat such as woodland which will maintain commuting routes and foraging habitat for bats. Although as foraging habitats will be reduced there may be some **Minor adverse** cumulative effects on foraging bats.

Breeding Birds

- 8.156 The habitats within the additional schemes noted above have potential to support nesting birds. It is considered that cumulative schemes will implement mitigation similar to those outlined above during the construction of phase of the Development. Therefore, **Negligible** cumulative effects are anticipated.

Brown Hare

- 8.157 The cumulative schemes do not identify brown hare to be present within or adjacent to each site. As such, **Negligible** cumulative effects on brown hare are anticipated.

Badgers

- 8.158 Current proposals within the cumulative schemes indicate the majority of the areas of woodland to be retained, and connectivity maintained through the wider area. There will likely be a loss

of foraging habitat, however given the existing mosaic of grassland, arable farmland and woodland within the wider area, this is not considered likely to have a significant impact upon badgers. Provided appropriate protection measures and mitigation is delivered during the construction of the cumulative schemes, **Negligible** cumulative effects on badger are anticipated.

Hedgehogs

- 8.159 Current cumulative scheme proposals indicate the majority of the areas of woodland to be retained, and connectivity maintained through the wider area. If the mitigation outlined during the construction phase is adhered to, **Negligible** cumulative effects on hedgehogs are anticipated.

Invertebrates

- 8.160 The cumulative schemes identified have not identified the presence of notable invertebrates on-site. As such, **Negligible** cumulative effects on invertebrates are anticipated.

Operational Phase

Designated Sites

- 8.161 The Site is located within the Impact Risk Zone of Mersey Estuary SSSI, SPA and Ramsar, located approximately 6.8 km south of the Site boundary. Sefton Coast SAC and Ribble and Alt Estuaries SPA, Ramsar has also been identified as being easily accessible by car and public transport from the site. During consultation with KMBC, recreational pressure from residential development has been identified as a Likely Significant Effect alone and in-combination within the Liverpool City Region. Recreational pressure is recognised in the formal statutory Conservation Advice Packages and Site Improvement Plans 5&6 as Medium-High risk to qualifying features of the European sites. As part of the wider Halsnead Garden Village Masterplan and SUE, an area of green space will be provided which will provide alternative green spaces for the additional residents associated with the Development and the cumulative schemes identified. The commercial schemes will not have any additional recreational pressure due to no increase in residents. As such if the mitigation is adhered to, **Negligible** cumulative effects on the Mersey Estuary, Sefton Coast and Ribble and Alt Estuaries are anticipated.
- 8.162 A number of LWS were present within and adjacent to the Site boundary. Providing appropriate protection measures and mitigation is delivered during the construction of the cumulative schemes, there will be **Negligible** cumulative effects on the LWSs.

Habitats

- 8.163 During the operational phase, cumulative effects on habitats are not anticipated. Landscaping will be provided as part of the aforementioned schemes, which will be maintained throughout operation. Therefore **Negligible** effects are anticipated.

Amphibians

- 8.164 During the operational phase of the cumulative schemes identified, should mitigation measures be followed, there are unlikely to be cumulative effects on Amphibians, adverse or beneficial **Negligible** cumulative effects are therefore anticipated.

Bats

- 8.165 It is likely that bat boxes will be provided within the aforementioned schemes in order to increase roosting opportunities for bats. It is also understood that corridors will be maintained throughout the wider Halsnead Garden Village Masterplan and SUE to facilitate commuting bats. As such cumulative effects are anticipated to be **Negligible**.

Breeding Birds

- 8.166 The wider cumulative schemes identified have potential to support nesting birds. It is likely additional bird boxes will be provided within the aforementioned schemes to provide additional opportunities for breeding birds along with landscape planting and retention of the majority of areas of woodland. During operation **Negligible** cumulative effects on breeding birds are anticipated.

Brown Hare

- 8.167 During occupation it is unlikely that residents would use the surrounding arable fields (private land) which are the highest value for brown hare, for recreation, as such cumulative effects on brown hare are anticipated to be **Negligible**.

Badgers

- 8.168 The area most likely to support badger setts, the broadleaved woodland, will be retained throughout occupation, and the majority is anticipated to be retained within the cumulative schemes identified. However, impacts are anticipated due to the increase in pressure from

residents/ dog walkers and reduction of sett building opportunities at a site level. As such, **Minor adverse** cumulative effects may be noted regarding badgers.

Hedgehogs

- 8.169 The area's most likely to support hedgehogs, the broadleaved woodland, will be retained throughout occupation and the majority will also be retained throughout the identified cumulative schemes. As such cumulative effects on the local hedgehog population are likely to be **Negligible**.

Invertebrates

- 8.170 Notable invertebrates have not been identified within the cumulative schemes, as such cumulative effects are anticipated to be **Negligible**.

Summary

- 8.171 To date a number of surveys have been undertaken following standard industry guidance, including a Preliminary Ecological Appraisal, and Biodiversity Net Gain Calculation and Report. The Preliminary Ecological Appraisal identified the need for updated GCN surveys within ponds located within 250 m of the Site, the results of which were returned negative.
- 8.172 During the Preliminary Ecological Appraisal, the Site was found to comprise areas of broadleaved woodland, dense scrub, semi-improved grassland, tall ruderal, scattered trees and arable land. The Site was found to have suitability to support amphibians, bats, breeding birds, brown hare, badgers, hedgehogs and common invertebrates. During the survey, invasive plant species, rhododendron, was located within the woodland. The desk study undertaken identified that the Site is located within the Impact Risk Zone of Mersey Estuary SSSI, SPA and Ramsar, located approximately 6.8 km south of the Site boundary. Sefton Coast SAC and the Ribble and Alt Estuaries SPA and Ramsar is located 17.5km northwest of the site boundary and easily accessible by car and public transport. In addition, a number of Local Wildlife Sites were identified within the zone of influence.
- 8.173 Likely significant effects during construction in the absence of mitigation have been identified on LWSs, habitats, amphibians, bats, breeding birds, brown hare, badgers, hedgehogs, invertebrates and invasive species. Mitigation is proposed during the construction phase, however there will still be minor adverse residual effects for habitats, amphibians, bats and breeding birds. Minor beneficial effects will be seen for invasive species due to the removal of rhododendron within the Site.

8.174 During operation, effects in the absence of mitigation are anticipated on the Mersey Estuary SSSI, SPA and Ramsar, habitats, amphibians, bats, breeding birds, badgers and hedgehogs. As a result of the implementation of mitigation, adverse residual effects will remain on habitats, foraging bats, and badgers. A minor beneficial residual effect will be seen on roosting bats and invasive species.

8.175 Table 8.2 contains a summary of the likely significant effects of the Development.

Table 8.2: Table of Significance – Biodiversity

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/Negligible)
				I	UK	E	R	C	B	L	
Construction											
Designated Sites (Mersey Estuary/ Sefton Coast/ Ribble and Alt Estuaries)	N/A	Negligible	N/A	X							Negligible
Designated Sites (LWSs)	Permanent	Moderate Adverse	Precautionary working methods including a toolbox talk						X		Negligible
Habitats	Permanent	Moderate Adverse	Protection of retained habitats						X		Minor Adverse
Amphibians	Permanent	Minor Adverse	Toolbox Talk prior to commencement of works and removal of amphibians from working area.							X	Minor Adverse
Bats	Temporary	Moderate Adverse	Construction Light Planning					X			Minor Adverse
Breeding Birds	Temporary	Minor Adverse	Nesting bird checks undertaken during nesting season							X	Minor Adverse
Brown Hare	Temporary	Minor Adverse	A pre-commenced check for young							X	Negligible
Badgers	Temporary	Minor Adverse	Precautionary working methods.							X	Negligible
Hedgehogs	Temporary	Minor Adverse	Hand demolition of suitable hedgehog habitat.							X	Negligible
Invertebrates	N/A	Negligible	N/A							X	Negligible
Invasive species	N/A	Negligible	Rhododendron to be removed to enhance the woodland following best practice guidelines.						X		Minor Beneficial
Completed Development											
Designated Sites	Permanent	Major Adverse	Information Packs will be delivered to local residence As part of the wider Halsnead Garden Village Masterplan, an area of green space will be provided	X							Negligible

Habitats	Permanent	Minor Adverse	A Habitat Management plan will be produced to secure implemented habitat creation/ retention. The landscape plans will be implemented within the site to provide areas of tree planting, wildflower meadow and native shrub planting.						X		Moderate Adverse
Amphibians	Permanent	Minor Adverse	A Hibernaculum will be installed within the site.							X	Negligible
Bats	Permanent	Moderate Adverse	A lighting plans will be produced, and Bat Boxes will be installed.					X			Roosting bats - Minor beneficial Foraging bats – minor adverse impacts
Breeding Birds	Permanent	Minor Adverse	Nesting boxes will be installed within the site. Landscape plans will provide suitable nesting habitat including scattered trees and native shrub planting.							X	Negligible
Brown Hare	N/A	Negligible	N/A							X	Negligible
Badgers	Permanent	Minor Adverse	A lighting plan will be produced. A 20mph speed limit will be set within the site.							X	Minor Adverse
Hedgehogs	Permanent	Minor Adverse	A number of Hedgehog houses will be installed. Gaps in boundary fences are proposed. A 20mph speed limit will be set within the Site.							X	Negligible
Invertebrates	N/A	Negligible	An insect hotel will be provided within the Site.							X	Negligible
Invasive species	N/A	Negligible	A habitat management plan will be produced detailing eradication of invasive species if identified within the site.						X		Minor Beneficial
Cumulative Effects											
<i>Construction</i>											
Designated sites	N/A	Negligible	N/A	X							Negligible
Habitats	Permanent	Moderate Adverse	Creation of Country Park.						X		Negligible
Amphibians	N/A	Negligible	N/A							X	Negligible

Bats	Permanent	Minor Adverse	Habitat creation					X			Minor Adverse on foraging bats.
Breeding Birds	Temporary	Minor Adverse	Nesting bird checks undertaken during nesting season							X	Negligible
Brown Hare	N/A	Negligible	N/A							X	Negligible
Badgers	Temporary	Minor Adverse	Precautionary working methods.							X	Negligible
Hedgehogs	Temporary	Minor Adverse	Hand demolition of suitable hedgehog habitat.							X	Negligible
Invertebrates	N/A	Negligible	N/A							X	Negligible
<i>Completed Development</i>											
Designated Sites	Permanent	Major Adverse	Creation of alternative green space	X							Negligible
Habitats	Permanent	Minor Adverse	Landscaping plans implemented						X		Negligible
Amphibians	Permanent	Minor Adverse	Habitat creation and enhancement.							X	Negligible
Bats	Permanent	Moderate Adverse	Bat boxes provided, commuting routes maintained, implementation of landscape plans to provide foraging habitat.					X			Negligible
Breeding Birds	Permanent	Minor Adverse	Bird boxes provided, implementation of landscape plans.							X	Negligible
Brown Hare	N/A	Negligible	N/A							X	Negligible
Badgers	Permanent	Minor Adverse	N/A							X	Minor Adverse
Hedgehogs	Permanent	Minor Adverse	Habitat creation and enhancement.							X	Negligible
Invertebrates	N/A	Negligible	N/A							X	Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

- ⁱ The National Planning Policy Framework (NPPF) Ministry of Housing, Communities & Local Government. (July 2021)
- ⁱⁱ UK BAP Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (Natural Environment and Rural Communities Act 2006, 2006)
- ⁱⁱⁱ (Natural Environment and Rural Communities Act 2006, 2006).
- ^{iv} Knowsley Local Plan Core Strategy (2016)
- ^v (The Conservation of Habitats and Species Regulations 2017, 2017), as amended (the Habitats Regulations)
- ^{vi} (The Conservation of Habitats and Species Regulations 2010, 2010)
- ^{vii} (Wildlife and Countryside Act 1981, 1981), as amended (WCA)
- ^{viii} CIEEM. (2018). Guidelines for Ecological Impact Assessment in the UK and Ireland Retrieved from Collins, J. (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd Edition ed.). London: The Bat Conservation Trust,.
- ^{ix} KNOWSLEY Halshead Garden Village Masterplan Supplementary Planning Document June 2017
- ^x Joint Nature Conservation Committee (JNCC) Handbook for Phase 1 Habitat Survey (JNCC, 2010).
- ^{xi} CIEEM. (2017). Guidelines for Preliminary Ecological Appraisal.
- ^{xii} Stace, Clive. (2019). New Flora of the British Isles (Fourth Edition ed.): Cambridge University Press.
- ^{xiii} (April 2010) Schedule 9 of the Wildlife and Countryside Act (Wildlife and Countryside Act 1981, 1981) (as amended)
- ^{xiv} Rees, H. C., Baker, C. A., Gardener, D. S. , Maddison, B. , & Gough, K. (2017). The detection of great crested newts year round via environmental DNA analysis. BioMed Central, 10(327). doi:10.1186/s13104-017-2657-y
- ^{xv} Engineers, The Institution of Lighting. (2005). Guidance Notes for the Reduction of Obtrusive Light. In. JNCC. (2010). Handbook for Phase 1 habitat survey [Press release]
- ^{xvi} Trust, Bat Conservation. (2018). Bats and artificial lighting in the UK.

9.0 BUILT HERITAGE

Introduction

- 9.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of designated and non-designated built heritage assets. This chapter is supported by an Historic Environment Desk-Based Assessment (HEDBA) produced in June 2022 (refer to Appendix 9.1).

Policy Context

National Planning Policy Framework

- 9.2 The key policies affecting how heritage assets should be treated within the planning process is given within the National Planning Policy Framework (NPPF) (MHCLG 2021), specifically Section 16 entitled 'Conserving and enhancing the historic environment'.
- 9.3 Overall, the objectives of Section 16 of the NPPF can be summarised as seeking the:
- Delivery of sustainable development
 - Understanding the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment, and
 - Conservation of England's heritage assets in a manner appropriate to their significance.
- 9.4 Section 16 of the NPPF recognises that intelligently managed change may sometimes be necessary if heritage assets are to be maintained for the long term. Paragraph 194 states that planning decisions should be based on the significance of the heritage asset, and that the level of detail supplied by an applicant should be proportionate to the importance of the asset and should be no more than sufficient to review the potential impact of the proposal upon the significance of that asset.
- 9.5 A 'Heritage Asset' is defined in Annex 2 of the NPPF as: *'A building, monument, site, place, area or landscape identified as having a degree of significance meriting consideration in planning decisions, because of its heritage interest. It includes designated heritage assets and assets identified by the local planning authority (including local listing)'.*

- 9.6 A Designated Heritage Asset comprises a World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area.
- 9.7 Significance is defined as: *'The value of a heritage asset to this and future generations because of its heritage interest. This interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting. For World Heritage Sites, the cultural value described within each site's Statement of Outstanding Universal Value forms part of its significance.'*

Planning Practice Guidanceⁱⁱ

- 9.8 The Planning Practice Guidance (MHCLG/DLUHC 2019) is a web-based resource which is to be used in conjunction with the NPPF. It is aimed at planning professionals and prescribes best practice within the planning sector. The relevant section is entitled *'Conserving and enhancing the historic environment'*. The guidance given in this section sets out the best practice to applying government policy in the NPPF. It provides an interpretation for each of the interests assigned to heritage assets in understanding its significance; archaeological, architectural, and artistic, and historic.

Local Planning Policy

Knowsley Local Plan Core Strategy

- 9.9 The statutory development plan applicable to this assessment comprises the Knowsley Local Plan Core Strategy (KMBC 2016)ⁱⁱⁱ, which sets out the strategic framework for the growth and development of Knowsley up to 2028 and beyond. Policy CS20 – 'Managing the Borough's Historic Environment' deals with heritage assets and archaeology, the details of which are laid out below.

1) Development proposals in Knowsley should preserve or enhance the borough's historic and architectural assets, including Listed Buildings, Conservation Areas, Historic Parks and Gardens and archaeological remains, together with other local areas, buildings and structures of historic importance. The Council will:

- a) Require preservation of the local distinctiveness and character of historic assets through sensitive design of new development, including appropriate integration with their setting and immediate landscape;*
- b) Prevent demolition and/or development which would result in substantial harm or the loss of a designated historic asset or its*

- setting, unless the proposal would result in substantial public benefits which clearly outweigh the harm or loss;*
- c) Where a development proposal will result in less than substantial harm to a designated heritage asset or its setting, assess such harm against the benefits of the proposal;*
 - d) Facilitate long term conservation and enhancement of local assets and areas of historic importance, including through the preparation of Conservation Area Management Plans.*
- 2) The re-use of vacant or underused historic assets will be encouraged, with favourable consideration given, where appropriate, to proposals which will:*
- a) Enable a use for a purpose sympathetic to its conservation;*
 - b) Retain or introduce public access; and*
 - c) Enhance the importance of the asset for local tourism, leisure or the economy.*
- 3) Development proposals on sites which include, or are considered to have the potential to include, heritage assets or comprising archaeological interest, should be accompanied by a heritage impact statement.*
- 4) Locally important historic assets which are not subject to statutory designation will be identified in a local list and will be afforded consideration in the decision making process.*

National Legislation

- 9.10 The importance of heritage assets is recognised in legislation, as well as national and local policy. Certain built features that are deemed to be of particular importance and significance are given legal protection through The Planning (Listed Buildings and Conservation Area) Act 1990^{iv}. This act is the primary legislative instrument addressing the treatment of listed buildings and Conservation Areas through the planning process.
- 9.11 Section 66 of the 1990 Act states that '*...in considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses*'.

Assessment Methodology

Professional Guidance

- 9.12 This chapter has been informed by a baseline HEDBA (Appendix 9.1) and produced in line with the guidelines set out within the Merseyside Environmental Advisory Service's (MEAS)

Guidance on Archaeological Desk-Based Assessments (MEAS 2019)^v, in addition to best practice and professional judgement.

9.13 The Chartered Institute for Archaeologists (CIfA) Standard and Guidance for Historic Environment Desk-based Assessment (CIfA 2020)^{vi} provides guidelines and recommendations for best practice in undertaking archaeological desk-based research and assessment.

9.14 The following Historic England (previously English Heritage) publications:

- Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment (EH 2008)^{vii}, which offers guidance about all aspects of England's historic environment, in addition to describing four ranges of heritage value an asset may hold: aesthetic, communal, historic, and evidential.
- Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment (HE 2015)^{viii}, which provides information to assist stakeholders in implementing historic environment policy in the NPPF and PPG, in addition to outlining processes for the assembly and analysis of relevant information relation to heritage assets potentially affected by a proposed development.
- Historic Environment Good Practice Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets Setting (HE 2017)^{ix}, which sets out guidance on managing change within the settings of heritage assets, including archaeological remains and historic buildings, sites, areas and landscapes.
- Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12 (HE 2019)^x, brings together all of the above guidance in an analysis of an appropriate approach for applicants for heritage and other consents in providing an understanding of the significance of heritage assets in line with NPPF.

Baseline Information Sources

9.15 The following information sources were utilised during this assessment:

- All records held by the Merseyside Historic Environment Record (HER) within a 1km radius off-set from the Site boundary;
- The Historic England National Heritage List for England (NHLE)^{xi} for information regarding designated heritage assets within the 1km radius;
- Historic England's Aerial Photo Explorer^{xii};
- The Environment Agency website for LiDAR data published on the Department for Environment, Food & Rural Affairs (DEFRA) Data Service Platform^{xiii}.

- Historic maps and plans, which have been reproduced within Appendix 9.1; and
- Two site visits carried out on 10th May 2022 and 15th June 2022, both undertaken in sunny, warm and dry conditions.

Scoping and Consultation

- 9.16 A pre-application response was provided by Knowsley Metropolitan Borough Council (KMBC), which helped to inform the EIA Scoping Report submitted to KMBC on 29th June 2022. This is discussed in more detail within Chapter 2: EIA Methodology. This report (Appendix 2.1) along with the Scoping Opinion provided by KMBC on 18th August 2022 has confirmed the proposed scope of and methodology for the production of the HEDBA (Appendix 9.1) and this Built Heritage chapter.

Assessment Criteria

Definition and Assessment of Significance

- 9.17 NPPF defines significance as the value of a heritage asset to this and future generations because of its heritage interest. The interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset's physical presence, but also from its setting (MHCLG 2021)ⁱ.
- 9.18 In order to understand the nature, extent, and level of significance, Managing Significance in Decision Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2 (HE 2015)^{viii} advocates considering the four types of heritage value an asset may hold, as identified in Conservation Principles (EH 2008)^{vii}: aesthetic, communal, historic and evidential, as defined below.
- Aesthetic value: derives from the ways in which people draw sensory and intellectual stimulation from a place.
 - Communal value: derives from the meanings of a place for the people who relate to it, or for whom it figures in their collective experience or memory. Communal values are closely bound up with historical (particularly associative) and aesthetic values but tend to have additional and specific aspects.
 - Historical value: derives from the ways in which people, events and aspects of life can be connected through a place to the present. It tends to be illustrative or associative.
 - Evidential value: derives from the potential of a place to yield evidence about past human activity.

9.19 Statements of Heritage Significance. Analysing Significance in Heritage Assets. Historic England Advice Note 12 (HE 2019, 16)* adopts the values terminology, or interest, for assessing the significance of a heritage asset, as identified within both the NPPF and PPG.

- **Archaeological Interest:** the potential of an asset to yield evidence of past human activity that could be revealed through future investigation. Archaeological interest includes above-ground structures, as well as earthworks and buried or submerged remains.
- **Architectural and Artistic Interest:** derives from a contemporary appreciation of an asset's aesthetics. Architectural interest is an interest in design, construction, craftsmanship and decoration of buildings and structures. Artistic interest can include the use, representation or influence of historic places or buildings in artwork. It can also include the skill and emotional impact of works of art that are part of heritage assets or assets in their own right.
- **Historic Interest:** the way in which an asset can illustrate the story of past events, people and aspects of life (illustrative value, or interest). It can be said to hold communal value when associated with the identity of a community.

9.20 These values or interests encompass the criteria that Historic England are obliged to consider when statutorily designating heritage assets. There are no single defining criteria that dictates the overall asset significance; each asset has to be evaluated against the range of criteria listed above on a case-by-case basis. These values are not intended to be restrictive but are identified in order to help establish a method for thinking systematically and consistently about the heritage values that can be ascribed to a place and contribute to a heritage asset's significance.

9.21 The relative contribution of the heritage values to the significance of the asset(s) are graded as either very high, high, medium, low, neutral or negligible, and are determined using the following criteria set out within Table 9.1.

Table 9.1: Criteria for Determining Heritage Significance

Heritage Significance	Description
Very High	World Heritage Sites
High	Scheduled Monuments Grade I and II* Listed Buildings Grade I and II* Registered Historic Parks and Gardens
Medium	Grade II Listed Buildings Grade II Registered Historic Parks and Gardens Conservation Areas
Low	Locally listed buildings Non-designated archaeological sites of local value, and/or potential to contribute to local research objectives
Negligible	Heritage assets with very little or no surviving research value

- 9.22 The methodology for assessing the magnitude of impacts upon identified heritage assets are determined using the criteria set out within Table 9.2.

Table 9.2: Methodology for Assessing Magnitude

Magnitude of Impact	Criteria for assessing impact
Major	Total loss or major/substantial alteration to key elements/features of the baseline (pre-Development) conditions such that the post Development character/composition/attributes will be fundamentally changed.
Moderate	Loss or alteration to one or more key elements/features of the baseline conditions such that post Development character/composition/attributes of the baseline will be materially changed.
Minor	A minor shift away from baseline conditions. Change arising from the loss/alteration will be discernible/detectable but not material. The underlying character/composition/attributes of the baseline condition will be similar to the pre-Development circumstances/situation.
Negligible	Very little change from baseline conditions. Change barely distinguishable, approximating to a 'no change' situation.

- 9.23 The sensitivity of a receptor (Table 9.3) is based on the relative importance of the receptor and the ability of the receptor to adapt to or absorb the change.

Table 9.3: Methodology for Determining Impact Sensitivity

Sensitivity	Examples of receptor
High	The receptor/resource has little ability to absorb change without fundamentally altering its present character, or is of international or national importance.
Moderate	The receptor/resource has moderate capacity of absorb change without significantly altering its present character, or is of high importance.
Low	The receptor/resource is tolerant of change without detriment to its character, is of low or local importance.

- 9.24 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the impacts can be beneficial or adverse. The Effect Significance Matrix is set out in Table 9.4.

Table 9.4: Effect Significance Matrix

Magnitude	Sensitivity		
	High	Moderate	Low
Major	Major Adverse/Beneficial	Major – Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial
Moderate	Major – Moderate Adverse/Beneficial	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial
Minor	Moderate – Minor Adverse/Beneficial	Minor Adverse/Beneficial	Minor Adverse/Beneficial - Negligible
Negligible	Negligible	Negligible	Negligible

- 9.25 The significance of effect is determined through the weighing of the value, or significance of the asset, and the magnitude of impact. For the purposes of this assessment, effects of Moderate, Moderate-Major, or Major are considered to be significant in EIA terms.

Limitations and Assumptions

- 9.26 Due to construction works being carried out within other areas of the former Halsnead Park, and accessibility issues with one of the heritage assets, it was not possible to visit all the designated and non-designated heritage assets discussed within this chapter. These issues have been identified below and have been assessed based on available sources and professional judgement.

Baseline Conditions

- 9.27 The baseline conditions are discussed in detail in the HEDBA (Appendix 9.1). In summary, the HEDBA has identified nine Grade II listed buildings within 1km of the Site, none of which are located within the Site. Several of these listed structures relate to the former Halsnead Estate, including the former North-East Lodge of Halsnead Park (NHLE 1253249) and adjacent gate piers (NHLE 1253429), and Old Halsnead (NHLE 1261787). The remaining structures primarily comprise vernacular and agricultural buildings, apart from the Anglican Church of St Nicholas (NHLE 1261894).
- 9.28 There are 87 non-designated heritage assets recorded within 1km of the Site, the great majority of which date to the post-medieval and modern periods. One of these assets fall within or bounding the Site: Halsnead Park (MME15147).
- 9.29 The pre-application response and subsequent EIA Scoping Opinion issued by KMBC (Appendix 2.2) noted there were a number of designated and non-designated heritage assets located adjacent to or within the vicinity of the Site that may have their settings impacted upon by the Development. In addition to the nine listed buildings within the 1km of the Site, KMBC has also identified the potential that the Grade II listed Carr House Farmhouse (NHLE 1253441) and The Paddocks and The Stables (NHLE 1253505) 1.2km south-west of the Site may be impacted. However, site visits carried out as part of the HEDBA have confirmed that not all of these identified heritage assets (receptors) need to be included within the assessment and have therefore been 'scoped out', as fully outlined within the HEDBA (Appendix 9.1).
- 9.30 The EIA Scoping Opinion also highlighted that these assets are historically associated with Halsnead Park Estate, which has been confirmed through documentary research (see

Appendix 9.1). However, an examination of available mapping has indicated that historically, views between these designated farmhouses and outbuildings and the Site would not have existed, with many of these structures located within or immediately adjacent woodland, with additional plantation clumps within the estate, such as Round Clump west of Big Water, and the extensive tree coverage surrounding the former Halsnead Hall site, limiting intervisibility around the estate parkland.

- 9.31 The Site visits confirmed that at present, there is no intervisibility between the Site and seven of the designated heritage assets, due to intervening built environment, topography and vegetation. Specifically, these are the Barn at Snape Gate (NHLE 1253250), Dean's Farmhouse (NHLE 1253345), Carr House Farmhouse (NHLE 1253441), The Paddocks and The Stables (NHLE 1253505), Old Halsnead (NHLE 1261787), Range of Farm Buildings in L-shaped Plan (NHLE 1261893), and Ropers Bridge (NHLE 1392301). Therefore, due to the overall lack of historic and present intervisibility between the assets and the Site, as well as using professional judgement, these designated structures have been scoped out of further assessment as it is considered there will be no harm to their significance in terms of the heritage values which are embodied in their physical presence.
- 9.32 Site visits also confirmed that two of the non-designated assets, walled garden and outbuilding and ponds and streams have no intervisibility between them and the study site due to intervening topography and vegetation.
- 9.33 The HEDBA (Appendix 9.1) has indicated the settings of two of the Grade II listed buildings and the non-designated Halsnead Park Landscape, which in itself contains a number of non-designated heritage assets, are considered sensitive to the Development's construction and operational phase effects. The locations of all the heritage assets identified within Table 9.5 below are illustrated on Figure 9.1.

Table 9.5: Identified Designated and Non-designated Heritage assets

NHLE Ref.	HER Ref.	Description
1253249	DME100 MME6862	North East Lodge to Halsnead Park <i>GII LB</i> 19 th century Lodge marking the eastern entrance into Halsnead Park, leading to Halsnead Hall.
1253429	DME106 MME6861	Gate Piers beside North East Lodge to Halsnead Park <i>GII LB</i> Set of seven 19 th century Gate Piers marking the eastern entrance into Halsnead Park.
-	MME15147	Halsnead Park Possible medieval parkland later emparked in the late-17 th century by Thomas Willis. Estate and parkland sold in lots in 1929.

NHLE Ref.	HER Ref.	Description
-	MME15681	Halsnead Park boundary walls Possibly dates to the late-17 th century with the emparkment of Halsnead Park. Many sections have been altered or removed.
-	MME6856	Halsnead Hall (site of) A possible late-17 th century structure commissioned by Thomas Willis. Altered several times throughout the 18 th century. Demolished in 1932.
-	MME13083 MME6857	Prince's House Farm (site of) and extant outbuildings Site of former post-medieval farm associated with the Halsnead Estate. Whilst the main house has been demolished, a barn and outbuildings survive.
-	MME18748	Church Lodge 19 th century Lodge marking the western entrance into Halsnead Park, leading to Prince's House and Halsnead Hall.

Grade II Listed North East Lodge to Halsnead Park (NHLE 1253429)

- 9.34 This designated heritage asset is located c. 330m east of the Site and is one of two gate lodges which formed the main entrances into Halsnead Park, with the second being the non-designated Church Lodge (MME18748) at the junction of Windy Arbor Road and Main Drive in the west. The North-East Lodge is located behind the former boundary wall to Halsnead Park (MME15681), with the northern and western boundaries of this asset formed by the former Halsnead Park, and the southern by a hedge-lined garden. The Historic England listing description (HE 2022c)^{xiv} dates this lodge to the Georgian period: however, neither lodge appears on historic maps until the late-19th century.
- 9.35 This single-storey structure is constructed of red ashlar with rusticated quoins and a pyramidal slate roof. Originally built with a square plan, this lodge was extended to the south in the late-20th century. The northern and western elevations are the two most prominent of this structure, with the former possessing a central round-headed doorway with stone round-arched porch and two-light windows with round-headed lights and labels present on either side. The western elevation has a central projecting bay with gable, below which a shield with a crest (possibly the Willis family crest) is mounted. Much like the northern elevation, this bay is bounded to either side by a pair of two-light windows and labels. Based on the above, it is considered that this asset derives significance from its *historic interest*, primarily its *illustrative historical* and *aesthetic values*, resulting in it possessing both *design value* and *architectural interest*.
- 9.36 This Grade II listed asset also possesses significance due to its *group value*, resulting from its *historic interest* and relationship with the Halsnead Estate. This includes the designated Gate Piers adjacent the Lodge (NHLE 1253429), the non-designated boundary walls

(MME15681) and former parkland (MME15147), including the former Halsnead Hall (MME6856), eastern driveway, and Church Lodge (MME18748).

- 9.37 It is also considered that this asset, in addition to all the assets which once formed part of the Halsnead Estate, possess *associative historical value* due to their relationship with the Willis family. Thomas Willis, a merchant from Liverpool, purchasing the estate in 1684 and likely commissioned the construction of Halsnead Hall (MME6856) as his main residence. This Hall was partially rebuilt in 1727 by Daniel Willis, a descendant of Thomas Willis. The Willis family owned and resided within the Halsnead property for almost 250 years.
- 9.38 Being a Grade II listed structure, this asset is of *medium significance*. It is considered that the setting contributes to the lodge's *illustrative historical, aesthetic, design and group values*, in addition to its *historic and architectural interest*, but does not contribute to this asset's *associative historical value*.

Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.39 These Grade II listed piers are also located c. 330m east of the Site, north of the North East Lodge (NHLE 1253429), and provide the eastern entrance from Fox's Bank Lane into the Halsnead Estate. Whilst it is possible these assets were constructed at the same time the eastern entrance into the estate was established, that is by the early-19th century, it is more likely they are contemporary with the construction of the North East Lodge itself, with both structures creating a more formal entry into the former parkland.
- 9.40 The Historic England listing description (HE 2022d)^{xv} records the following about this designated asset: '*Four rusticated gate piers, square, with cornice and ball, flanked by convex wall of rusticated stone of the same height – two of the piers being beside the lodge, the others being on the roadside.*'
- 9.41 There is an inconsistency between the listing description and the asset as it currently exists. The listing description (HE 2022d)^{xv} records four piers when there are actually seven square piers, topped with cornice and ball: two at roadside connected by convex wall to two wall end piers. Within the centre of the northern convex wall is an additional pier. The wall end piers are connected by decorative iron fences to a final set of piers, between which extends a pair of iron gates leading into the parkland. One set of gates have been inset into the piers themselves, suggesting the hinges (and possibly gates themselves) are original. A second set have been attached more recently to the eastern faces of these two piers. Based on the design of the seven piers, it is likely that they were all constructed at the same time and, as a result,

they all possess *historic interest*, due to their *illustrative historical* and *aesthetic values*, resulting in them possessing *design value* and *architectural interest*.

- 9.42 It is also considered that, much like the North-East Lodge, all of these piers possess *associative historical value*, due to their affiliation with the Willis family. However, most of the significance of these assets appear to derive from their *group value*, resulting from their *historic interest* with the Halsnead Estate, specifically their direct visual relationship to the Grade II listed Lodge to the south, their direct physical relationship with the former park boundary walls, and their wider relationship with the former Halsnead Park, including the former Halsnead Hall and eastern driveway.
- 9.43 Being a Grade II listed structure, this asset is of *medium significance*. Much as with the North East Lodge, it is considered that setting contributes to the pier's *illustrative historical*, *aesthetic*, *design* and *group values*, in addition to their *historic* and *architectural interest*, but does not contribute to the assets *associative historical value*.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.44 Halsnead Park (MME15147) likely originated as a smaller, medieval park, possibly centred within the south-western part of the known post-medieval parkland boundaries. A parkland certainly was present by the late-17th century when Thomas Willis purchased Halsnead for use as a hunting estate. A number of structures were once located within the park itself, including Halsnead Hall (MME6856) and Prince's House (MME13083), each which possessed a number of outbuildings (MME6857) in addition to walled gardens. Across the former parkland were numerous landscape features, including driveways, plantations and water features, many of which still survive in some form. The part of former parkland within which the Site is located appears to have itself remained devoid of any features of interest, though surviving elements of the former Halsnead Park landscape have been identified adjacent the Site, including a curved belt of woodland along the northern and north-eastern boundary of the Site, within which is an L-shaped pond. Historically, these built heritage and landscape features would have possessed a high degree of *historic interest* from their *group* and *aesthetic values*, as combined, they formed a tranquil, enclosed parkland, designed to highlighted views of the aesthetically pleasing (e.g. woodland, ponds), and shielding from sight the more practical (e.g. farm buildings, colliery works west of the park) from its primary building, Halsnead Hall.
- 9.45 Halsnead Hall (MME6856) was once the focal point of this former parkland landscape, and its demolition has removed much of the original purpose of the associated elements of the estate. The establishment of a permanent caravan site across the former site of the Hall and its

associated outbuildings and garden has additionally diminished the context of the understanding and appreciation of the wider group of landscape features. Furthermore, the construction of the M62 severed the southernmost part from the wider former parkland, further reducing the coherence of the landscape, and affecting the former parkland with a constant source of noise. Cronton Colliery, established south of Old Halsnead in the early-20th century, operated within the former parkland until 1984, with the structures, machinery, and spoil heap associated with the works dominating the southern part of the park, south of the M62. Whilst these industrial works are no longer present, the spoil heap levelled, and the entire site subject to schemes of reclamation and tree planting in the late-20th century, the landscape within this area of park has been permanently altered.

- 9.46 Despite the changes noted above, Halsnead Park still possesses, in part, a distinct enclosed character, with large sections of the original park boundary wall (MME15681) still present around the perimeter (largely along its eastern and northern extents), with the missing areas of walling replaced by later brick or more modern metal fencing. Within the former parkland, the eastern and western entrances, composed of stone gate piers and lodges (NHLE 1253429; 1253249; MME18748), are still extant. The associated driveways are also still present, with the western drive known as Main Drive, the primary access into the former parkland today, providing access to the extant Princes House Farm outbuildings (MME6857) and static caravan site. The eastern driveway is unpaved and not utilised for wider access into the former parkland.
- 9.47 The former parkland originally possessed a great number of trees, present in belts internally along the boundary walls, and scattered in plantation 'clumps' both around the park and around water features, with the more open aspects of the landscape interspersed with additional plantings. Whilst many of these areas of planting have been removed since the early-mid 20th century, where they do survive, they contribute to the surviving elements of the former parkland's original naturalistic design.
- 9.48 The former Halsnead Park landscape as a whole possesses significance, due largely to its *historic interest* resulting from the *group* and *aesthetic values* that it possesses. This is largely due to the survival of elements of built heritage and the landscape features within the former parkland boundary. However, the demolition of Halsnead Hall in 1932 removed much of the original purpose of these associated elements, resulting in these assets, especially the built heritage assets, possessing more interest individually rather than as a result of their *group value*. Furthermore, the later 20th century use of the former parkland for wider agricultural use, and smaller areas of designed nursery plantings, as well as the construction of a static caravan park across the former site of Halsnead Hall, has additionally diminished the significance the former parkland possesses as a result of its *historic interest*, *group* and

aesthetic values, as these changes have effectively physically and visually eroded the former parkland setting. It is therefore considered that the former Halsnead Park landscape, as it exists today, is of *low significance*.

Future Baseline

- 9.49 The baseline would not be expected to change should the Development not proceed, and the Site remain in its current, undeveloped state.

Likely Significant Effects

Construction Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.50 These heritage assets will experience impact to their setting during the construction phase of the Development, largely as a result of their proximity (c. 330m east) to the Site. Historically, the setting of both assets comprised the largely rural, wooded setting of Halsnead Park, with the majority of the lodge (apart from its pyramidal roof) hidden behind the park walls. The only possible clear views of both assets would have been from within the former parkland, specifically from along the tree-lined eastern driveway which led to Halsnead Hall. The vistas traveling eastwards along this drive would have highlighted views of the western and northern elevations of the lodge, and the gated eastern park entrance with piers set amongst a dense belt of woodland. This woodland north, west and south of these assets restricted views not only from this area across the wider former parkland, but views of these assets from outside the alignment of the tree-line driveway. These views of both the lodge and adjacent piers, which highlights their *illustrative historical, aesthetic, and design values*, as well as their *architectural interest*, do not included the Site within their extent, and it is therefore considered that the construction phase of the Development will have a negligible impact upon this element of both assets' significance. Furthermore, it is also considered that the construction phase of the Development will have a negligible impact upon the significance these assets possess due to their *group value*, that is their visual and physical relationship specifically with one another, as this relationship is best highlighted from within the former parkland itself.
- 9.51 Both assets derive significance due to their *group value*, resulting from their *historic interest* with the wider Halsnead Estate. Since the sale of the estate in 1929, a number of changes has been carried out within the former parkland that have permanently altered its setting.

The demolition of Halsnead Hall in 1932 removed the original purpose of both the lodge and adjacent piers: as a home for a porter, controlling access into the estate itself via the driveway. This primary function of the driveway has also been made irrelevant, with this feature now more of a secondary pathway into the former parkland. This overall loss of purpose has slightly reduced the *group value* of these asset's significance.

- 9.52 The landscape across the former parkland itself has also been altered, originally a space with extensive belts of plantations, both internally along the boundary walls and surrounding the main complexes (Halsnead Hall, Old Halsnead and Prince's House), with the more open aspects of the landscape peppered with additional trees and water features (e.g. the ornamental lake 'Big Water'). Current Site conditions show that much of the woodland surrounding both the lodge and piers has been removed, as have the trees along the former eastern driveway. This loss of vegetation has laid bare the immediate setting of both the lodge and piers to the more open nature of the inner park, making these receptors more sensitive to change. The 20th century suburban expansion has also extended into the former parkland, with the establishment of a permanent caravan site across the former location of Halsnead Hall. These changes to the overall former parkland have further diminished the *historic interest* and *group value* these assets possess.
- 9.53 It is considered that the construction phase of the Development will have a minor impact upon the more significant relationships these assets retain due to their *group value*, that is their visual and physical relationship with the non-designated elements of the former Halsnead landscape. Present views of these assets, which highlight their *historic interest* (e.g. the relationship with other elements of the former Halsnead landscape), specifically the non-designated Halsnead Park and boundary walls, are best appreciated from Fox's Bank Lane to the east. The sweeping curved walls and taller piers form an impressive entrance into the former parkland. These views include both the earlier, original walling to the north and south of the entrance, and the later 19th-century walling likely contemporaneous with the more prominent eastern entrance, though these views only include the roof of the lodge. The longer and wider views of this relationship provide a backdrop of open, arable former parkland interspersed with small clumps of woodland plantation, remnants of the extensive plantations which were once more plentiful across the Site. Prior to the sale and alteration of Halsnead Park during the 20th century, these longer and wider views would have historically not existed, due to the presence of dense woodland surrounding the lodge and piers, and alongside the inner boundary wall, which would have shortened the views to those immediately adjacent the eastern entrance. Furthermore, these more recent longer views have already been adversely affected by the static caravan park to the west, providing a more suburbanised backdrop within a historically wooded setting.

- 9.54 The listed buildings would be permanently affected by the Development within the Site during the construction phase, as there will be a tangible change to one aspect of their setting, resulting in a minor impact upon their *group value*. It is considered that the overall significance of these effects would be **negligible to minor adverse**.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.55 The non-designated Halsnead Park landscape will experience impact to its setting during the construction phase of the Development. Halsnead Park is a non-designated heritage asset (MME15147), and its landscape incorporates a number of extant designated and non-designated heritage assets, former sites of notable structures, and ephemeral designed elements within the remains of a former parkland estate. Surviving elements of the Halsnead Park landscape have been identified within the Halsnead Garden Village Masterplan Supplementary Planning Document (SPD) (KMBC 2017)^{xvi}. Whilst no landscape features have been identified within the Site, this document does note the curved belt of woodland and pond along the northern and north-eastern boundary of the Site as the closest surviving historic feature. Further afield is the former alignment of the eastern drive, the remnants of Fox Clump woodland, c. 145m and c. 230m south of the Site respectively, as well as the curved boundary east of Prince's House Farm, c. 310m west of the Site. The present trees scattered across the Site are more recent additions, likely late-20th century plantings.
- 9.56 The construction phase of the Development will have no direct physical impacts upon the former boundary wall to Halsnead Park (MME15147), as proposed pedestrianised and vehicular access will be located where there are no upstanding remains of the boundary wall. Much of the upstanding wall north of the Site is concealed behind existing woodland, shielded from view, and therefore, there will be no visual impacts to this asset.
- 9.57 Church Lodge (MME18748), and the adjacent stone gate piers and flanking walls are located c. 630m west of the Site. The Site walkovers have shown that there is no intervisibility between these assets and the Site, and historically, views between these two areas would not have existed, as both the eastern and western lodges were designed and situated to be hidden from longer views within the former parkland itself.
- 9.58 Main Drive was one of two primary routes into Halsnead Park, with Church Lodge and its associated piers forming the western entrance. This driveway extended east/south-east into the park itself, with its main function providing access to Prince's House and Halsnead Hall. Whilst both houses are no longer present and only several outbuildings surviving to present day, the drive still follows the same alignment as that depicted on early-19th century plans, extending from Church Lodge in the west to the east/south-east, although it now terminates

at the static caravan site, which is situated across the former footprint of Halsnead Hall. Whilst there is some intervisibility from along the southern extent of this drive with the Site, this intervisibility does not impact upon this features function as an access road, nor does this intervisibility impact upon the significance this asset once derived due to its relationship with the former Halsnead Hall and Prince's House Farm.

- 9.59 The Site visits have shown that there is some intervisibility between the Site and the surviving above-ground elements of the former Prince's House Farm complex (MME13083; MME6857), though these views are slightly softened by a curving boundary lined intermittently with trees, to the east of the extant structures. The Site visits have shown there is no intervisibility between the Site and the former location of Halsnead Hall (MME6856), due to its location within the centre of a static caravan park.
- 9.60 Due to the Site's location within the northernmost part of the former parkland, within an area that appears to have largely lacked any significant landscape features (with the exception of the woodland and hidden pond to the north and north-east), it is considered that this area is largely outside any significant views or vistas that may have historically existed, or still exist. These views include key visual relationships between the historic routes extending into the former parkland from the designated eastern and non-designated western lodges and associated gate piers towards the primary (Halsnead Hall) and secondary (Princes House Farm) structures within the former parkland. All of these assets are located to the east, south and west of the Site.
- 9.61 The Halsnead Park Landscape would be affected by the Development within the Site during the construction phase, as there will be a permanent change within it. It is considered that the significance of these effects would be **minor adverse**.

Operational Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.62 The Development would be in the background of the views of these heritage assets from Fox's Bank Lane, which would result in the slight suburbanisation of these views, as well as the introduction of additional visual impacts from local traffic movement within the Site. However, historically these longer views did not exist and this current slight intervisibility is the product of mid-late 20th century landscaping changes within the former Halsnead boundary. Therefore, magnitude of impact for this set of assets that are of *medium heritage significance* (as laid out within Table 9.1) are considered to be **negligible to minor adverse**.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.63 The Development would result in the further expansion of the suburbanisation into the former parkland as a whole, as well as the introduction of additional visual impacts from local traffic movement within the Site. However, due to the Site's location within the northernmost part of the former parkland, within an area that appears to have largely lacked any significant landscape features (with the exception of the woodland and hidden pond to the north and north-east of the Site), it is considered that this area is largely outside any significant views or vistas that may have historically existed, or still exist, within the former parkland landscape. These views include key visual relationships between the historic routes extending into the former parkland from the designated eastern and non-designated western lodges and associated gate piers towards the primary (Halsnead Hall) and secondary (Princes House Farm) structures within the former parkland. All of these assets are located to the east, south and west of the Site.
- 9.64 Therefore, magnitude of impact for this former parkland landscape, which is an asset of *low heritage significance* (as laid out within Table 9.1) is considered to be **minor adverse**.

Embedded Mitigation Measures

Construction Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.65 Potential effects to the settings of the North East Lodge and adjacent Gate Piers will be lessened by embedded landscaping mitigation within the design such as tree and hedge planting.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.66 Whilst no significant landscape features have been identified within the Site itself, surviving elements of the former Halsnead Park landscape have been identified within the Halsnead Garden Village Masterplan SPD^{xvi} within the immediate vicinity of the Site. This includes the curved belt of woodland along the northern and north-eastern boundary of the Site, in addition to the alignment of the former eastern drive, and the remnants of Fox Clump woodland, c. 145m and c. 230m south of the Site respectively, as well as the curved boundary east of Prince's House Farm, c. 310m west of the Site. Both the Development plan and

Masterplan SPD^{xvi} indicate this area of woodland will to be retained as part of the wider Halsnead Garden Village Development, as are the landscape elements to the south and west. The retention of these landscape features will aid in softening the overall visual impact of the Development upon the wider former park landscape.

- 9.67 Potential effects to the setting of the former park landscape will be slightly lessened by embedded landscaping mitigation within the design such as tree and hedge planting.

Operational Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.68 As with the construction phase, potential effects to the settings of the North East Lodge and adjacent Gate Piers during the operational phase will be lessened by embedded mitigation within the design such as tree and hedge planting. Maturing of the landscaping provision embedded within the design will further soften the intervisibility between these heritage assets and the southern part of the Site.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.69 The Development within the Site would result in the further expansion of the suburbanisation into the former parkland as a whole, as well as the introduction of additional visual impacts from local traffic movement within the Site. However, due to the Site's location within the northernmost part of the former parkland, within an area that appears to have largely lacked any significant landscape features (with the exception of the woodland and hidden pond bounding the northern and north-eastern part of the Site), it is considered that this area is largely outside any significant views or vistas that may have historically existed, or still exist, within the former parkland landscape. These views include key visual relationships between the historic routes extending into the former parkland from the designated eastern and non-designated western lodges and associated gate piers towards the primary (Halsnead Hall) and secondary (Princes House Farm) structures within the former parkland. All of these assets are located to the east, south and west of the Site.
- 9.70 As noted during the construction phase, no significant landscape features have been identified within the Site itself, though surviving elements of the Halsnead Park landscape have been identified within the Masterplan SPD^{xvi} within the immediate vicinity of the Site. This includes the curved belt of woodland along the northern and north-eastern boundary of the Site, in addition to the alignment of the former eastern drive, and the remnants of Fox Clump

woodland, c. 145m and c. 230m south of the Site respectively, as well as the curved boundary east of Prince's House Farm, c. 310m west of the Site. Both the Development plan and Masterplan SPD^{xvi} indicate this area of woodland will to be retained as part of the wider Halsnead Garden Village Development, as are the landscape elements to the south and west. The retention of these landscape features will aid in softening the overall visual impact of the Development upon the wider former park landscape.

- 9.71 As with the construction phase, potential effects to the setting of the former parkland during the operational phase will be lessened by embedded mitigation within the design such as tree and hedge planting. Maturing of the landscaping provision embedded within the design will further soften the intervisibility between this and the southern part of the Site.

Additional Mitigation Measures

Construction Phase

Grade II Listed North East Lodge (NHLE 1253429), Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) and Non-designated Former Halsnead Park Landscape (MME15147)

- 9.72 A Construction Environmental Management Plan (CEMP) will be prepared prior to commencement of construction works. This will comprise best practice measures to minimise adverse effects during construction, however no further mitigation measures are considered appropriate or proportionate to reduce the magnitude of change on these assets and therefore the significance of effects during the construction phase.

Operational Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.73 Embedded mitigation measures such as tree and hedge planting, and the retention of existing landscape features will be managed over the lifespan of the Development through a Landscape Management Plan (LMP). The LMP, which will be secured through a planning condition, will ensure adequate maintenance of embedded mitigation measures so that proposed planting survives and matures as expected.

Residual Effects

Construction Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.74 A CEMP will be prepared prior to the commencement of construction and will include best practice measures to mitigate impacts on built heritage assets. Therefore, should such measures be enabled, the residual effects during the construction phase are considered to be **negligible**.

Non-designated Halsnead Park Landscape (MME15147)

- 9.75 A CEMP will be prepared prior to the commencement of construction and will include best practice measures to mitigate impacts on built heritage assets. Therefore, the residual effects during the construction phase are considered to be **negligible to minor adverse**.

Operational Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.76 The residual effects during the operational phase are considered to be **negligible**.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.77 The residual effects during the operational phase are considered to be **negligible to minor adverse**.

Cumulative Effects

Construction Phase

- 9.78 As listed in Chapter 2: EIA Methodology, eight surrounding developments have been included in the cumulative assessment. The entire south of Whiston/Land north of the M62 SUE 'Halsnead Park' (detailed in the Halsnead Garden Village Masterplan SPD^{xvi}) has been included as part of the assessment.

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.79 The cumulative effect to the setting of both the North East Lodge and the adjacent Gate Piers would be increased when considered alongside the consented residential development at Fox's Bank Lane (Ref. 20/00417/FUL), south and south-east of the Site, and also the proposed residential development west of the Site (Ref. 20/00399/OUT), in addition to future development within Halsnead Garden Village SPD land parcel 2b, and the proposed primary school site north of parcel 2b and east of the Site. These effects will be slightly reduced by the establishment of a strategic green space west of the lodge and piers as part of the Fox's Bank Lane development. These effects will also be further reduced by the reinstatement of the eastern drive into the former parkland as a functional entrance, albeit as a key pedestrian/cyclist route rather than a residential drive. This reimagined route will, however, be lined with trees, referencing the former historic character of this entranceway.
- 9.80 It is considered that the significance of these cumulative effects would be **minor adverse**.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.81 The cumulative effect to the setting of the non-designated Halsnead Park Landscape would be increased when considered alongside the consented and proposed residential developments within the former parkland, as listed within Chapter 2: EIA Methodology. Furthermore, this effect will also increase when considered alongside the Halsnead Garden Village SPD land parcels that will come forward in future.
- 9.82 The consented and proposed residential developments have included within their designs the surviving elements of the Halsnead Park landscape that have been identified within the Masterplan SPD^{xvi}. These include the retention of key woodland groups, such as Fox Clump to the south of the Site and the curved, tree-lined boundary east of the former Prince's House Farm, west of the Site. The former eastern drive into the site will be re-lined with trees and utilised as a local pedestrian/cycle connection, giving this asset purpose.
- 9.83 It is considered that the significance of these cumulative effects would be **minor adverse**, as the Development will result in a permanent change in the former parkland landscape.
- Operational Phase

Grade II Listed North East Lodge (NHLE 1253429) and Grade II Listed Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)

- 9.84 Should the mitigation measures set out within the surrounding developments be implemented, the cumulative effects during the operational phase would be **minor adverse**.

Non-designated Former Halsnead Park Landscape (MME15147)

- 9.85 Should the mitigation measures be implemented as part of the surrounding Developments, the cumulative effects during the operational phase are considered to be **minor adverse**.

Summary

- 9.86 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of designated and non-designated built heritage assets. This chapter is supported by an historic environment desk-based assessment (HEDBA), produced in June 2022, which provided a baseline assessment of the Site and an assessment of the significance of heritage assets, including their setting. This was carried out using guidelines set out by the Chartered Institute for Archaeologists and Historic England, as well as best practice and professional judgement, and follows a pre-application and scoping opinion response from KMBC. The HEDBA identified the potential for the settings of two Grade II listed buildings and the non-designated former Halsnead Park Landscape, which in itself contains a number of non-designated heritage assets, to be affected by the Development.
- 9.87 The Grade II listed North East Lodge to Halsnead Park (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) are located c. 300m east of the Site, along the eastern boundary of the former Halsnead Park, adjacent Fox's Bank Lane. During the construction phase of the Development, it is considered that there will be a negligible to minor adverse effect upon one element of their significance and setting, specifically the views of these assets from Fox's Bank Lane looking west, which highlight their historic interest, specifically their group value with the non-designated Halsnead Park and boundary walls. The longer and wider views of this relationship provide a backdrop of open, arable former parkland interspersed with small clumps of woodland plantation, remnants of the extensive plantations which were once more plentiful across the Site. Historically, views would have not existed, due to the presence of dense woodland surrounding the lodge and piers, and alongside the inner boundary wall, which would have shortened the views to those immediately adjacent the eastern entrance. Furthermore, these more recent longer views have already been adversely affected by the static caravan park to the west, providing a more suburbanised backdrop within a historically wooded setting.

- 9.88 The Site is located entirely within the former Halsnead Park (MME15147), a landscape which once incorporated a number of extant designated and non-designated heritage assets, former sites of notable structures, and ephemeral designed elements within the remains of a former parkland estate. The Site contains no known landscape elements, and due to its location along the northern boundary of the former parkland, is not historically nor presently included within any significant views across the former parkland. During the construction phase of the Development, it is considered that there will be a minor adverse effect upon the setting and significance of this non-designated asset, specifically the further suburbanisation of the former Halsnead Park landscape. Whilst this suburbanisation will not impact upon the significance and character of the individual elements, it will have a slight impact upon the significance these assets possess as a result of their historic interest, as well as their group and aesthetic values.
- 9.89 There would be no further significant effects on the Grade II listed North East Lodge to Halsnead Park (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) during the operational phase of the Development, nor will there be any further significant effects on the non-designated Halsnead Park landscape (MME15147).
- 9.90 The likely significant adverse effects to the settings of the Grade II listed North East Lodge to Halsnead Park (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) will be lessened by embedded landscaping mitigation which slightly diminishes the suburban background and, as the trees mature, these effects will further diminish.
- 9.91 Whilst no significant landscape features have been identified within the Site itself, surviving elements of the former Halsnead Park landscape (MME15147) have been identified within the immediate vicinity of the Site. This includes the curved belt of woodland along the northern and north-eastern boundary of the Site, in addition to the alignment of the former eastern drive, and the remnants of Fox Clump woodland, c. 145m and c. 230m south of the Site respectively, as well as the curved boundary east of Prince's House Farm, c. 310m west of the Site. This area of woodland to the north will be retained as part of the wider Halsnead Garden Village Development, as are the landscape elements to the south and west. The retention of these landscape features will aid in softening the overall visual impact of the Development upon the wider former park landscape. Embedded landscaping mitigation across the Development will further soften the impact upon the former parkland landscape as the trees mature, these effects will further diminish.
- 9.92 The implementation of a CEMP will provide additional mitigation measure to minimise any construction effects upon the setting of both the Grade II listed North East Lodge to Halsnead

Park (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) and the former Halsnead Park landscape (MME15147).

- 9.93 The cumulative effect to the setting of both the Grade II listed North East Lodge to Halsnead Park (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) would be increased when considered alongside the consented residential development at Fox's Bank Lane (Ref. 20/00417/FUL), south and south-east of the Site, and also the proposed residential development west of the Site (Ref. 20/00399/OUT), in addition to future development within Halsnead Garden Village SPD land parcel 2b, and the proposed primary school site north of parcel 2b and east of the Site. These effects will be slightly reduced by the establishment of a strategic green space west of the lodge and piers as part of the Fox's Bank Lane development. These effects will also be further reduced by the reinstatement of the eastern drive into the former parkland as a functional entrance, albeit as a key pedestrian/cyclist route rather than a residential drive. This reimagined route will, however, be lined with trees, referencing the former historic character of this entranceway. The significance of these cumulative effects would be minor adverse.
- 9.94 The cumulative effect to the setting of the non-designated Halsnead Park Landscape (MME15147) would be increased when considered alongside the eight consented and proposed residential developments within the former parkland, as listed in Chapter 2: EIA Methodology. Furthermore, this effect will also increase when considered alongside the Halsnead Garden Village SPD land parcels that will come forward in future. The consented and proposed residential developments have included within their designs the surviving elements of the Halsnead Park landscape and include the retention of key woodland groups, such as Fox Clump to the south of the Site and the curved, tree-lined boundary east of the former Prince's House Farm, west of the Site. The former eastern driveway into the site will be re-lined with trees and utilised as a local pedestrian/cycle connection, giving this asset purpose. It is considered that the significance of these cumulative effects would be minor adverse, as the Development will result in a permanent change in the former Halsnead parkland landscape.
- 9.95 Table 9.6 contains a summary of the likely significant effects of the Development.

Table 9.6: Table of Significance – Built Heritage

Potential Effect	Nature of Effect (Permanent/ Temp orary)	Significance (Major/Moderate/ Minor) (Beneficial/Adverse /Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Mi nor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Construction											
GII LB: North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Negligible-Minor Adverse	Implementation of a CEMP			*					Negligible
GII LB: Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Negligible-Minor Adverse				*					Negligible
Former Halsnead Park landscape	Permanent	Minor Adverse								*	Negligible-Minor Adverse
Non-designated elements of the former Halsnead Park Estate	Permanent	Minor Adverse								*	Negligible-Minor Adverse
Completed Development											
GII LB: North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Negligible-Minor Adverse	Implementation of Landscape Management Plan			*					Negligible
GII LB: Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Negligible-Minor Adverse				*					Negligible
Former Halsnead Park landscape	Permanent	Minor Adverse								*	Negligible-Minor Adverse
Non-designated elements of the former Halsnead Park Estate	Permanent	Minor Adverse								*	Negligible-Minor Adverse
Cumulative Effects											
Construction											

Potential Effect	Nature of Effect (Permanent/ Temp orary)	Significance (Major/Moderate/ Minor) (Beneficial/Adverse /Negligible)	Mitigation / Enhancement Measures	Geographical Importance*						Residual Effects (Major/Moderate/Mi nor) (Beneficial/Adverse/ Negligible)	
				I	UK	E	R	C	B		L
GII LB: North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Minor Adverse	Future developments to east and south of the Site include plans for landscaping, which would provide future additional woodland screening			*					Minor Adverse
GII LB: Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Minor Adverse				*					Minor Adverse
Former Halsnead Park landscape	Permanent	Minor Adverse	Retention of surviving elements of the former parkland surrounding the Site, including the woodland and pond to the north/north- east							*	Minor Adverse
Non-designated elements of the former Halsnead Park Estate	Permanent	Minor Adverse								*	Minor Adverse
Completed Development											
GII LB: North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Minor Adverse	Future developments to east and south of the Site include plans for landscaping, which would provide future additional woodland screening			*					Minor Adverse
GII LB: Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429)	Permanent	Minor Adverse				*					Minor Adverse
Halsnead Park landscape	Permanent	Minor Adverse								*	Minor Adverse

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/ Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Mi nor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Non-designated elements of the former Halsnead Park Estate	Permanent	Minor Adverse	Retention of surviving elements of the former parkland surrounding the Site, including the woodland and pond to the north/north- east							*	Minor Adverse

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

References

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- ⁱⁱⁱ Knowsley Metropolitan Borough Council (KMBC), 2016, *Knowsley Local Plan Core Strategy*.
- ^{iv} Planning (Listed Buildings and Conservation Areas) Act (P(LBCA)), 1990.
- ^v Merseyside Environmental Advisory Service (MEAS), 2019, *Guidance on Archaeological Desk-Based Assessment*.
- ^{vi} Chartered Institute for Archaeologists (CIfA), 2020, *Standard and guidance for historic environment desk based assessment*.
- ^{vii} English Heritage (EH), 2008, *Conservation Principles, Policies and Guidance. For the sustainable management of the historic environment*.
- ^{viii} Historic England (HE), 2015, *Managing Significance in Decision-Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2*.
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- ^x Historic England (HE), 2019, *Statements of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12*.
- ^{xi} Historic England (HE), 2022a, 'Search the List'. Available at: <https://historicengland.org.uk/listing/the-list/>
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- ^{xiv} Historic England (HE), 2022c, 'North East Lodge to Halsnead Park.' Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1253249?section=comments-and-photos>
- ^{xv} Historic England (HE), 2022d, 'Gate Piers Beside North East Lodge to Halsnead Park.' Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1253429>
- ^{xvi} Knowsley Metropolitan Borough Council (KMBC), 2017, *Halsnead Garden Village Masterplan Supplementary Planning Document*. Available at: [https://consultations.knowsley.gov.uk/Documents/halsnead/HalsneadMasterplanSPD_FINAL\(5.06.2017\).pdf](https://consultations.knowsley.gov.uk/Documents/halsnead/HalsneadMasterplanSPD_FINAL(5.06.2017).pdf)

10.0 AIR QUALITY

Introduction

- 10.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect to local air quality.
- 10.2 The chapter includes a description of the methods used to assess the impacts, the baseline conditions currently existing at the Site and surroundings, the potential direct and indirect impacts of the Development arising from fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the Site during construction and operation, the mitigation measures required to prevent, reduce, or offset the impacts and the residual effects, as well as an assessment of cumulative effects.

Policy Context

National Planning Policy Frameworkⁱ

- 10.3 The revised National Planning Policy Framework (NPPF), published in July 2021, recognises air quality within Section 15: Conserving and enhancing the natural environment. The revised NPPF highlights that Developments should help improve the local environment, in terms of air quality wherever possible taking into account the relevant information.
- 10.4 To prevent unacceptable risks from air pollution, the revised NPPF states that:

"Planning policies and decisions should contribute to and enhance the natural and local environment by...preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air quality".

and

"Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development".

- 10.5 More specifically on air quality, the revised NPPF states within paragraph 181 that:

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

10.6 The implications of the NPPF have been considered throughout this Chapter.

Planning Practice Guidanceⁱⁱ

10.7 National Planning Practice Guidance (NPPG) has been developed in order to support the NPPF. The guidance provides a concise outline as to how air quality should be considered in order to comply with the NPPF and states when air quality is considered relevant to a planning application, which includes when the proposals:

- *"Significantly affect traffic in the immediate vicinity of the proposed development site or further afield. This could be by generating or increasing traffic congestion; significantly changing traffic volumes, vehicle speed or both; or significantly altering the traffic composition on local roads";*
- *'Introduce new point sources of air pollution. This could include furnaces which require prior notification to local authorities; or extraction systems (including chimneys) which require approval under pollution control legislation or biomass boilers or biomass-fuelled CHP plant; centralised boilers or CHP plant burning other fuels within or close to an air quality management area or introduce relevant combustion within a Smoke Control Area';*
- *'Expose people to existing sources of air pollutants. This could be by building new homes, workplaces or other development in places with poor air quality'; and*
- *'Give rise to potentially unacceptable impact (such as dust) during construction for nearby sensitive locations'".*

10.8 These were reviewed and the relevant guidance considered as necessary throughout the undertaking of this Chapter.

Local Planning Policy

Knowsley Metropolitan Borough Council Local Plan: Core Strategyⁱⁱⁱ

- 10.9 The Knowsley Local Plan: Core Strategy was adopted by Knowsley Metropolitan Borough Council (KMBC) on 6th January 2016. Review of the document indicated the following policy of relevance to this Chapter:

"Policy CS2

Development Principles

1) New development in Knowsley and the preparation of subsequent stages of the Local Plan will be expected to support the following development principles:

Principal 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote air quality of place by:

[...]

e) Mitigating potential negative impacts of traffic growth and road traffic on highway safety, air quality, noise and health;

[...]

j) Minimising negative impact upon flood risk, air quality, water quality, land quality, soil quality, and noise or vibration levels and ensuring any negative impacts are appropriately mitigated."

Knowsley Replacement Unitary Development Plan^{iv}

- 10.10 The Knowsley Replacement Unitary Development Plan (UDP) was adopted in June 2006. Under the transitional arrangement for moving to the Local Plan system, 39 UDP policies have been saved, these include the following in relation to air quality:

"Policy Env1: Control of Pollution in New Development

Development will not be permitted which is likely to cause significant harm to amenity as a result of impact on any of the following:

Air quality; [...]"

- 10.11 The above policies have been taken into consideration throughout the undertaking of this Chapter.

Legislative Context

10.12 The Air Quality Standards Regulations (2010)^v and subsequent amendments include Air Quality Limit Values (AQLVs) for the following pollutants:

- Nitrogen dioxide (NO₂);
- Sulphur dioxide;
- Lead;
- Particulate matter with an aerodynamic diameter of less than 10µm (PM₁₀);
- Particulate matter with an aerodynamic diameter of less than 2.5µm (PM_{2.5});
- Benzene; and,
- Carbon monoxide.

10.13 Air quality target values were also provided for several additional pollutants. It should be noted that the AQLV for PM_{2.5}, as stated in the Air Quality Standards Regulations, was amended in the Environment (Miscellaneous Amendments) (EU Exit) Regulations^{vi}.

10.14 The Air Quality Strategy (AQS)^{vii} was produced by the Department for Environment, Food and Rural Affairs (DEFRA) and published in July 2007. The document contains standards, objectives and measures for improving ambient air quality, including a number of Air Quality Objectives (AQOs). These are maximum ambient pollutant concentrations that are not to be exceeded either without exception or with a permitted number of exceedances over a specified timescale. These are generally in line with the AQLVs, although the requirements for the determination of compliance vary.

10.15 Table 10.1 presents the AQOs and AQLVs for pollutants considered within the assessment.

Table 10.1: Air Quality Objectives/Air Quality Limit Values

Pollutant	Air Quality Objective/Air Quality Limit Values	
	Concentration (µg/m ³)	Averaging Period
NO ₂	40	Annual mean
	200	1-hour mean, not to be exceeded on more than 18 occasions per annum
PM ₁₀	40	Annual mean
	50	24-hour mean, not to be exceeded on more than 35 occasions per annum
PM _{2.5}	20	Annual mean

10.16 The Environment Act (2021)^{viii} was published on 9th November 2021 and makes provision for the setting of lower PM_{2.5} targets. The final criteria will be included in legislation to be put before parliament by 31st October 2022. Prior to this time the AQLV outlined in Table 10.1 remains the adopted air quality standard within the UK.

10.17 Table 10.2 summarises the advice provided in DEFRA guidance^{ix} on where the AQOs for pollutants considered within this Chapter apply.

Table 10.2: Examples of Where the Air Quality Objectives Apply

Averaging Period	Objectives Should Apply at	Objectives Should Not Apply at
Annual mean	All locations where members of the public might be regularly exposed. Building facades of residential properties, schools, hospitals, care homes etc.	Building façades of offices or other places of work where members of the public do not have regular access. Hotels, unless people live there as their permanent residence. Gardens of residential properties. Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
24-hour mean	All locations where the annual mean objective would apply, together with hotels. Gardens of residential properties.	Kerbside sites (as opposed to locations at the building façade), or any other location where public exposure is expected to be short term.
1-hour mean	All locations where the annual mean and 24 and 8-hour mean objectives apply. Kerbside sites (for example, pavements of busy shopping streets). Those parts of car parks, bus stations and railway stations etc which are not fully enclosed, where members of the public might reasonably be expected to spend one hour or more. Any outdoor locations where members of the public might reasonably be expected to spend one hour or longer.	Kerbside sites where the public would not be expected to have regular access.

Local Air Quality Management

10.18 Local Authorities (LAs) are required to periodically review and assess air quality within their area of jurisdiction under the system of Local Air Quality Management (LAQM). This review and assessment of air quality involves comparing present and likely future pollutant concentrations against the AQOs. If it is predicted that levels at locations of relevant exposure, as summarised in Table 10.2, are likely to be exceeded, the LA is required to declare an Air Quality Management Area (AQMA). For each AQMA the LA is required to produce an Air Quality Action Plan, the objective of which is to reduce pollutant concentrations in pursuit of the AQOs.

Dust

10.19 The main requirements with respect to dust control from industrial or trade premises not regulated under the Environmental Permitting (England and Wales) Regulations^x and subsequent amendments, such as construction sites, are those provided in Section 79 of Part III of the Environmental Protection Act^{xi}. The Act defines nuisance as:

"any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance."

- 10.20 Enforcement of the Act, in regard to nuisance, is currently under the jurisdiction of the local Environmental Health Department, whose officers are deemed to provide an independent evaluation of nuisance. If the LA is satisfied that a statutory nuisance exists, or is likely to occur or happen again, it must serve an Abatement Notice under Part III of the Environmental Protection Act. The only defence is to show that the process to which the nuisance has been attributed and its operation are being controlled according to best practicable means.

Assessment Methodology

Consultation

- 10.21 Consultation was undertaken with Helen Bradshawe, Environmental Protection Officer at KMBC, in order to outline the proposed assessment methodology. This was agreed via email on 31st May 2022 and is included in Appendix 10.4.

Construction Phase Fugitive Dust Emissions

- 10.22 There is the potential for fugitive dust emissions to occur as a result of construction phase activities. These have been assessed in accordance with the methodology outlined within the IAQM document 'Guidance on the Assessment of Dust from Demolition and Construction V1.1'^{xii}.
- 10.23 Activities on the Site have been divided into three types to reflect their different potential impacts. These are:
- Earthworks;
 - Construction; and,
 - Trackout.
- 10.24 The potential for dust emissions was assessed for each of these activities and considered three separate dust effects:
- Annoyance due to dust soiling;
 - Harm to ecological receptors; and,
 - The risk of health effects due to a significant increase in exposure to PM₁₀.

- 10.25 The first stage of the assessment screens the requirement for a more detailed assessment. Should human receptors be identified within 350m from the boundary or 50m from the construction vehicle route up to 500m from the Site entrance, then the assessment proceeds to the next stage. Additionally, should ecological receptors be identified within 50m of the Site, or the construction vehicle route up to 500m from the Site entrance, then the assessment also proceeds to the next stage. It should be noted that if no human or ecological receptors are identified within the relevant screening distances, assessment beyond this stage is not required.
- 10.26 The second stage of the assessment screens the risk of potential dust impacts. It should be noted that the standard IAQM's terminology of risk has been replaced with significance criteria to allow continuity throughout the Environmental Statement (ES) and comparison of various effects. A site is initially allocated an effect significance (risk) category based on two factors:
- The sensitivity of the area to dust impacts, which can be defined as **low**, **medium** or **high** sensitivity; and,
 - The scale and nature of the works, which determines the magnitude of dust arising as **low**, **medium** or **high**.
- 10.27 The two factors are combined in order to determine the potential effect significance without mitigation applied.
- 10.28 The influencing factors that define the sensitivity of the area to potential effects are shown in Table 10.3.

Table 10.3: Construction Dust - Examples of Factors Defining Sensitivity of an Area

Sensitivity	Examples	
	Human Receptors	Ecological Receptors
High	Users expect high levels of amenity; High aesthetic or value property; People expected to be present continuously for extended periods of time; and Locations where members of the public are exposed over a time period relevant to the AQO for PM ₁₀ e.g. residential properties, hospitals, schools and residential care homes.	Internationally designated site e.g. Special Area of Conservation (SAC)
Medium	Users would expect to enjoy a reasonable level of amenity; Aesthetics or value of their property could be diminished by soiling; and People or property wouldn't reasonably be expected to be present here continuously or regularly for extended periods as part of the normal pattern of use of the land e.g. parks and places of work.	Nationally designated site e.g. Sites of Special Scientific Interest (SSSI)

Sensitivity	Examples	
	Human Receptors	Ecological Receptors
Low	Enjoyment of amenity would not reasonably be expected; Property would not be expected to be diminished in appearance; and Transient exposure, where people would only be expected to be present for limited periods. e.g. public footpaths, playing fields, shopping streets, playing fields, farmland, footpaths, short term car park and roads.	Locally designated site e.g. Local Nature Reserve (LNR) or Local Wildlife Site (LWS)

10.29 The guidance also requires consideration of the following factors when determining the sensitivity of an area to potential dust impacts:

- Any history of dust generating activities in the area;
- The likelihood of concurrent dust generating activity on nearby sites;
- Any pre-existing screening between the source and receptors;
- Any conclusions drawn from analysing local meteorological data which accurately represent the area; and if relevant the season during which works will take place;
- Any conclusions drawn from local topography;
- Duration of the potential impact, as a receptor may become more sensitive over time; and,
- Any known specific receptor sensitivities which go beyond the classifications given in the document.

10.30 The criteria for determining the sensitivity of the area to dust soiling effects on people and property are summarised in Table 10.4.

Table 10.4: Construction Dust - Sensitivity of the Area to Dust Soiling Effects on People and Property

Receptor Sensitivity	Number of Receptors	Distance from the Source (m)			
		Less than 20	Less than 50	Less than 100	Less than 350
High	More than 100	High	High	Medium	Low
	10 – 100	High	Medium	Low	Low
	1 – 10	Medium	Low	Low	Low
Medium	More than 1	Medium	Low	Low	Low
Low	More than 1	Low	Low	Low	Low

10.31 Table 10.5 outlines the criteria for determining the sensitivity of the area to human health impacts.

Table 10.5: Construction Dust - Sensitivity of the Area to Human Health Impacts

Receptor Sensitivity	Background Annual Mean PM ₁₀ Concentration	Number of Receptors	Distance from the Source (m)			
			Less than 20	Less than 50	Less than 100	Less than 350
High	Greater than 32µg/m ³	More than 100	High	High	High	Medium
		10 - 100	High	High	Medium	Low
		1 - 10	High	Medium	Low	Low
	28 - 32µg/m ³	More than 100	High	High	Medium	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	High	Medium	Low	Low
	24 - 28µg/m ³	More than 100	High	Medium	Low	Low
		10 - 100	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	Less than 24µg/m ³	More than 100	Medium	Low	Low	Low
		10 - 100	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Medium	Greater than 32µg/m ³	More than 10	High	Medium	Low	Low
		1 - 10	Medium	Low	Low	Low
	28 - 32µg/m ³	More than 10	Medium	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	24 - 28µg/m ³	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
	Less than 24µg/m ³	More than 10	Low	Low	Low	Low
		1 - 10	Low	Low	Low	Low
Low	-	1 or more	Low	Low	Low	Low

10.32 Table 10.6 outlines the sensitivity of the area to ecological impacts.

Table 10.6: Construction Dust - Sensitivity of the Area to Ecological Impacts

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

10.33 The scale and nature of the construction works determine the magnitude of dust impacts arising from each activity. The relevant criteria are summarised in Table 10.7.

Table 10.7: Construction Dust - Magnitude of Emission

Magnitude	Activity	Criteria
Large	Earthworks	Total site area greater than 10,000m ² ; Potentially dusty soil type (e.g. clay, which will be prone to suspension when dry due to small particle size); More than 10 heavy earth moving vehicles active at any one time; Formation of bunds greater than 8m in height; and More than 100,000 tonnes of material moved.
	Construction	Total building volume greater than 100,000m ³ ; On site concrete batching; and Sandblasting.
	Trackout	More than 50 Heavy Duty Vehicle (HDV) trips per day; Potentially dusty surface material (e.g. high clay content); and Unpaved road length greater than 100m.

Medium	Earthworks	Total site area 2,500m ² to 10,000m ² ; Moderately dusty soil type (e.g. silt); 5 to 10 heavy earth moving vehicles active at any one time; Formation of bunds 4m to 8m in height; and Total material moved 20,000 tonnes to 100,000 tonnes.
	Construction	Total building volume 25,000m ³ to 100,000m ³ ; Potentially dusty construction material (e.g. concrete); and On site concrete batching.
	Trackout	10 to 50 HDV trips per day; Moderately dusty surface material (e.g. high clay content); and Unpaved road length 50m to 100m.
Small	Earthworks	Total site area less than 2,500m ² ; Soil type with large grain size (e.g. sand); Less than 5 heavy earth moving vehicles active at any one time; Formation of bunds less than 4m in height; Total material moved less than 20,000 tonnes; and Earthworks during wetter months.
	Construction	Total building volume less than 25,000m ³ ; and Construction material with low potential for dust release (e.g. metal cladding or timber).
	Trackout	Less than 10 HDV trips per day; Surface material with low potential for dust release; and Unpaved road length less than 50m.

10.34 The dust emission impact magnitude and the sensitivity of the area are combined to determine the impact significance. This is explained in the Significance Criteria Section.

Construction Phase Road Traffic Exhaust Emissions

10.35 The Development has the potential to impact existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the Site during the construction phase. A screening assessment was therefore undertaken with reference to the criteria contained within the IAQM 'Land-Use Planning & Development Control: Planning for Air Quality'^{xiii} guidance to determine the potential for trips generated by the scheme to affect local air quality.

10.36 The following criteria are provided to help establish when an assessment of potential impacts on the local area is likely to be considered necessary:

- A change of Light Duty Vehicle (LDV) flows of more than 100 Annual Average Daily Traffic (AADT) within or adjacent to an AQMA or more than 500 AADT elsewhere;
- A change of HDV flows of more than 25 AADT within or adjacent to an AQMA or more than 100 AADT elsewhere;
- Realignment of roads where the change is 5m or more and the road is within an AQMA; or,
- Introduction of a new junction or removal of an existing junction near to relevant receptors.

10.37 Should these criteria not be met, then the IAQM guidance^{xiv} considers air quality impacts associated with a Development are **negligible** and no further assessment is required. Should review indicate of any of the criteria are met, then detailed assessment of potential impacts could be undertaken using the dispersion modelling methodology outlined for operational phase road vehicle exhaust emissions.

Operational Phase

10.38 The Development has the potential to impact on existing air quality as a result of road traffic exhaust emissions, such as NO₂, PM₁₀ and PM_{2.5}, associated with vehicles travelling to and from the Site.

10.39 Potential impacts were defined by predicting pollutant concentrations at sensitive locations using dispersion modelling for the following scenarios:

- 2019 - Verification;
- Opening year Do-Minimum (DM) (predicted traffic flows in 2030 should the Development not proceed); and,
- Opening year Do-Something (DS) (predicted traffic flows in 2030 should the Development be completed).

10.40 The DM scenario (i.e. without the Development) included baseline traffic data, inclusive of anticipated growth and committed developments, for the relevant assessment year (2030). The DS scenario (i.e. with the Development) included baseline traffic data, inclusive of anticipated growth and committed developments, for the relevant assessment year (2030), in addition to predicted traffic associated with the operation of the Development.

10.41 For the purpose of the assessment, traffic data for 2030 was utilised as the Development opening year. Air quality is predicted to improve in the future. However, in order to provide a robust assessment, emission factors for 2019 were utilised within the dispersion model. The use of 2030 traffic data and 2019 emission factors is considered to provide a worst-case scenario and therefore the predicted pollution concentrations are likely to overestimate actual levels during the operation of the Development.

10.42 Reference should be made to Appendix 10.1 for assessment input data and details of the verification process.

- 10.43 Locations sensitive to potential changes in pollutant concentrations were identified within 200m of the highway network in accordance with the guidance provided within the Design Manual for Roads and Bridges (DMRB)^{xv} on the likely limits of pollutant dispersion from road sources. The criteria provided within the DEFRA guidance^{xvi} on where the AQOs apply, as summarised in Table 10.2, was utilised to determine worst-case receptor positions in the vicinity of links likely to be affected by changes in traffic flows as a result of the Development.
- 10.44 The sensitivity of receptors to potential changes in pollutant concentrations as a result of road vehicle exhaust emissions is outlined in Table 10.8. It should be noted that these are based on the values provided within the IAQM guidance^{xvii} with additional descriptors included to ensure consistency throughout the ES.

Table 10.8: Operational Phase Receptor Sensitivity

Receptor Sensitivity	Pollutant Concentration at Receptor in Assessment Year
Very High	110% or more of AQO
High	103 - 109% of AQO
Medium	95 - 102% of AQO
Low	76 - 94% of AQO
Very Low	75% or less of AQO

- 10.45 The magnitude of predicted air quality impacts was calculated based on the predicted concentration change between DM and DS scenarios as a proportion of the AQO. This is outlined in Table 10.9.

Table 10.9: Operational Phase Magnitude of Impact

Change in Annual Mean NO ₂ , PM ₁₀ and PM _{2.5} Concentration as a Proportion of the AQO	Pollutant Concentration at Receptor in Assessment Year
0	Negligible
1	Very Minor
2 - 5	Minor
6 - 10	Moderate
More than 10	Major

- 10.46 It should be noted that the categories in Table 10.9 are intended to be used by rounding the change in percentage pollutant concentration to whole numbers.

Significance Criteria

- 10.47 The significance of potential effects was determined by integrating the assessments of sensitivity and impact magnitude in a reasoned way. This is described separately for the construction and operational phase impacts in the following Sections.

Construction Phase Fugitive Dust Emissions

10.48 The dust emission magnitude and the sensitivity of the area were combined to determine the significance of the unmitigated effects.

10.49 Table 10.10 outlines the effect significance from earthworks and construction activities.

Table 10.10: Construction Dust - Effect Significance from Earthworks and Construction Activities

Receptor Sensitivity	Dust Emissions Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Moderate	Moderate	Minor
Low	Minor	Minor	Negligible

10.50 Table 10.11 outlines the effect significance from trackout.

Table 10.11: Construction Dust - Effect Significance from Trackout Activities

Receptor Sensitivity	Dust Emissions Magnitude		
	Large	Medium	Small
High	Major	Moderate	Minor
Medium	Moderate	Minor	Negligible
Low	Minor	Minor	Negligible

10.51 It should be noted that all construction dust impacts are classified as adverse as they relate to a deterioration in baseline air quality.

10.52 Site specific mitigation measures were identified from the IAQM guidance^{xviii} to reduce potential dust impacts based upon the predicted effect significance. For negligible effects, mitigation measures beyond those required by legislation are not required. However, additional controls may be applied as part of good practice.

10.53 The significance of residual effects is determined based on the dust effect significance and appropriate mitigation measures. For almost all construction activity, the aim should be to control effects through the use of effective mitigation. Experience shows that this is normally possible, hence the residual effect will normally be **negligible**. It should be noted that where the overall effect is **moderate** or **major**, the effect is likely to be considered **significant** in regards the EIA Regulations, whilst if the impact is **minor** or **negligible**, the impact is likely to be considered not significant in regards the Town and Country Planning (EIA) 2017 Regulations^{xix}.

10.54 Construction Phase Road Traffic Exhaust Emissions Potential air quality impacts may occur due to road traffic exhaust emissions associated with construction vehicles travelling to and from the Site. Trip data for the construction phase of the Development, provided by the Transport Consultants for the project, was therefore reviewed with reference to the relevant screening thresholds outlined in paragraph 10.35.

10.55 Should the thresholds not be exceeded, then the IAQM Guidance^{xx} considers potential air quality impacts associated with the Development to be **negligible**. This is regarded as **not significant** with respect to Town and Country Planning (EIA) 2017 Regulations.

Operational Phase

10.56 The significance of operational phase road vehicle exhaust emissions effects was determined through the interaction between the magnitude of impact and sensitivity of the receptor, as outlined in Table 10.12.

Table 10.12: Operational Phase Road Vehicle Exhaust Emissions - Effect Significance

Magnitude	Sensitivity				
	Very High	High	Medium	Low	Very Low
Major	Major Adverse/ Beneficial	Major Adverse/ Beneficial	Major Adverse/ Beneficial	Moderate Adverse/ Beneficial	Moderate Adverse/ Beneficial
Moderate	Major Adverse/ Beneficial	Major Adverse/ Beneficial	Moderate Adverse/ Beneficial	Moderate Adverse/ Beneficial	Minor Adverse/ Beneficial
Minor	Major Adverse/ Beneficial	Moderate Adverse/ Beneficial	Moderate Adverse/ Beneficial	Minor Adverse/ Beneficial	Negligible
Very Minor	Moderate Adverse/ Beneficial	Moderate Adverse/ Beneficial	Minor Adverse/ Beneficial	Negligible Adverse/ Beneficial	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

10.57 An adverse impact would be a deterioration in baseline air quality, whilst a beneficial impact would be an improvement.

10.58 Following the prediction of impacts at discrete receptor locations, the IAQM document provides guidance on determining the overall air quality impact significance of the operation of a development. The following factors are identified for consideration by the assessor:

- The existing and future air quality in the absence of the Development;
- The extent of current and future population exposure to impacts; and,
- The influence and validity of any assumptions adopted when undertaken the prediction of impacts.

- 10.59 The IAQM guidance states that an assessment must reach a conclusion on the likely significance of the predicted impact. Where the overall effect is moderate or major, the effect is likely to be considered significant in regards the EIA Regulations, whilst if the impact is minor or negligible, the impact is likely to be considered not significant in regards the EIA Regulations.

Limitations and Assumptions

- 10.60 A number of air quality factors are likely to change in future years and therefore act as limitations to the assessment, these include:

- Background pollutant concentrations are predicted to decrease in future years as a result of Government policies and legislation to reduce pollutant emissions. However, there is current uncertainty over the level of likely decrease. As such, a worst-case assumption that air quality conditions remain constant and do not improve in the future was adopted to ensure robust results; and,
- Road traffic exhaust emissions are predicted to decrease in future years with changes to the UK's vehicle fleet in line with Government legislation. However, similarly to background concentrations, there is current uncertainty over the level of likely decrease. As such, a worst-case assumption that emission factors do not reduce in the future was adopted to ensure robust results.

- 10.61 Pollutant concentrations during 2020 were lower than previous years due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. As such, baseline monitoring results from this year were treated with caution during the assessment.

- 10.62 A number of assumptions have been made in the undertaking of the assessment. These include the following:

- The total building volume constructed will be greater than 100,000m³. This ensured emissions were included in the largest magnitude category as a worst case;
- The meteorological data used for the assessment is representative of the conditions at the Site. Records were obtained based on a review of available monitoring locations to ensure the most characteristic observation station was selected;
- The background concentrations used for the assessment are representative of baseline annual mean pollutant concentrations at the Site. These values were obtained from the DEFRA background mapping study, an industry standard database produced on behalf of the UK Government, to ensure the most accurate representation of background pollutant concentrations;

- The traffic data obtained for the purpose of the assessment is accurate. Information was provided by the Transport Consultants for the project. This ensured a more accurate representation of vehicle flows in the local area;
- The emissions factors used for the assessment are representative of vehicle exhaust releases. These values were obtained from the Emission Factor Toolkit (Version 11.0)^{xxi}, an industry standard database produced on behalf of the UK Government, to ensure the most accurate representation of traffic emissions; and,
- The monitoring data used in the assessment was accurate. Relevant pollutant concentrations were obtained from KMBC for 2019 to ensure validity of results.

10.63 The above assumptions are similar to those required for any project of this nature and the adoption of worst-case parameters, where necessary, has ensured the assessment results can be considered sufficiently robust.

Baseline Conditions

10.64 Existing air quality conditions in the vicinity of the Development were identified in order to provide a baseline for the assessment. These are detailed in the following Sections.

Local Air Quality Management

10.65 As required by the Environment Act^{xxii} (1995), KMBC has undertaken Review and Assessment of air quality within their area of jurisdiction. This process has indicated that concentrations of all pollutants considered within the AQS are currently below the relevant AQOs. As such, no AQMAs have been designated within the borough.

Air Quality Monitoring

10.66 Monitoring of pollutant concentrations is undertaken by KMBC throughout their area of jurisdiction. Recent NO₂ results recorded in the vicinity of the Site are shown in Table 10.13. Exceedances of the AQO are shown in **bold**.

Table 10.13: Monitoring Results - NO₂

Monitoring Site		Monitored NO ₂ Concentration (µg/m ³)		
		2018	2019	2020
Huyton	Cronton Road	37.4	37.6	29.5
H1	Station co-location	37.5	37.4	29.5
H2	Outside 2 Whitefield Lane	41.0	40.8	35.1
H3	Outside 1 Whitefield Lane	49.3	48.0	42.2
H4	Whitton Road, Twickenham	29.8	31.4	25.3
H5	Opposite Smithford Walk	26.8	27.4	21.4

H6	Sevenoak Grove	30.0	32.1	28.6
H7	Wilson Road Junction	36.8	37.2	33.9
H8	Tarbock Island	26.6	29.3	22.7
H9	Natruscot	25.0	26.4	20.6
H10	Outside 29 Southford Walk	23.3	23.9	19.1
H11	Outside 9 Ribchester Way	26.4	28.9	23.3
H12	Outside 12 Windy Arbor Brow	33.5	32.8	27.2

10.67 As shown in Table 10.13, annual mean NO₂ concentrations were above the AQO at H2 and H3 in recent years. As these monitors are positioned at roadside locations, elevated concentrations are to be expected. Levels were below the AQO at all remaining locations.

10.68 Recent PM₁₀ results recorded in the vicinity of the Site are shown in Table 10.14.

Table 10.14: Monitoring Results - PM₁₀

Monitoring Site		Monitored PM ₁₀ Concentration (µg/m ³)		
		2018	2019	2020
Huyton	Cronton Road	21.8	22.9	-(a)

Note: -(a) Data not available

10.69 As shown in Table 10.14, PM₁₀ concentrations were below the annual mean AQO at the Huyton monitoring site in recent years.

10.70 Recent PM_{2.5} results recorded in the vicinity of the Site are shown in Table 10.15.

Table 10.15: Monitoring Results - PM_{2.5}

Monitoring Site		Monitored PM _{2.5} Concentration (µg/m ³)		
		2018	2019	2020
Huyton	Cronton Road	9.1	10.8	-(a)

Note: -(a) Data not available

10.71 As shown in Table 10.15, PM_{2.5} concentrations were below the annual mean AQLV at the Huyton monitoring site in recent years.

10.72 It should be noted that pollutant concentrations during 2020 were lower than previous years due to a reduction in traffic and associated emissions caused by the COVID-19 pandemic. The results should therefore be viewed with caution.

10.73 Monitoring locations are shown in Figure 10.1 within Appendix 10.2.

Background Pollutant Concentrations

10.74 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by DEFRA for the entire of the UK to assist LAs in their Review and Assessment of

air quality. The Site is located in grid square National Grid Reference (NGR): 347500, 390500. Data for this location was downloaded from the DEFRA website^{xxiii} for the purpose of the assessment. This included data for 2019 and 2022 in order to consider background levels during the model verification year and the year this Chapter was produced. These are summarised in Table 10.16.

Table 10.16: Background Pollutant Concentration Predictions

Pollutant	Predicted Background Pollutant Concentrations ($\mu\text{g}/\text{m}^3$)	
	2019	2022
NO ₂	15.53	13.62
PM ₁₀	13.03	12.56
PM _{2.5}	8.43	8.09

- 10.75 As shown in Table 10.16, predicted background NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and AQLV at the Site.

Air Quality Receptors

- 10.76 A sensitive receptor is defined as any location which may be affected by changes in air quality as a result of a development. These have been defined for dust and road vehicle exhaust emission impacts in the following Sections.

Construction Phase Sensitive Receptors

- 10.77 Receptors sensitive to potential dust impacts during earthworks and construction were identified from a desk-top study of the area up to 350m from the Site boundary. These are summarised in Table 10.17.

Table 10.17: Construction Dust - Earthworks and Construction Dust Sensitive Receptors

Distance from Site Boundary (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	1 - 10	1
Up to 50	10 - 100	1
Up to 100	10 - 100	-(a)
Up to 350	More than 100	-(a)

NOTE: (A) Assessment at this distance is not required in accordance with the stated guidance.

- 10.78 Receptors sensitive to potential dust impacts from trackout were identified from a desk-top study of the area up to 50m from the road network within 500m of the Site access. These are summarised in Table 10.18.

Table 10.18: Construction Dust - Trackout Dust Sensitive Receptors

Distance from Site Access Route (m)	Approximate Number of Human Receptors	Approximate Number of Ecological Receptors
Up to 20	10 - 100	2
Up to 50	More than 100	2

10.79 A number of additional factors have been considered when determining the sensitivity of the surrounding area. These are summarised in Table 10.19.

Table 10.19: Additional Area Dust Sensitivity Factors

Guidance	Comment
Whether there is any history of dust generating activities in the area	The baseline study did not indicate any dust generating activities in the local area.
The likelihood of concurrent dust generating activity on nearby sites	There are a number of schemes identified as cumulative developments within 700m of the Site. It is therefore possible that there will be concurrent dust generation in the area should the construction phases overlap.
Pre-existing screening between the source and the receptors	Trees are located sporadically along the Site boundaries. Additionally, woodland is located along the northern boundary of the Site. These may act as a barrier between emission sources and receptors should they be retained during the construction phase.
Conclusions drawn from analysing local meteorological data which accurately represents the area and if relevant the season during which the works will take place	As shown in Figure 10.2 within Appendix 10.2, the predominant wind bearing at the Site is from the north-west with significant frequencies from the south-east. As such, receptors to the south-east and north-west of the Site are most likely to be affected by dust releases.
Conclusions drawn from local topography	There are no significant topographical constraints to dust dispersion.
Duration of the potential impact, as a receptor may become more sensitive over time	It is anticipated that construction will be undertaken over a period of approximately 25-months. The sensitivity of nearby receptors is unlikely to change during this time
Any known specific receptor sensitivities which go beyond the classifications given in the document	No specific receptor sensitivities have been identified during the baseline assessment.

10.80 Based on the criteria shown in Table 10.3, the sensitivity of the receiving environment to potential dust soiling and health impacts is classified as high. This was because identified receptors include residential properties.

10.81 The ecological designations in Table 10.17 and Table 10.18 are LWSs. As such, the sensitivity was classified as low in accordance with the criteria shown in Table 10.3.

10.82 The sensitivity of the receiving environment to specific dust impacts is shown in Table 10.20.

Table 10.20: Sensitivity of the Surrounding Areas to Specific Dust Impacts

Potential Impact	Sensitivity of the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	Medium	Medium	High
Human Health	Low	Low	Low
Ecological	Low	Low	Low

Operational Phase Sensitive Receptors

10.83 Receptors sensitive to potential road vehicle exhaust emission impacts were identified from a desk top study and are summarised in Table 10.21. Receptor heights were included in order to take account of less sensitive land uses at ground floor level, such as retail space.

Table 10.21: Operational Phase Road Vehicle Exhaust Emissions Sensitive Receptor Locations

Receptor		NGR (m)		Height (m)
		X	Y	
R1	Residential - Lickers Lane	347451.6	390581.6	1.5
R2	Residential - Lickers Lane	347591.9	390562.1	1.5
R3	Residential - Lickers Lane	347878.7	390546.7	1.5
R4	Residential - Cumber Lane	347856.6	390643.8	1.5
R5	Residential - Cumber Lane	347841.2	391039.6	1.5
R6	Residential - Cumber Lane	347847.4	391207.1	1.5
R7	Residential - Fox's Bank Lane	347963.9	390249.1	1.5
R8	Residential - Fox's Bank Lane	347857.6	390034.2	1.5
R9	St Leo R C Church	347303.5	390571.4	1.5
R10	Residential - Lickers Lane	346994.0	390536.8	1.5
R11	Residential - Lickers Lane	346876.8	390558.6	1.5
R12	Residential - Windy Arbor Road	346846.2	390535.6	1.5
R13	Residential - Windy Arbor Road	346801.1	390774.6	1.5
R14	Residential - Windy Arbor Road	346803.2	390863.0	1.5
R15	Residential - Greene's Road	346771.4	390885.0	3.0
R16	Residential - Greene's Road	346707.9	390941.5	1.5
R17	Residential - Greene's Road	346491.0	391039.0	1.5
R18	Residential - Dragon Lane	346856.2	390876.3	1.5
R19	Noodles Nursery	346854.1	390900.0	1.5
R20	Residential - Dragon Lane	346910.6	390976.0	1.5
R21	Residential - Dragon Lane	347096.1	391209.6	1.5
R22	Residential - Windy Arbor Road	346832.1	390496.8	1.5
R23	Residential - Windy Arbor Road	346791.3	390389.7	1.5
R24	Residential - Windy Arbor Road	346770.7	390252.1	1.5
R25	Residential - Windy Arbor Road	346612.2	390109.0	1.5
R26	Residential - Windy Arbor Road	346564.8	390017.6	1.5
R27	Residential - Windy Arbor Road	346471.3	389962.4	1.5

10.84 Refer to Figure 10.3, within Appendix 10.2 for a graphical representation of operational phase road vehicle exhaust emission sensitive receptor locations.

Future Baseline

- 10.85 When determining the future baseline, the EIA Regulations focus on the 'natural evolution' of the baseline in the absence of the Development. From an air quality perspective, there are limited 'natural' aspects that would influence the change in the baseline and any changes would be as direct consequence of human intervention.
- 10.86 It is currently predicted that air quality will improve in future years. The DEFRA 'Air Pollution in the UK 2020'^{xxiv} report published in September 2021 indicates that ambient concentrations of NO₂, as measured by the Automatic Urban and Rural Network (AURN), have demonstrated a downward trend since the AURNs inception in 1992. In addition, in January 2019 the UK Government launched the Clean Air Strategy^{xxv} which included a commitment to end the sale of new diesel and petrol cars and vans by the end of 2030. This will continue to aid the reduction of road vehicle exhaust emissions from combustion engines, including nitrogen oxides (NO_x) and PM₁₀.
- 10.87 In order to provide a future baseline for assessment of operational stage air quality effects at human health receptors, predicted 2030 annual mean NO₂, PM₁₀ and PM_{2.5} background concentrations were taken from the DEFRA mapping study for the grid squares containing the Site. These are summarised in Table 10.22.

Table 10.22: Future Background Pollutant Concentration Predictions

Pollutant	Predicted 2030 Background Pollutant Concentration (µg/m ³)
NO ₂	10.74
PM ₁₀	12.17
PM _{2.5}	7.78

- 10.88 As shown in Table 10.22, the predicted background NO₂, PM₁₀ and PM_{2.5} concentrations are below the relevant AQOs and AQLV at the Site.

Likely Significant Effects

Construction Phase Fugitive Dust Emissions

- 10.89 The undertaking of activities such as excavation, ground works, cutting, construction, concrete batching and storage of materials has the potential to result in fugitive dust emissions throughout the construction phase. Vehicles movements both on-Site and on the local road network also have the potential to result in the re-suspension of dust from haul roads and highway surfaces.

- 10.90 The potential for impacts at sensitive locations depends significantly on local meteorology during that undertaking of dust generating activities, with the most significant effects likely to occur during dry and windy conditions.
- 10.91 The desk-study undertaken to inform the baseline identified a number of sensitive receptors within 350m of the Site boundary. As such, a detailed assessment of potential dust impacts has been undertaken.
- 10.92 Predicted air quality impacts from construction phase activities are considered to be adverse but temporary in nature.

Earthworks

- 10.93 Earthworks will primarily involve excavating material, haulage, tipping and stockpiling, as well as Site levelling and landscaping. The Site covers an area greater than 10,000m². In accordance with the criteria outlined in Table 10.7, the magnitude of potential dust emissions from earthworks is therefore **large**.
- 10.94 Table 10.20 indicates the sensitivity of the area to dust soiling effects on people of property is **medium**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated dust soiling effects as a result of earthworks is predicted to be **moderate adverse**, which is considered to be **significant**.
- 10.95 Table 10.20 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated effects at human health receptors as a result of earthworks is predicted to be **minor adverse**, which is considered to be **not significant**.
- 10.96 Table 10.20 indicates the sensitivity of ecological receptors is **low**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated effects at ecological receptors as a result of earthworks is predicted to be **minor adverse**, which is considered to be **not significant**.

Construction

- 10.97 Due to the size of the Development, it is anticipated the total building volume will be greater than 100,000m³. In accordance with the criteria outlined in Table 10.7, the magnitude of potential dust emissions from construction is therefore **large**.

- 10.98 Table 10.20 indicates the sensitivity of the area to dust soiling effects on people or property is **medium**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated dust soiling effects as a result of construction activities is predicted to be **moderate adverse**, which is considered to be **significant**.
- 10.99 Table 10.20 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated effects at human health receptors as a result of construction is predicted to be **minor adverse**, which is considered to be **not significant**.
- 10.100 Table 10.20 indicates the sensitivity of ecological receptors is **low**. In accordance with the criteria outlined in Table 10.10, the significance of unmitigated effects at ecological receptors as a result of construction is predicted to be **minor adverse**, which is considered to be **not significant**.

Trackout

- 10.101 Based on the Site area, it is anticipated that the unpaved road length is likely to be greater than 100m during certain stages of construction. In accordance with the criteria outlined in Table 10.7, the magnitude of potential dust emissions from trackout is therefore **large**.
- 10.102 Table 10.20 indicates the sensitivity of the area to dust soiling effects on people or property is **high**. In accordance with the criteria outlined in Table 10.11, the significance of unmitigated dust soiling effects as a result of trackout activities is predicted to be **major adverse**, which is considered to be **significant**.
- 10.103 Table 10.20 indicates the sensitivity of the area to human health is **low**. In accordance with the criteria outlined in Table 10.11, the significance of unmitigated effects at human health receptors as a result of trackout is predicted to be **minor adverse**, which is considered to be **not significant**.
- 10.104 Table 10.20 indicates the sensitivity of ecological receptors is **low**. In accordance with the criteria outlined in Table 10.11, the significance of unmitigated effects at ecological receptors as a result of trackout is predicted to be **minor adverse**, which is considered to be **not significant**.

Summary of Dust Effects

- 10.105 A summary of the potential construction phase effect significance from each dust generating activity is provided in Table 10.23.

Table 10.23: Summary of Potential Unmitigated Effect Significance

Potential Impact	Potential Effect on the Surrounding Area		
	Earthworks	Construction	Trackout
Dust Soiling	Moderate Adverse/Significant	Moderate Adverse/Significant	Major Adverse/Significant
Human Health	Minor Adverse/Not Significant	Minor Adverse/Not Significant	Minor Adverse/Not Significant
Ecological	Minor Adverse/Not Significant	Minor Adverse/Not Significant	Minor Adverse/Not Significant

Construction Phase Road Traffic Exhaust Emissions

10.106 Any vehicle movements associated with the construction of the Development will generate exhaust emissions on the local and regional road networks. Information provided by Croft Transport Planning & Design, the Transport Consultants for the project, indicated that the construction phase of the Development is predicted to generate 90 LDV and 10 HDV movements per day.

10.107 Based on the above information, the construction phase of the Development is not anticipated to result in an increase in LDV flows of more than 100 AADT on any individual road link, include significant highway realignment or the introduction of a junction and there will not be a requirement for more than 25 HDV movements per day. As such, the potential air quality impacts associated with construction phase road vehicle exhaust emissions are predicted to be **negligible**, in accordance with criteria provided in paragraph 10.35.

Operational Phase

10.108 Vehicle movements associated with the operation of the Development will generate exhaust emissions on the local and regional road networks. An assessment was therefore undertaken using dispersion modelling in order to quantify potential changes in pollutant concentrations at sensitive locations in the vicinity of the Site.

10.109 For the purpose of the assessment, traffic data for 2030 was utilised as the opening year of the Development. Air quality is predicted to improve in the future. However, in order to provide a robust assessment, emission factors and background concentrations for 2019 were utilised within the dispersion model. The use of 2030 traffic data and 2019 emission factors is considered to provide a worst-case scenario and therefore predicted pollution concentrations are likely to overestimate actual levels during the operational of the Development. Reference should be made to Appendix 10.1 for assessment inputs.

10.110 Predicted air quality impacts from operational phase activities are considered to be adverse and permanent in nature.

Predicted Concentrations

10.111 Annual mean NO₂ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in Table 10.24.

Table 10.24: Predicted Annual Mean NO₂ Concentrations

Receptor		Predicted Annual Mean NO ₂ Concentration (µg/m ³)		
		DM	DS	Change
R1	Residential - Lickers Lane	28.00	28.08	0.08
R2	Residential - Lickers Lane	29.75	29.79	0.04
R3	Residential - Lickers Lane	30.78	30.80	0.02
R4	Residential - Cumber Lane	26.63	26.65	0.02
R5	Residential - Cumber Lane	26.48	26.49	0.01
R6	Residential - Cumber Lane	26.89	26.91	0.02
R7	Residential - Fox's Bank Lane	27.31	27.32	0.01
R8	Residential - Fox's Bank Lane	29.42	29.44	0.02
R9	St Leo R C Church	28.77	29.48	0.71
R10	Residential - Lickers Lane	29.74	30.58	0.84
R11	Residential - Lickers Lane	33.28	34.15	0.87
R12	Residential - Windy Arbor Road	33.76	34.52	0.76
R13	Residential - Windy Arbor Road	32.07	32.57	0.50
R14	Residential - Windy Arbor Road	34.10	34.70	0.60
R15	Residential - Greene's Road	29.62	29.90	0.28
R16	Residential - Greene's Road	33.37	33.79	0.42
R17	Residential - Greene's Road	30.83	31.10	0.27
R18	Residential - Dragon Lane	31.44	31.82	0.38
R19	Noodles Nursery	33.70	34.17	0.47
R20	Residential - Dragon Lane	31.32	31.65	0.33
R21	Residential - Dragon Lane	29.61	29.86	0.25
R22	Residential - Windy Arbor Road	33.02	33.60	0.58
R23	Residential - Windy Arbor Road	32.99	33.52	0.53
R24	Residential - Windy Arbor Road	30.57	30.90	0.33
R25	Residential - Windy Arbor Road	34.35	34.89	0.54
R26	Residential - Windy Arbor Road	32.33	32.71	0.38
R27	Residential - Windy Arbor Road	36.53	37.15	0.62

10.112 As shown in Table 10.24, predicted annual mean NO₂ concentrations were below the relevant AQO at all sensitive receptors in both the DM and DS scenarios.

10.113 Reference should be made to Figure 10.4 and 10.5, within Appendix 10.2 for graphical representations of annual mean NO₂ concentrations across the assessment area for the DM and DS scenarios.

10.114 Annual mean PM₁₀ concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in Table 10.25.

Table 10.25: Predicted Annual Mean PM₁₀ Concentrations

Receptor		Predicted Annual Concentration (µg/m ³)		Mean PM ₁₀
		DM	DS	Change
R1	Residential - Lickers Lane	21.23	21.24	0.01
R2	Residential - Lickers Lane	21.52	21.53	0.01
R3	Residential - Lickers Lane	21.65	21.65	0.00
R4	Residential - Cumber Lane	21.02	21.03	0.00
R5	Residential - Cumber Lane	21.02	21.02	0.00
R6	Residential - Cumber Lane	21.09	21.09	0.00
R7	Residential - Fox's Bank Lane	21.11	21.11	0.00
R8	Residential - Fox's Bank Lane	21.39	21.39	0.00
R9	St Leo R C Church	21.35	21.47	0.12
R10	Residential - Lickers Lane	21.50	21.64	0.14
R11	Residential - Lickers Lane	22.06	22.20	0.14
R12	Residential - Windy Arbor Road	22.15	22.28	0.13
R13	Residential - Windy Arbor Road	21.88	21.96	0.08
R14	Residential - Windy Arbor Road	22.13	22.22	0.10
R15	Residential - Greene's Road	21.46	21.50	0.04
R16	Residential - Greene's Road	22.12	22.19	0.07
R17	Residential - Greene's Road	21.67	21.72	0.05
R18	Residential - Dragon Lane	21.73	21.79	0.06
R19	Noodles Nursery	22.10	22.17	0.08
R20	Residential - Dragon Lane	21.78	21.84	0.06
R21	Residential - Dragon Lane	21.52	21.56	0.04
R22	Residential - Windy Arbor Road	22.03	22.13	0.10
R23	Residential - Windy Arbor Road	22.02	22.11	0.09
R24	Residential - Windy Arbor Road	21.60	21.65	0.05
R25	Residential - Windy Arbor Road	22.21	22.30	0.09
R26	Residential - Windy Arbor Road	21.84	21.91	0.06
R27	Residential - Windy Arbor Road	22.55	22.65	0.11

10.115 As shown in Table 10.25, predicted annual mean PM₁₀ concentrations were below the relevant AQO at all sensitive receptors in both the DM and DS scenarios.

10.116 Reference should be made to Figures 10.6 and 10.7, within Appendix 10.2 for graphical representations of annual mean PM₁₀ concentrations across the assessment area for the DM and DS scenarios.

10.117 Annual mean PM_{2.5} concentrations were predicted at the sensitive receptor locations for the DM and DS scenarios. The results are summarised in Table 10.26.

Table 10.26: Predicted Annual Mean PM_{2.5} Concentrations

Receptor		Predicted Annual Concentration (µg/m ³)		Mean PM _{2.5}
		DM	DS	Change
R1	Residential - Lickers Lane	10.02	10.03	0.01
R2	Residential - Lickers Lane	10.15	10.15	0.00
R3	Residential - Lickers Lane	10.21	10.21	0.00
R4	Residential - Cumber Lane	9.93	9.93	0.00
R5	Residential - Cumber Lane	9.93	9.93	0.00
R6	Residential - Cumber Lane	9.96	9.96	0.00
R7	Residential - Fox's Bank Lane	9.97	9.97	0.00
R8	Residential - Fox's Bank Lane	10.10	10.10	0.00

Receptor		Predicted Annual Mean Concentration ($\mu\text{g}/\text{m}^3$)		PM _{2.5}
		DM	DS	Change
R9	St Leo R C Church	10.08	10.13	0.05
R10	Residential - Lickers Lane	10.14	10.20	0.06
R11	Residential - Lickers Lane	10.39	10.45	0.06
R12	Residential - Windy Arbor Road	10.43	10.49	0.06
R13	Residential - Windy Arbor Road	10.31	10.35	0.04
R14	Residential - Windy Arbor Road	10.42	10.47	0.04
R15	Residential - Greene's Road	10.13	10.15	0.02
R16	Residential - Greene's Road	10.41	10.45	0.03
R17	Residential - Greene's Road	10.22	10.24	0.02
R18	Residential - Dragon Lane	10.25	10.27	0.03
R19	Noodles Nursery	10.41	10.44	0.03
R20	Residential - Dragon Lane	10.27	10.29	0.02
R21	Residential - Dragon Lane	10.15	10.17	0.02
R22	Residential - Windy Arbor Road	10.38	10.42	0.04
R23	Residential - Windy Arbor Road	10.37	10.41	0.04
R24	Residential - Windy Arbor Road	10.19	10.21	0.02
R25	Residential - Windy Arbor Road	10.46	10.50	0.04
R26	Residential - Windy Arbor Road	10.30	10.33	0.03
R27	Residential - Windy Arbor Road	10.61	10.66	0.05

10.118 As shown in Table 10.26, predicted annual mean PM_{2.5} concentrations were below the AQLV at all sensitive receptors in both the DM and DS scenarios.

10.119 Reference should be made to Figures 10.8 and 10.9, within Appendix 10.2 for graphical representations of annual mean PM_{2.5} concentrations across the assessment area for the DM and DS scenarios.

Effect Significance

10.120 Predicted effects on annual mean NO₂ concentrations at the sensitive receptor locations in are summarised in Table 10.27.

Table 10.27: Predicted Operational Phase Road Vehicle Exhaust Emissions Effect Significance - Annual NO₂

Receptor		Sensitivity of Receptor	Magnitude of Impact	Effect Significance
R1	Residential - Lickers Lane	Very Low	Negligible	Negligible
R2	Residential - Lickers Lane	Very Low	Negligible	Negligible
R3	Residential - Lickers Lane	Low	Negligible	Negligible
R4	Residential - Cumber Lane	Very Low	Negligible	Negligible
R5	Residential - Cumber Lane	Very Low	Negligible	Negligible
R6	Residential - Cumber Lane	Very Low	Negligible	Negligible
R7	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R8	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R9	St Leo R C Church	Very Low	Negligible	Negligible
R10	Residential - Lickers Lane	Low	Minor	Minor
R11	Residential - Lickers Lane	Low	Minor	Minor
R12	Residential - Windy Arbor Road	Low	Minor	Minor
R13	Residential - Windy Arbor Road	Low	Negligible	Negligible

Receptor		Sensitivity of Receptor	Magnitude of Impact	Effect Significance
R14	Residential - Windy Arbor Road	Low	Minor	Minor
R15	Residential - Greene's Road	Very Low	Negligible	Negligible
R16	Residential - Greene's Road	Low	Negligible	Negligible
R17	Residential - Greene's Road	Low	Negligible	Negligible
R18	Residential - Dragon Lane	Low	Negligible	Negligible
R19	Noodles Nursery	Low	Negligible	Negligible
R20	Residential - Dragon Lane	Low	Negligible	Negligible
R21	Residential - Dragon Lane	Very Low	Negligible	Negligible
R22	Residential - Windy Arbor Road	Low	Negligible	Negligible
R23	Residential - Windy Arbor Road	Low	Negligible	Negligible
R24	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R25	Residential - Windy Arbor Road	Low	Negligible	Negligible
R26	Residential - Windy Arbor Road	Low	Negligible	Negligible
R27	Residential - Windy Arbor Road	Low	Minor	Minor

10.121 As indicated in Table 10.27, impacts on annual mean NO₂ concentrations as a result of the Development were predicted to be **negligible** at 22 receptors and **minor adverse** at five locations.

10.122 Predicted effects on annual mean PM₁₀ concentrations at the sensitive receptor locations are summarised in Table 10.28.

Table 10.28: Predicted Operational Phase Road Vehicle Exhaust Emissions Effect Significance - Annual PM₁₀

Receptor		Sensitivity of Receptor	Magnitude of Impact	Effect Significance
R1	Residential - Lickers Lane	Very Low	Negligible	Negligible
R2	Residential - Lickers Lane	Very Low	Negligible	Negligible
R3	Residential - Lickers Lane	Very Low	Negligible	Negligible
R4	Residential - Cumber Lane	Very Low	Negligible	Negligible
R5	Residential - Cumber Lane	Very Low	Negligible	Negligible
R6	Residential - Cumber Lane	Very Low	Negligible	Negligible
R7	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R8	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R9	St Leo R C Church	Very Low	Negligible	Negligible
R10	Residential - Lickers Lane	Very Low	Negligible	Negligible
R11	Residential - Lickers Lane	Very Low	Negligible	Negligible
R12	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R13	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R14	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R15	Residential - Greene's Road	Very Low	Negligible	Negligible
R16	Residential - Greene's Road	Very Low	Negligible	Negligible
R17	Residential - Greene's Road	Very Low	Negligible	Negligible
R18	Residential - Dragon Lane	Very Low	Negligible	Negligible
R19	Noodles Nursery	Very Low	Negligible	Negligible
R20	Residential - Dragon Lane	Very Low	Negligible	Negligible
R21	Residential - Dragon Lane	Very Low	Negligible	Negligible
R22	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R23	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R24	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R25	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R26	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R27	Residential - Windy Arbor Road	Very Low	Negligible	Negligible

10.123 As indicated in Table 10.28, impacts on annual mean PM₁₀ concentrations as a result of the Development were predicted to be **negligible** at all receptors.

10.124 Predicted effects on annual mean PM_{2.5} concentrations at the sensitive receptor locations are summarised in Table 10.29.

Table 10.29: Predicted Operational Phase Road Vehicle Exhaust Emissions Effect Significance - Annual PM_{2.5}

Receptor		Sensitivity of Receptor	Magnitude of Impact	Effect Significance
R1	Residential - Lickers Lane	Very Low	Negligible	Negligible
R2	Residential - Lickers Lane	Very Low	Negligible	Negligible
R3	Residential - Lickers Lane	Very Low	Negligible	Negligible
R4	Residential - Cumber Lane	Very Low	Negligible	Negligible
R5	Residential - Cumber Lane	Very Low	Negligible	Negligible
R6	Residential - Cumber Lane	Very Low	Negligible	Negligible
R7	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R8	Residential - Fox's Bank Lane	Very Low	Negligible	Negligible
R9	St Leo R C Church	Very Low	Negligible	Negligible
R10	Residential - Lickers Lane	Very Low	Negligible	Negligible
R11	Residential - Lickers Lane	Very Low	Negligible	Negligible
R12	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R13	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R14	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R15	Residential - Greene's Road	Very Low	Negligible	Negligible
R16	Residential - Greene's Road	Very Low	Negligible	Negligible
R17	Residential - Greene's Road	Very Low	Negligible	Negligible
R18	Residential - Dragon Lane	Very Low	Negligible	Negligible
R19	Noodles Nursery	Very Low	Negligible	Negligible
R20	Residential - Dragon Lane	Very Low	Negligible	Negligible
R21	Residential - Dragon Lane	Very Low	Negligible	Negligible
R22	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R23	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R24	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R25	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R26	Residential - Windy Arbor Road	Very Low	Negligible	Negligible
R27	Residential - Windy Arbor Road	Very Low	Negligible	Negligible

10.125 As indicated in Table 10.29, impacts on annual mean PM_{2.5} concentrations as a result of the Development were predicted to be **negligible** at all receptors.

Overall Impact Significance

10.126 The overall significance of operational phase road traffic emission impacts was determined as **minor adverse**, which is considered to be **not significant**. This was based on the worst-case predicted impact at any discrete receptor location and the considerations outlined previously. Further justification is provided in Table 10.30.

Table 10.30: Operational Phase Road Vehicle Exhaust Emissions - Overall Effect Significance

Guidance	Comment
The existing and future air quality in the absence of the Development	Predicted annual mean NO ₂ , PM ₁₀ and PM _{2.5} concentrations were below the relevant AQOs and AQLV at all receptor locations in the DM scenario. The predicted concentrations are considered unlikely to change significantly in the absence of the Development given the established nature of the area.
The extent of current and future population exposure to the impacts	The Development is not predicted to affect the population exposed to exceedances of the AQOs.
The influence and validity of any assumptions adopted when undertaking the prediction of impacts	The assessment assumed that vehicle exhaust emission rates and background pollutant levels will not reduce in future years. This provides worst-case results when compared with DEFRA and National Highways methodologies. Due to the adopted assumptions, it is considered the presented results are sufficiently robust for an assessment of this nature.

Mitigation Measures

Construction Phase

- 10.127 Due to the size and nature of the Development a Construction Environmental Management Plan (CEMP) will be produced to control potential impacts during the construction phase. This can be secured through attachment of a suitably worded planning condition to any forthcoming consent. The mitigation measures outlined in Table 10.31 will be included within the CEMP to mitigate fugitive dust emissions during construction. These are based on the advice provided within IAQM guidance and are therefore considered suitable for the Site.

Table 10.31: Fugitive Construction Dust Emissions Mitigation Measures

Guidance	Comment
Communications	Development and implement a stakeholder communications plan that includes community engagement before work commences on Site; Develop a Dust Management Plan (DMP) which may be part of an overarching CEMP; Display the name and contact details of person(s) accountable for air quality pollutant emissions and dust issues on the Site boundary; and Display the head or regional office contact information.
Site management	Record and respond to all dust and air quality pollutant emissions complaints; Make the complaints log available to the LA upon request; and Record any exceptional incidents, either on or off the Site, and the action taken to resolve the situation is recorded in the log book.
Monitoring	Undertake daily on-Site and off-Site inspection, where receptors are nearby, to monitor dust, record inspection results, and make the log available to the LA when asked; Carry out regular Site inspections, record inspection results, and make an inspection log available to the LA upon request; and Increase the frequency of Site inspections when activities with a high potential to produce dust and emissions and dust are being carried out, and during prolonged dry or windy conditions.

Guidance	Comment
Site preparation	Plan Site layout: machinery and dust causing activities should be located away from receptors; Fully enclose Site specific operations where there is a high potential for dust production and the Site is active for an extensive period; Erect solid screens or barriers around dust activities or the Site boundary that are, at least, as high as any stockpiles on Site; Avoid Site runoff of water or mud; Keep Site fencing, barriers and scaffolding clean using wet methods; Remove materials from Site as soon as possible; and Cover, seed or fence stockpiles to prevent wind whipping.
Operating vehicle/ machinery and sustainable travel	Ensure all Non-Road Mobile Machinery comply with the relevant standards; Ensure all vehicles switch off engines when stationary - no idling vehicles; Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable; and Produce a Construction Logistics Plan (CLP) to manage the sustainable delivery of goods and materials.
Operations	Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques; Ensure an adequate water supply on the Site for effective dust/particulate matter mitigation (using recycled water where possible); Use enclosed chutes and conveyors and covered skips; Minimise drop heights and use fine water sprays wherever appropriate; and Ensure equipment is readily available on Site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
Waste management	Reuse and recycle waste to reduce dust from waste materials; and Avoid bonfires and burning of waste materials.
Earthworks	Revegetate earthworks and exposure areas/soil stockpiles to stabilise surfaces; Use Hessian, mulches or trackifiers where it is not possible to revegetate or cover with topsoil; and Only remove secure covers in small areas during work and not all at once.
Construction	Avoid scabbing (roughening of concrete surfaces) if possible; Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out; 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; and For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.
Trackout	Use water-assisted dust sweeper on access and local roads, if required Avoid dry sweeping of large areas; Ensure vehicles entering and leaving Site are covered to prevent escape of materials; Inspect on-Site haul routes and any subsequent action in a Site log book; Record all inspections of haul routes and any subsequent action in a Site log book; Implement a wheel washing system, if required; Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the Site exit, wherever Site size and layout permits; and Access gates to be located at least 10m from receptors where possible.

Operational Phase

10.128 The IAQM have released a position statement 'Mitigation of Development Air Quality Impacts'^{xxvi} (IAQM, 2018) which provides guidance on determining appropriate mitigation measures for new development. This states:

"The IAQM position is that the appropriate mitigation solution for the operational air quality impact of any given general development scheme should be principle-led rather than specified by detailed prescription."

10.129 The following hierarchy of principles is provided for use when determining an appropriate level of mitigation:

- Prevent or avoid;
- Reduction and minimisation; and,
- Off-setting.

10.130 The air quality assessment has shown that the overall significance of operational phase road traffic emission impacts was determined as **minor adverse**, which is considered to be **not significant**. As such, mitigation to further reduce potential impacts is not considered necessary. However, a comprehensive Travel Plan has been produced for the Development. The implementation of the Travel Plan will further reduce reliance on private motor vehicles and minimise air quality impacts during operation.

Residual Effects

Construction Phase

10.131 The residual effect of the Development following implementation of mitigation measures was predicted to be **negligible** as a result of construction phase activities. This is considered to be **not significant**, in accordance with the EIA Regulations.

Operational Phase

10.132 The residual effect of the Development following implementation of mitigation measures was predicted to be **minor adverse** as a result of operational phase activities. This is considered to be **not significant**, in accordance with the EIA Regulations.

Cumulative Effects

Construction Phase

10.133 Should construction phase activities such as earthworks, construction and trackout take place at any committed developments within a 700m radius of the Site boundary, it is possible that cumulative dust impacts may occur. However, as previously outlined, any fugitive dust

emissions generated by the Development will be controlled through the mitigation measures outlined above. A similar level of control would also be expected for any other scheme. Therefore, residual cumulative effects are predicted to be **negligible** and **not significant** in accordance with the EIA Regulations.

10.134 There is the potential for cumulative construction phase road vehicle exhaust emission impacts should other sites generate traffic which utilised the same routes as movements generated by the Development. However, it is anticipated that movements are unlikely to exceed those predicted during the operational phase. As outlined in the section below, operational phase road vehicle exhaust emissions are predicted to be **minor adverse** and **not significant**. As such, it is predicted that cumulative impacts from construction phase road vehicle exhaust emissions are also **not significant**.

Operational Phase

10.135 There is the potential for cumulative operational phase road vehicle exhaust emission impacts should other developments generate traffic which utilised the same routes as movements generated by the Development.

10.136 Eight cumulative developments have been identified within the vicinity of the Site. As such, traffic generation associated with these schemes was provided by the Transport Consultants in order to ensure consideration of cumulative impacts from exhaust emissions associated with developments within the local area. These have been included within the assessment.

10.137 It should be noted that in addition to the above, traffic data used in the assessment included predicted growth up to 2030. This is considered to provide a reasonable representation of potential increases in traffic flows as a result of other local committed developments, as well as other schemes expected to come forward throughout the wider area. As such, the presented results consider cumulative effects from operational phase road vehicle exhaust emissions. Residual cumulative effects are therefore predicted to be **minor adverse** and **not significant** in accordance with the EIA Regulations.

Summary

10.138 The Development has the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road traffic exhaust emissions associated with vehicles travelling to and from the Site during operation. As such, an assessment was undertaken in order to determine baseline conditions and assess potential effects as a result of the Development.

- 10.139 During the construction phase of the Development there is the potential for air quality impacts as a result of fugitive dust emissions from the Site. Assuming good practice dust control measures are implemented, the residual effect of potential air quality effects from dust generated by earthworks, construction and trackout activities was predicted to be **negligible**, which is considered to be **not significant**.
- 10.140 Potential impacts during the construction phase of the Development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the Site. These were assessed against screening criteria provided within the IAQM guidance. Due to the low number of predicted vehicle trips associated with the Development, construction phase road traffic impacts were predicted to be **negligible**, which is considered to be **not significant**.
- 10.141 Potential impacts during the operational phase of the Development may occur due to road traffic exhaust emissions associated with vehicles travelling to and from the Site. Dispersion modelling was therefore undertaken in order to predict pollutant concentrations at sensitive locations as a result of emissions from the local highway network both with and without the Development in place. Results were subsequently verified using local monitoring data.
- 10.142 Review of the dispersion modelling results indicated that effects on annual mean NO₂ concentrations as a result of traffic generated by the Development were classified as **negligible** at 22 receptors and **minor adverse** at five locations. Impacts on annual mean PM₁₀ and PM_{2.5} concentrations were **negligible** at all positions.
- 10.143 Based on the worst case predicted impact, the overall significance of potential operational phase road vehicle exhaust emissions effects was classified as **minor adverse**, which is considered to be **not significant**.
- 10.144 Table 10.32 contains a summary of the likely significant effects of the Development.

Table 10.32: Table of Significance – Air Quality

Potential Effect	Nature of Effect (Permanent/ Temporary)	Significance (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/ Minor) (Beneficial/Adverse /Negligible)	
				I	UK	E	R	C	B	L		
Construction												
Fugitive dust emission impacts on amenity and ecological designations, as well as increased PM ₁₀ concentrations at human health receptors	Temporary	Major Adverse for earthworks and trackout activities Moderate Adverse for construction activities	Suitable mitigation measures identified in Table 10.30 will be detailed in the CEMP (secured via planning condition) to control fugitive dust emissions during construction to an acceptable level.							X	Negligible and Not Significant	
Road traffic exhaust emissions associated with construction vehicles travelling to and from the Site	Temporary	Negligible	Further mitigation to reduce potential impacts is not considered necessary.							X	Negligible and Not Significant	
Completed Development												
Road traffic exhaust emissions associated with vehicles travelling to and from the Site	Permanent	Minor adverse at five locations and Negligible at 22 positions	Further mitigation to reduce potential impacts is not considered necessary. However, a comprehensive Travel Plan will assist in further minimising potential effects.							X	Minor adverse and Not Significant	
Cumulative Effects												
Construction												

Fugitive dust emission impacts on amenity and ecological designations, as well as increased PM ₁₀ concentrations at human health receptors	Temporary	Negligible from earthworks, construction and trackout	Further mitigation to reduce potential impacts is not considered necessary as suitable mitigation in the form of CEMPs would be anticipated for each scheme.								X	Negligible and Not Significant
Road traffic exhaust emissions associated with construction vehicles travelling to and from the Site	Temporary	Negligible	Further mitigation to reduce potential impacts is not considered necessary								X	Negligible and Not Significant
<i>Completed Development</i>												
Road traffic vehicles exhaust emissions associated with vehicles travelling to and from the Site	Permanent	Minor adverse at five locations and Negligible at 22 positions	Further mitigation to reduce potential impacts is not considered necessary								X	Minor adverse and Not Significant

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

- i Ministry of Housing, Communities and Local Government (July 2021) National Planning Policy Framework
- ii Ministry of Housing, Communities and Local Government (March 2014) Planning Practice Guide
- iii KMBC (January 2016) Knowsley Local Plan: Core Strategy
- iv KMBC (June 2006) Knowsley Replacement Unitary Development Plan
- v The Air Quality Standards Regulations 2010
- vi The Environment (Miscellaneous Amendments) (EU Exit) Regulations 2020
- vii DEFRA (July 2007) The Air Quality Strategy
- viii UK Government (November 2021) The Environment Act
- ix DEFRA (April 2021) Local Air Quality Management Technical Guidance
- x UK Government (December 2016) Environmental Permitting (England and Wales) Regulations
- xi UK Government (November 1990) The Environmental Protection Act 1990
- xii IAQM (February 2014) Guidance on the assessment of dust from demolition and construction V1.1
- xiii IAQM (January 2017) Land-Use Planning & Development Control: Planning for Air Quality
- xiv IAQM (January 2017) Land-Use Planning & Development Control: Planning for Air Quality
- xv Highways England (November 2019) LA 105: Air Quality
- xvi DEFRA (April 2021) Local Air Quality Management Technical Guidance (TG16)
- xvii IAQM (January 2017) Land-Use Planning & Development Control: Planning for Air Quality
- xviii IAQM (February 2014) Guidance on the assessment of dust from demolition and construction
- xix UK Government (May 2017) Town and Country Planning (Environmental Impact Assessment) Regulations
- xx IAQM (January 2017) Land-Use Planning & Development Control: Planning for Air Quality
- xxi DEFRA (2021) Emissions Factors Toolkit
- xxii Environment Act 1995
- xxiii DEFRA (n.d.) Background Mapping Data for Local Authorities - 2018
- xxiv DEFRA (2021) Air Pollution in the UK 2020
- xxv DEFRA (January 2019) Clean Air Strategy 2019
- xxvi IAQM (June 2018) Mitigation of Development Air Quality Impacts

11.0 TRANSPORT AND ACCESS

Introduction

- 11.1 This chapter of the ES assesses the likely significant effects of the Development on the environment in respect of traffic and transport.
- 11.2 The overall approach to the assessment is based upon the consideration of the traffic and transport conditions with and without the Development. The assessment incorporates relevant findings from a Transport Assessment (TA) and accompanying Travel Plan Framework, which have been produced by Eddisons and are included as Appendix 11.1 of the ES.
- 11.3 The following transport-related impacts are considered in this chapter:
- Driver delay;
 - Pedestrian delay and amenity;
 - Fear and intimidation;
 - Severance;
 - Accidents and safety; and
 - Public transport delay.
- 11.4 Details of the methodology adopted to assess the impact of the Development on each of the topics identified above are set out in this chapter.

Policy Context

National Planning Policy Frameworkⁱ

- 11.5 The Department for Communities and Local Government (now the Department for Levelling Up, Housing & Communities) updated its National Planning Policy Framework (NPPF) in July 2021. The NPPF replaces previous Planning Policy Guidance (PPG) Notes and Planning Policy Statements (PPS) with a single document.
- 11.6 The NPPF provides guidance on key themes for Local Authorities in determining planning applications. At the heart of NPPF is 'a presumption in favour of sustainable development'. Development in accord with the development plan should be approved without delay (Paragraph 11).

11.7 In determining planning proposals, paragraph 110 of the NPPF states:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

- a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) safe and suitable access to the site can be achieved for all users;*
- c) the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code; and*
- d) 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.*

11.8 The most relevant policy for decision making is set out in paragraph 111, which advises that

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

11.9 Developments are required to provide and promote pedestrian and cyclist movements as a priority, facilitate access to public transport services and maximise the catchment areas for bus and other public transport services.

11.10 It is demonstrated in the TA (Appendix 11.1) that the Site is located close to good pedestrian links and public transport networks and is therefore ideally situated to encourage trips by sustainable modes of travel.

11.11 Furthermore, the TA (Appendix 11.1) also demonstrates that the Development will not have a material impact on the adjoining highway network.

11.12 It is therefore clear from the NPPF that development:

- Should be assessed with a presumption in favour of approval;
- Should be capable of being accessed satisfactorily with safe and suitable access provided for all;
- Should be sustainable, with preference given to accessibility by sustainable modes of transport; and
- Should only be refused on highways grounds if there is an unacceptable impact on safety, or the cumulative impacts on the road network are severe.

11.13 Therefore, developments should be located and designed where practical to:

- Give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;
- Address the needs of people with disabilities and reduced mobility in relation to all modes of transport;
- Create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;
- Allow for the efficient delivery of goods, and access by service and emergency vehicles; and
- Be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.

11.14 The location of the Development is close to a number of local amenities (as described in Section 6 of the TA (Appendix 11.1), in accordance with the guidance contained within paragraph 20 of the NPPF, which states that:

"Strategic policies should set out an overall strategy for the pattern, scale and quality of development, and make sufficient provision for:

- *housing (including affordable housing), employment, retail, leisure and other commercial development;*
- *infrastructure for transport, telecommunications, security, waste management, water supply, wastewater, flood risk and coastal change management, and the provision of minerals and energy (including heat);*
- *community facilities (such as health, education and cultural infrastructure); and*
- *conservation and enhancement of the natural, built and historic environment, including landscapes and green infrastructure, and planning measures to address climate change mitigation and adaptation".*

11.15 It is therefore evident that as the Development is located a short distance from a range of local amenities, is accessible by public transport and has been designed in accordance with the guidance contained within Manual for Streetsⁱⁱ, it is considered that the Development accords with the aims and objectives of the Framework.

11.16 Paragraph 113 of the NPPF states:

"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed".

- 11.17 In order to satisfy this policy requirement, the TA is accompanied by a Travel Plan Framework (Appendix 11.1) which provides commitment to produce a full Travel Plan upon completion of the Development.

Planning Practice Guidance

- 11.18 Planning Practice Guidance (PPG)ⁱⁱⁱ was launched on 6th March 2014 and provides an internet based source of all national planning guidance. In the section relating to Travel Plans, Transport Assessments and Statements, the PPG defines these documents as ways of assessing and mitigating the negative transport impacts of development in order to promote sustainable development. They are required for all developments which generate significant amounts of movements.
- 11.19 The PPG provides guidance as to what should be considered when setting the scope of the Transport Assessment, as well as the level of detail to be included, whilst acknowledging that this will vary from site to site. Topics that should be considered in the Transport Assessment or statement include:
- The planning context of the Development;
 - Appropriate study parameters (i.e. area, scope and duration of study);
 - Assessment of public transport, walking/cycling capacity and road network capacity;
 - Road trip generation and trip distribution methodologies and/ or assumptions about the Development;
 - Measures to promote sustainable travel;
 - Safety implications of development; and
 - Mitigation measures (where applicable) – including scope and implementation strategy.
- 11.20 The PPG states that an assessment should include the likely associated environmental impacts of transport related to the Development, particularly in relation to proximity to environmentally sensitive areas (such as Air Quality Management Areas (AQMA)s) as well as an appropriate assessment of the cumulative impacts arising from other committed development.

Local Planning Policy

The Third Local Transport Plan for Merseyside (2011)^{iv}

11.21 The Third Local Transport Plan for Merseyside sets out a long-term strategy for how to improve transport in Merseyside up until 2024, including transport objectives and transport policy of relevance to the Knowsley area.

11.22 Its vision is to provide:

"A City Region, committed to a low carbon future which has a transport network and mobility culture which positively contributes to a thriving economy and the health and wellbeing of its citizens and where sustainable travel is the option of choice".

Knowsley Local Plan Adopted Core Strategy (2016)^v

11.23 The Local Plan Core Strategy was adopted in January 2016 and sets out the strategic framework for the growth and development of Knowsley up to 2028 and beyond.

11.24 At a local level, within the adopted Knowsley Local Plan Core Strategy, Policy SUE2c relates specifically to the Site and in relation to transport in particular, this policy sets out the following requirements:

- *"Safe and convenient highways access for the sites together with a well connected internal road system and traffic mitigation measures, including any measures needed to address the impact of the development on traffic generation in the wider area; AND*
- *Provision for public transport, walking and cycling, which enhance linkages within the area and surrounding areas including linkages to the former mineral railway line linking Cronton Colliery and Stadt Moers Park and to Whiston railway station."*

11.25 In terms of transport, other relevant planning policy includes Policy CS7 of the Core Strategy. Policy CS7 relates to Transport Networks and how the local plan can support a sustainable transport system and geographical pattern of development which minimises the need to travel, ensuring that jobs, shops and services are accessible to all, leading to a lesser reliance on the private car for travel.

Knowsley Replacement Unitary Development Plan (Saved Policies)^{vi}

- 11.26 Saved Policies are also detailed in the Knowsley Replacement Unitary Development Plan (UDP). The saved UDP policies have been influential in relation to the development of the Core Strategy and include the following in respect to transport.
- 11.27 Policy T7 aims to ensure the walking and cycling network is at least preserved and where possible enhanced, while Policy T8 requires transport assessments to be submitted with major applications and those likely to significantly increase pollution or cause highway capacity issues.
- 11.28 Similarly, Policy T9 relates to the requirement for Travel Plans for major traffic generating developments or those likely to exacerbate existing traffic problems.

Legislative Context

- 11.29 There is no legislation that is directly relevant to the scope of this chapter, although other disciplines informed from outputs of the transportation work may be subject to such legislation.

Assessment Methodology

- 11.30 The environmental impact of the road traffic generated by the Development has been assessed taking account of the criteria set out in The Institute of Environmental Assessment's 1993 'Guidelines for the Environmental Assessment of Road Traffic' (IEA) (note that the IEA is now the Institute of Environmental Management and Assessment (IEMA), but the guidelines still apply)^{vii}.

Consultation

- 11.31 An EIA Scoping Opinion was requested and received from KMBC. The EIA Scoping Opinion (Appendix 2.2) identified matters on which the Applicant should incorporate into the EIA process and document within the ES. Although not included as a topic to be scoped in to the ES in the formal EIA Scoping Report (Appendix 2.1), KMBC subsequently requested in the Scoping Opinion that Transport should be assessed as part of the ES. The Scoping Opinion also confirmed that the entire Sustainable Urban Extension (SUE) allocation should be included as part of the cumulative scheme assessment, as well as other additional cumulative schemes (refer to the Cumulative section later in the chapter). Scoping discussions have also been held with highways officers (Mark McCartney) at KMBC in relation to the scope of the

TA (Appendix 11.1). These discussions were undertaken and have been used to inform the Development and to inform the scope of the TA.Scope of Assessment

- 11.32 This chapter sets out the likely significant traffic and transport-related environmental impacts during the operational and construction phases of the Development. The assessment has considered the likely significant impact of the Development upon the following assessment topics:

Driver Delay

- 11.33 The IEA guidelines note that driver delay to non-development traffic can occur at several points on the network, although the effects are only likely to be significant when the traffic on the highway network is predicted to be at or close to the capacity of the system; typically, during commuter periods. Values for delay are determined by use of the Department for Transport (DfT) computerised junction assessment packages which estimate vehicle time and delays through junctions.
- 11.34 The LinSig software package has been used within the TA (Appendix 11.1) to obtain detailed output on a range of traffic parameters including flows and average delay.

Pedestrian Delay

- 11.35 The IEA guidelines note that changes in the volume, composition and / or speed of traffic may affect the ability of people to crossroads. Typically, increases in traffic levels result in increased pedestrian delay, although increased pedestrian activity also contributes. The guidelines do not set any thresholds, recommending instead that assessors use their judgement to determine the significance of effect.

Pedestrian Amenity

- 11.36 Pedestrian amenity is defined as the relative pleasantness of a journey, which as with pedestrian delay is affected by traffic volumes and composition along with pavement width and pedestrian activity. The guidelines suggest tentative thresholds of significance arising where the traffic flows are halved or doubled.

Fear and Intimidation

- 11.37 The IEA guidelines note that a further effect that traffic may have on pedestrians is fear and intimidation, the impact of which is dependent on volume of heavy vehicle traffic, its proximity to people or a lack of protection caused by such factors as narrow pavements.

Severance

- 11.38 Severance is defined as the perceived division that can occur within a community when it becomes separated by a major traffic artery and describes a series of factors that separate people from places and other people. Such division may result from the difficulty of crossing a heavily trafficked road or a physical barrier created by the road itself.

Accidents and Safety

- 11.39 The IEA guidelines do not include any definition in relation to accidents and safety, suggesting that professional judgement would be needed to assess the implications of local circumstances, or factors which may increase or decrease the risk of accidents.

Public Transport Delay

- 11.40 It should be noted that there is a lack of formal guidance for the assessment of public transport delay in guidance documents. Therefore, proposed assessment of public transport has been considered with regards to the detailed information regarding the impact of public transport presented in the TA (Appendix 11.1).

Limitations and Assumptions

- 11.41 The following limitations and assumptions in undertaking this chapter include:
- The data used in this assessment is from observed traffic flows, undertaken in 2018 by KMBC. The surveys were undertaken prior to any Covid restrictions were in place and is therefore deemed to be appropriate and robust for the purpose of the assessments;
 - Baseline conditions have been established from a variety of sources which are the most up-to-date data available at the time. However due to the dynamic nature of certain aspects of the environment and the lengthy time for the implementation of the Development, conditions may change during the construction and operation of the Development;

- The Development traffic flows used within this assessment have been obtained from the TRICS database, based on trip rates at other, similar developments. This follows standard industry practice, and it is assumed that these will be representative of the traffic flows that will occur at the Site; and
- The Development trips have been assigned to the network based on observed vehicle movements. It is assumed that this will be representative of the traffic distribution that will occur at the Site.

Establishment of Effect Level and Significance

11.42 The IEA guidelines refer to the DfT's 'Manual of Environmental Appraisal'^{viii}, which suggests that changes in traffic flow of 30%, 60% and 90% would be likely to produce 'slight', 'moderate' and 'substantial' changes respectively.

11.43 Likely significant transport effects have been defined as:

- **Beneficial:** Meaning that they produce environmental benefits in transportation terms, i.e. where overall traffic flows or percentage Heavy Goods Vehicles (HGV) decrease, or there are improved facilities for pedestrians, cyclists or public transport users;
- **Negligible:** Meaning that changes are too small to meaningfully measure where changes in flows are typically less than 10%; and
- **Adverse:** Meaning that they produce environmental dis-benefits in transportation terms, i.e. where overall traffic flows or percentage HGV increase, or there are reductions in facilities for pedestrians, cyclists or public transport users.

11.44 Beneficial and adverse effects are further characterised as:

- **Minor:** Slight very short or highly localised changes of no significance and/or where changes in traffic flows/patterns are between 10% and 30%;
- **Moderate:** Limited change by extent, duration or magnitude which may be considered significant and/or where changes in traffic flows/patterns are between 30% and 60%; and
- **Major:** Considerable change by extent, duration or magnitude of more than local significance or in breach of recognised acceptability, legislation, policy or standards, and/or where changes in traffic flows/patterns are greater than 60%.

11.45 Predicted effects are either long or short term, typically with the effects of construction traffic deemed short term and those associated with the operational stages of the Development as long term. The IEA guidance also advises that these broad indicators should be used with

care and regard paid to specific local conditions. The application of these criteria in this ES has, therefore, been based on professional judgement.

- 11.46 Where predicted increases in traffic flows are lower than the percentage-based thresholds, the IEA guidelines suggest the significance of effects can be stated to be low or insignificant and further detailed assessments are not required. Where predicted effects would breach the identified thresholds, further detailed assessment is required to define their significance in accordance with the IEMA guidelines and using professional judgement.
- 11.47 In EIA terms and for the purposes of assessment in this chapter, any effect greater than moderate (adverse/beneficial) is considered to be significant.

Study Area

- 11.48 The Site is located approximately 1 kilometre (km) to the south of Whiston. The full Development description is set out in Chapter 3 of this ES.
- 11.49 The location of the Site in relation to the surrounding area is presented as Plan 1 in the TA.
- 11.50 The Site is located directly to the east of land which is subject to a separate planning application (Ref. 20/00399/OUT). For context, the neighbouring site is shown in Figure 2.1 of the TA.
- 11.51 The Site is also bound by a wooded area to the north while agricultural land is located to the south and east of the Site.
- 11.52 Vehicular access to the Development will be gained from the adjacent site which is under a separate planning application (Ref. 20/00399/OUT) from which access will be taken from Lickers Lane. A signalised junction is proposed as part of the adjacent scheme.
- 11.53 In similar vein to the adjacent site, it is considered that due to assessment work which has already been undertaken to support the Halsnead Park SUE, that the TA should only include an assessment of the proposed access junctions, albeit with the increase in traffic associated with the Development.
- 11.54 For the purposes of this Chapter, the study area, therefore, focuses on the same highway network as that considered as part of the ES for the adjacent planning application (Ref. 20/00399/OUT). This can be considered to be a robust approach.

Overall Approach

- 11.55 The analysis and methodology adopted within this chapter have been derived from, and are entirely consistent with, the analysis presented within the TA (Appendix 11.1). It has been assumed that the assessment methodology previously agreed with KMBC, the Local Highway Authority, as part of the adjacent planning application, should be deemed appropriate in this instance. The approach is detailed below.
- 11.56 The structure and content of the accompanying TA complies with the DfT's "Guidance on Transport Assessment"^{ix} document and 'DfT Circular 02/2013'^x and in 'The Strategic Road Network - Planning for the Future'^{xi}, as requested by NH.
- 11.57 As already confirmed, in order to establish base levels of traffic, the traffic flows provided by KMBC for the adjacent planning application (Application Ref. 20/00399/OUT) have been used. The 2018 surveyed traffic flows have subsequently been factored to the appropriate future assessment year (2030) in order to provide a robust operational baseline assessment.
- 11.58 This corresponds with and is in line with the assessments which have been undertaken as part of the TA for the adjacent planning application (Ref. 20/00399/OUT).
- 11.59 As outlined in Chapter 5, the expected Development completion date is 2025 (open market) and 2026 (affordable). As such, 2030 has been used as the first full year of completion. This reflects a robust consideration of the likely level of impact of the Development and also accords with wider network modelling already undertaken by KMBC.
- 11.60 Background traffic growth has been applied to observed traffic surveys to generate 2030 Baseline traffic flows. Traffic Growth has been calculated using industry standard reference to TEMPRO growth factors.
- 11.61 Committed developments, as agreed with KMBC, have also been applied to the Baseline scenario to assess the cumulative impact of the proposals.
- 11.62 The directional distribution of the traffic associated with the Development has been assigned to the local highway network in line with the observed vehicle movements, which is considered to present a suitable approach and is consistent with the approach taken for the adjacent site.
- 11.63 In order to assess the effects of the Development, residential trip rates established from the industry standard TRICS database have been adopted. These trip rates are detailed in the

accompanying TA (Appendix 11.1) whilst Table 11.1 of this chapter provides the forecast AM and PM peak trip generation for the Site. Indeed, the same trip rates as utilised for the Area A site have been used which is deemed to be appropriate.

- 11.64 For the purposes of the traffic impact assessment, up to 120 residential dwellings have been considered. This provides a robust assessment.
- 11.65 The Chapter considers the potential changes in traffic flows brought about by the Development. The potential changes in traffic flows associated with the wider Halshead Masterplan and other local committed development sites in the surrounding area have also been considered.
- 11.66 The operational phase assessment provided in this chapter focuses on predicted impacts of the Development during the Weekday AM and PM peak hours, as these represent the peak periods of traffic generation from the operation of the Development and a 'worst case' in terms of the traffic and transport related environmental impact of the Development.
- 11.67 The impact of the Development at the proposed Site access junction (proposed by the adjacent scheme) has been assessed in the TA (Appendix 11.1) using the industry-standard software package, LinSig. The results of this analysis subsequently informed the assessment provided in this ES chapter.

Baseline Conditions

Existing Highway Network

- 11.68 Lickers Lane runs in an approximate east to west alignment along the northern boundary of the Site and is subject to a 30-mph speed limit. To the east, Lickers Lane forms the minor arm of a priority-controlled junction with Fox's Bank Lane. To the west of the Site, it forms the minor arm of a priority-controlled junction with Windy Arbor Road.
- 11.69 In the vicinity of the Site, Lickers Lane has a carriageway width of approximately 7.3 metres, is street lit, and has a pedestrian footway on its northern side.
- 11.70 To the east of the Site, Fox's Bank Lane runs in an approximate north to south alignment between the centre of Whiston and the A5080 Cronton Road. Fox's Bank Lane becomes Cumber Lane to the north before entering Whiston town centre, whilst to the south, it forms the minor arm of a priority-controlled junction with the A5080 Cronton Road.

- 11.71 To the west of the Site, Windy Arbor Road runs in an approximate north to south alignment. Approximately 350m north of Lickers Lane/Windy Arbour Road priority junction, Windy Arbor Road forms the southern arm of a signalised junction with Dragon Drive and Greenes Road. Dragons Drive continues towards Whiston town centre whilst Greenes Road provides links into Huyton via Pottery Lane.
- 11.72 Windy Arbour Road is subject to a 30mph speed limit, is street lit, and provides footways of at least 2m in width.
- 11.73 To the south, Windy Arbor Road forms the north-eastern arm of the M62 junction 6 grade separated roundabout, known as Tarbock Island. National Highways have carried out widening works to upgrade the footway/cycleway to a minimum of 2m at the Tarbock Island gyratory serving the M62 and M57.

Baseline Traffic Flows

- 11.74 The Site is currently undeveloped and apart from any associated agricultural traffic does not generate any traffic movements onto the local highway network.
- 11.75 With consideration of the traffic data included in the assessment for the adjacent scheme, the 2018 peak period flows have been identified as 0800 to 0900 hours and 1630 to 1730 hours for the AM and PM peak periods respectively.

Future Baseline

- 11.76 Only a future year assessment of 2030 assuming that all developments are complete have been undertaken. As such the future baseline forecast traffic flows on the surrounding highway network are provided below:

Lickers Lane

- 11.77 The future year traffic flows have been derived from the surveyed flows using 'TEMPRO Adjusted NTM' growth factors for Knowsley MSOA 013. This methodology was previously agreed with KMBC, as part of the TA for the adjacent site (Ref. 20/00399/OUT). The resultant growth traffic flows for 2030 are shown below:

Lickers Lane:

- AM Peak Eastbound – 365 vehicles;
- AM Peak Westbound – 407 vehicles;

- PM Peak Eastbound – 373 vehicles; and
- PM Peak Westbound – 300 vehicles.

Windy Arbor Road:

- AM Peak Northbound – 556 vehicles;
- AM Peak Southbound – 511 vehicles;
- PM Peak Northbound – 571 vehicles; and
- PM Peak Southbound – 464 vehicles.

Accident Statistics

- 11.78 In order to consider the potential impact of the Development on road safety, a review of the Crashmap website^{xii} has been undertaken.
- 11.79 The data shows that there have been no recorded incidents along Lickers Lane in the vicinity of the Development during the most recent 3 year period for which data is available.
- 11.80 In view of this information, it can be concluded that the local highway network in the vicinity of the Development does not have an unduly poor safety record.

Public Transport

- 11.81 The nearest bus stops to the Site are located approximately 150m from its centre on Lickers Lane, via the new pedestrian link proposed to the north of the Development. The nearest westbound stop consists of a bus stop pole with timetable information whilst the eastbound stop also has a bus shelter with seating.
- 11.82 Safe pedestrian access to these bus stops is provided via the existing and proposed pedestrian footways on Lickers Lane, including a new pedestrian route to the north.
- 11.83 The nearest bus stops provide regular Monday to Saturday services to destinations including Liverpool city centre, Prescot, Widnes and Whiston. Direct access to Whiston Hospital, located to the north of the Site, is also provided which is an important local employer as well as a key service in the area.
- 11.84 The Development is also accessible by rail with Whiston railway station located less than 1km from the centre of the Development. Whiston railway station offers 3 services per hour to Liverpool Lime Street and 2 services per hour to St Helens Junction.

Sustainable Travel

- 11.85 An existing pedestrian footway of around 2m in width is located to the northern side of Lickers Lane, this footway provides pedestrian links throughout Whiston and provides direct linkages to the nearby day to day amenities within the area.
- 11.86 Within around a 20-minute walk of the centre of the Site are a range of 'day to day' amenities at the Whiston Cross local centre including a number of convenience stores, healthcare facilities, restaurants and other 'High Street' services.
- 11.87 National Cycle Network route 56 is located in close proximity of the Site. This route provides a traffic free cycle route between Whiston and Huyton via Stadt Moers Park.
- 11.88 The area surrounding the Site is also relatively flat and so is ideal for cycling, providing residents with a choice about travelling in a sustainable manner, rather than relying on the private car.
- 11.89 A distance of 5km is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12km per hour and would encompass the whole of Whiston and the surrounding areas of Huyton, Rainhill and Prescot.

Likely Significant Effects

Construction Phase

- 11.90 As outlined in Chapter 5 of the ES, the Development is anticipated to have an indicative construction programme of approximately 3 years, anticipated to commence in February 2023, and reaching completion in January 2026 (based on the affordable dwellings), based on a build out of between 2.0 and 2.3 dwellings per month. The first full year of operation would be 2025 (for the open market housing) and 2026 (for the affordable housing). During this time, there will be a mix of construction and development traffic as early phases of the Development are built out. Construction traffic will include the movements of workers associated with the construction of infrastructure and individual plots along with the movement of material in the form of importing or exporting material. Construction access is to be taken from Lickers Lane.
- 11.91 It is expected that the majority of construction workers would originate within the local residential areas of Knowsley, Liverpool and Manchester and will all approach the Site from

the M57 or the M62. The HGV traffic generated during the construction phase of the Development is anticipated to originate predominantly from the wider strategic network, travelling to the Site via the M62.

11.92 Construction will make up a progressively lower proportion of the overall traffic volumes as the Site is developed, with overall traffic volumes anticipated to be the highest on completion. Construction vehicle movements will be managed to minimise the impact on the local road network.

11.93 Table 11.1 provides an indicative level of construction traffic trip generation based on the likely construction materials and phasing of the Development. It has been estimated based on experience of other similar residential developments and a house construction compound established to build approximately 24-28 units per year.

Table 11.1: Construction Traffic

Vehicle Type	Average Trips Per Day
HGV	10
Cars and Light Goods	90

11.94 There would be short term increases in driver delay associated with the implementation of the Site access junctions due to general traffic management measures employed to facilitate the construction of the Site access points.

11.95 The likely significant effects of the Development in relation to the above receptors have been assessed during the construction phase. This concluded that the minimal traffic volumes and HGV volumes associated with the construction phase of the Development, particularly during the AM and PM peak hours, are not considered significant and therefore the construction traffic effect on the receptors was considered as follows:

- Driver Delay – Negligible;
- Pedestrian Delay and Amenity – Negligible;
- Fear and Intimidation – Negligible;
- Severance – Negligible; and
- Accidents and Safety – Negligible.

Operational Phase

- 11.96 During the operational phases of the Development, predicted effects would occur gradually as the build out of the Development and the occupation of proposed residential dwellings will take place over a number of years.
- 11.97 For the purposes of the traffic impact assessment, a future year of 2030 has been considered which corresponds with assessments already undertaken on the wider network.

Access Proposals

- 11.98 As already stated, vehicular access into the Development will be through the adjacent scheme (Ref. 20/00399/OUT), which in turn will be via a new signal junction on Lickers Lane.

Vehicular Trip Generation

- 11.99 Table 11.2 below includes a summary of the potential number of vehicular trips associated with the Development, based on the trip rates as described in the TA (Appendix 11.1).

Table 11.2: Predicted Vehicular Trips from Operation of the Development

	Weekday AM Peak				Weekday PM Peak			
	Trip Rates		Trips		Trip Rates		Trips	
	Arr	Dep	Arr	Dep	Arr	Dep	Arr	Dep
Residential (up to 120 dwellings)	0.126	0.376	15	45	0.352	0.155	42	19

- 11.100 Table 11.3 below identifies predicted future baseline traffic flows in 2030, taking account of predicted traffic generation from cumulative developments based on the application of TEMPRO traffic growth. This table also shows predicted changes in traffic flows due to the addition of the Development.

Table 11.3: Changes in Traffic Resulting from the Development

	2030 Predicted Future Baseline	2030 With Addition of the Development	Change in Traffic Flow	Percentage Change (from Predicted Future Baseline – 2030)
Lickers Lane (Two-Way Flows) – West of the Site Access				
Weekday AM Peak	862	1060	+60	+6.9%
Weekday PM Peak	773	973	+61	+7.9%
Lickers Lane (Two-Way Flows) – East of the Site Access				
Weekday AM Peak	792	792	+0	+0.0%
Weekday PM Peak	781	629	+0	+0.0%
Windy Arbor Road (Two-Way Flows) – North of the Site Access				
Weekday AM Peak	1256	1340	+49	3.9%
Weekday PM Peak	1239	1330	+61	4.9%

	2030 Predicted Future Baseline	2030 With Addition of the Development	Change in Traffic Flow	Percentage Change (from Predicted Future Baseline – 2030)
Windy Arbor Road (Two-Way Flows) – South of the Site Access				
Weekday AM Peak	1256	1340	+49	3.9%
Weekday PM Peak	1239	1330	+61	4.9%

11.101 Table 11.3 demonstrates that Lickers Lane is predicted to experience a maximum increase in traffic of 7.90% at 2030 as a result of the Development, compared with the predicted future baseline traffic flows. In accordance with the IEA guidelines these predicted changes in traffic flows are categorised as a **negligible** level of effect, which is not considered significant. Further afield, the Development traffic will be further distributed onto the wider highway network, with a large proportion of the Development traffic distributed via the M57 and M62 from Tarbock Island. As such, impacts on the wider network and, in particular, on quieter roads in the area are expected to be less than 10% or **negligible** in accordance with IEA guidelines.

Mitigation Measures

11.102 The Development includes a range of measures to mitigate the potential significant effects associated with the Development, such as, the provision of a Travel Plan (Appendix 11.1). These are aimed at encouraging people to travel by more sustainable modes along with providing additional capacity and services where appropriate.

11.103 In addition to the above, the Development will also benefit from measures to be implemented by the adjacent scheme (Ref. 20/00399/OUT). Measures included as part of the scheme include:

- A signalised site access junction on Lickers Lane which will provide controlled pedestrian crossing facilities on Lickers Lane;
- A signalised site access junction on Windy Arbor Road which will provide controlled pedestrian crossing facilities on Windy Arbor Road;
- A new 2m pedestrian footway on Lickers Lane along the adjacent scheme frontage;
- A new pedestrian crossing on Lickers Lane in the form of signal-controlled crossing point in the vicinity of the north western corner of the Site; and
- New footway/cycleway connections to the remainder of the Land South of Whiston site (the Halsnead Masterplan) to the east, south and west of the Development.

11.104 As part of the Development, the design of footpath connections on the Site will facilitate easy and convenient access to bus stops on Lickers Lane. The Development will include high quality

footway and cycleway links, where appropriate, designed to promote walking and cycling on and off the Site with connections provided to the wider pedestrian and cycle networks within Whiston and the wider Halsnead Masterplan development.

11.105 No existing public PRow will be affected by the Development and the design of the proposed footpath connections on the Site will facilitate easy and convenient access.

Construction Phase

11.106 Traffic impacts during the construction of the Development will be appropriately managed via a proper planned and phased approach in terms of construction traffic and through the phasing of the Development. This will be supported by a Construction Traffic Management Plan (CTMP) which will be submitted as part of the Construction Environmental Management Plan (CEMP).

11.107 The CEMP will include control measures, including robustly enforced traffic management measures, to protect the environment, amenity and safety of local residents, businesses, and the general public in the vicinity of the Development.

11.108 Relevant procedures and measures which will be addressed in the CTMP include:

- Haulage routes would be agreed with the local highway authority;
- Construction traffic will be encouraged to avoid highway peak periods;
- Provision would be made to ensure that vehicles can be loaded and unloaded clear of the public highway;
- The Site labour forces would be encouraged to use sustainable modes of transport; and
- HGV wheels to be washed prior to vehicles leaving the Site.

Operational Phase

11.109 The proposed mitigation measures include the provision of:

- The internal layout of the Site will be designed to provide a safe environment for pedestrians and cyclists with clearly defined walkways, crossing points and traffic calming features where appropriate.

11.110 As already stated, the Development also includes the implementation of a Travel Plan to encourage sustainable travel as described in the TA (Appendix 11.1). A Framework Travel

Plan will form part of a formal Travel Plan (included in Appendix 11.1) which will evolve over the life of the Development.

11.111 The Travel Plan outlines physical and management measures to encourage travel to and from the Site by non-car modes of travel, including:

- Appointment of Travel Plan Co-ordinator;
- Residents' Travel Pack;
- Residents' Travel survey;
- Travel Awareness and Information;
- Promotion of Lift Share Scheme; and
- Encouraging Walking/Cycling.

11.112 The Site benefits from good non-car accessibility and it is, therefore, expected that the adoption of a Travel Plan will be effective in managing operational phase traffic. The predicted pre-mitigation levels of traffic effects are therefore considered to be 'worst-case' impacts.

Residual Effects

Construction Phase

11.113 The construction phase is temporary in nature and as such, some on-going traffic will be observed until the construction phase of the Development is completed. With the implementation of appropriate construction mitigation, including the CTMP which will be submitted as part of the CEMP, the residual effects are not considered significant and therefore the construction traffic effect on the receptors remain as follows:

- Driver Delay – Negligible;
- Pedestrian Delay and Amenity - Negligible;
- Fear and Intimidation – Negligible;
- Severance – Negligible; and
- Accidents and Safety – Negligible.

Operational Phase

11.114 The mitigation measures proposed would ensure that the potential traffic impact associated with the Development can be satisfactorily accommodated. There would be slight increased delay along some roads due to Development traffic when compared to existing conditions. However, these effects would be minimal and typically constrained to the commuter peak periods when the roads are busiest. Residual effects on road users and pedestrians and cyclists at the completed Development stage are considered below.

Severance

11.115 As described above, the traffic flows generated by the Development are predicted to increase the number of vehicles on the highway network, but only by a small amount. This is considered to have a negligible effect on severance on the local highway network.

11.116 In addition, the implementation of the site-wide development Travel Plan will be effective in managing operational phase traffic. On this basis it is concluded the Development would have a **negligible** residual effect on severance on the local road network.

Driver Delay

11.117 The LINSIG site access junction assessments, contained within the accompanying TA (Appendix 11.1), have also demonstrated that the forecast Development traffic can be accommodated at the proposed Site access on Lickers Lane and the proposed Site access is predicted to be operate within their theoretical capacity. As such, the residual effect on driver delay at the proposed Site access junctions is considered to be **negligible**.

Pedestrian Amenity and Delay

11.118 Fundamentally, traffic levels are not predicted to significantly rise on the road network as a result of the Development.

11.119 With the implementation of mitigation measures, the residual effect of the Development upon non-vehicular public access users within Whiston is considered to be **negligible**.

Fear and intimidation

11.120 Where pedestrian movements are to increase in the context of the Development, improvements in the form of new signalised crossing points and purpose-built footways form

part of the Development. On this basis it is concluded the Development would have a **negligible** residual effect on fear and intimidation.

Public Transport Users

11.121 The baseline conditions in relation to Public Transport provision are considered appropriate to meet the demands of the Development. The residual effect of the Development upon public transport users within Whiston is considered to be **negligible**.

Accidents and Safety

11.122 A review of the accident data is provided earlier in this chapter (Paragraphs 11.81 to 11.83). The review concludes that there is no reason to suggest that accidents will increase, or safety will be compromised as a result of construction or Development traffic. The residual effect on the network is therefore considered to be **negligible**.

Cumulative Effects

Construction Phase

11.123 The construction of the Development in combination with relevant cumulative developments would result in a temporary increase of HGV and cars carrying construction workers and materials on roads within the area.

11.124 It is anticipated that committed developments around the Site will all employ the same level of mitigation, such as appropriate CEMPs and CTMPs, during construction as proposed within this assessment during the construction phase. As such, no significant cumulative effects are predicted, and the cumulative construction effects are therefore considered to be **negligible**.

Operational Phase

11.125 The predicted future baseline traffic data accounts for future growth and committed development. KMBC has also requested that consideration is given to the cumulative impacts of the wider Halsnead Masterplan development in combination with the Development in terms of the anticipated traffic impact.

11.126 Therefore, the operational cumulative effects in relation to Transport are considered to be **negligible**.

Summary

- 11.127 An assessment was undertaken of the likely significant effects of the Development upon the traffic and transportation conditions within the vicinity of the Site. The impacts of the construction and operational phases of the Development were assessed for a 2030 scenario.
- 11.128 The operational phase impacts of the Development were assessed through a comparison of the traffic and transport conditions within the surrounding area under two scenarios; predicted future baseline traffic flows in 2030 and with the addition of the Development. The analysis and methodology adopted within the assessment was derived from and is entirely consistent with the analysis presented within a TA (Appendix 11.1).
- 11.129 The residual effects of the construction phase of the Development upon traffic flows and transport-related environmental factors are predicted to be negligible and not significant. The Development will include the implementation of a CEMP as a form of mitigation to control any potential construction environmental impacts, including the adoption of measures to minimise disruption caused by construction traffic.
- 11.130 Overall, the impacts of the Development during the operational phase are largely predicted to be negligible. A series of mitigation and enhancement measures are proposed to address potential traffic impacts from the operational phase of the Development.
- 11.131 To manage travel by residents of the Development, a Travel Plan will be developed and implemented. This will outline physical and management measures to encourage travel to and from the Site by non-car modes of travel.
- 11.132 Improvements to the pedestrian and cycle connections will also be implemented as part of the Development which will enhance connectivity running through and around the Site.
- 11.133 Cumulative construction and operational phase traffic impacts are also considered to be negligible.
- 11.134 Table 11.4 contains a summary of the likely significant effects of the Development.

Table 11.4: Table of Significance – Transport and Access

Potential Effect	Nature of Effect (Permanent/Temporary)	Significance (Major/Moderate/Minor) Beneficial/ Adverse/Negligible)	Mitigation / Enhancement Measures	Geographical Importance*							Residual Effects (Major/Moderate/Minor) (Beneficial/Adverse/ Negligible)
				I	UK	E	R	C	B	L	
Construction											
Severance	Temporary	Negligible	Implementation of Construction Traffic Management Plan (CEMP) which will include details of construction working hours, construction traffic routing, construction vehicle types and movement periods and appropriate mitigation measures, such as, wheel washing facilities.							*	Negligible
Driver Delay	Temporary	Negligible								*	Negligible
Pedestrian Amenity and Delay	Temporary	Negligible								*	Negligible
Fear and Intimidation	Temporary	Negligible								*	Negligible
Accidents and Safety	Temporary	Negligible								*	Negligible
Completed Development											
Severance	Permanent	Negligible	Implementation of a Travel Plan to encourage sustainable travel amongst residents and minimising the need to travel by private car.							*	Negligible
Driver Delay	Permanent	Negligible								*	Negligible
Pedestrian Amenity and Delay	Permanent	Negligible								*	Negligible
Fear and Intimidation	Permanent	Negligible								*	Negligible
Accidents and Safety	Permanent	Negligible	None required							*	Negligible
Public Transport Users	Permanent	Negligible	Implementation of a Travel Plan to encourage sustainable travel amongst residents and minimising the need to travel by private car.							*	Negligible
Delay and Amenity Impacts on Non-Vehicular Public Access Routes	Permanent	Negligible	None required							*	Negligible
Cumulative Effects											
Construction	Temporary	Negligible	None required								Negligible
Operational	Permanent	Negligible	Implementation of a Travel Plan to encourage sustainable travel amongst residents and minimising the need to travel by private car.								Negligible

*** Geographical Level of Importance**

I = International; UK = United Kingdom; E = England; R = Regional; C = County; B = Borough; L = Local

REFERENCES

- ⁱ CLG (July 2021) National Planning Policy Framework
- ⁱⁱ Manual for the Streets. Link:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1072722/Essex_Manual_for_Streets_Redacted.pdf
- ⁱⁱⁱ Planning Practice Guidance. Link <https://www.gov.uk/government/collections/planning-practice-guidance>
- ^{iv} The third Local Transport Plan for Merseyside (2011)
- ^v Knowsley Local Plan Adopted Core Strategy (2011), Adopted 2016
- ^{vi} Knowsley Replacement Unitary Development Plan (Saved Policies)
- ^{vii} Guidelines for the Environmental of Road Traffic (IEMA) 1993
- ^{viii} Department for Transport's Manual of Environmental Appraisal
- ^{ix} Guidance on Transport Assessment (DCLG/DfT) 2007
- ^x DfT Circular 02/2013 THE STRATEGIC ROAD NETWORK AND THE DELIVERY OF SUSTAINABLE DEVELOPMENT. Link:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/237412/dft-circular-strategic-road.pdf
- ^{xi} National Highways, The strategic road network Planning for the future. Link:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/461023/N150227_-_Highways_England_Planning_Document_FINAL-lo.pdf
- ^{xii} www.CrashMap.co.uk

12. SUMMARY AND RESIDUAL EFFECTS

Introduction

- 12.1 This chapter summarises the mitigation measures and residual effects identified in each of the technical assessments included in the ES, which has been prepared to accompany a full planning application for development of land south of Lickers Lane, Whiston for:

"Full planning application for the erection of 120 residential dwellings with vehicular access points off Lickers Lane, public open space, landscaping, boundary treatments and other associated works."

Mitigation Measures

- 12.2 The Development has been subject to an iterative design process. As this process progressed measures have been incorporated into the Development in order to avoid, reduce or offset significant environmental effects. These include:

- A fabric first approach that will reduce energy demand and consequent CO₂ emissions by 1.49% beyond the Part L 2013 baseline;
- Heat generation and distribution systems will be designed to give occupants a high level of control over their use, encouraging and allowing energy-efficient behaviour;
- Primary pipework will be fully insulated in all dwellings;
- Internal lighting will be low energy wherever possible, and areas of infrequent use will be fitted with occupancy sensors;
- Measures taken to reduce internal heat gain and provide natural ventilation through window opening will allow sufficient air exchanges rates to limit heat build up;
- Key existing landscape features are proposed to be retained, namely the boundary vegetation to a large proportion of the north of the Development;
- The location and height of the built form within the Development has been landscape driven in order not to expand the existing visual envelope in views from the immediate, local, and wider landscape;
- The proposed building facades will comprise of materials, finishes and hues which are evident in the local landscape and townscape;
- New Open space and pedestrian routes will be provided on site, connecting the Development to the countryside to the east;
- Sustainable Urban Drainage techniques such as rainwater harvesting, bio-retention areas (tree pits and rain gardens), permeable paving and cellular attenuation tanks will be incorporated throughout the Development to reduce the flood risk; and

- Trees will be retained on-site, new planting will be incorporated and the wider Garden Village Masterplan will offset habitat units lost as part of the Development.

12.3 Following assessment of the Development, additional mitigation measures have been proposed to be secured and implemented. These are set out in Table 12.1 below along with the residual effects of the Development following mitigation.

Table 12.1: Significance Table

Phase	Effect/ Receptor	Mitigation	Residual Significance
POPULATION AND HUMAN HEALTH (CHAPTER 6)			
Construction	Effect of construction on local employment	Not required	Minor beneficial
	Effect of construction on wider human health	Implementation of a Construction Environmental Management Plan (CEMP)	Moderate adverse-negligible
Operation	Housing Delivery	Not required	Minor beneficial
	Early Years Education Provision		Negligible
	Primary Education Provision		Negligible
	Secondary Education Provision		Negligible
	GP Provision	Not required. However, a financial contribution may be requested	Minor adverse
	Wider Human Health	Framework Travel Plan Open Space and New pedestrian routes within the Development	Minor beneficial-minor adverse
	Resident Labour Supply	Not required	Minor beneficial
LANDSCAPE AND VISUAL EFFECTS (CHAPTER 7)			
Construction	Landscape		
	Impact of construction on landscape setting to heritage assets	Implementation of CEMP	Negligible adverse
	Impact of construction on topography	N/A	Negligible
	Impact of construction on settlement pattern		Minor adverse
	Impact of construction on land use	Implementation of a CEMP	
	Impact of construction on open space	N/A	Negligible
	Impact of construction on Public Right of Ways		
	Impact of construction on national landscape character	Implementation of a CEMP	Negligible
	Impact of construction on regional landscape character		Minor adverse
	Impact of construction on site level landscape character		Moderate adverse
	Impact of construction on vegetation	Protection of landscape features, implementation of CEMP	Moderate adverse
	Impact of construction on built form	N/A	Negligible
	Visual - Adjoining / Close Views		
	Residential receptors	Implementation of a CEMP	Negligible-minor adverse
	Receptors using the road network		

Phase	Effect/ Receptor	Mitigation	Residual Significance
	Receptors using areas of open space		
	Receptors at place of work		Negligible
	Middle Distance Views		
	Residential receptors	Implementation of a CEMP	Negligible-minor adverse
	Receptors using the road network		Negligible
	Receptors using the Public Right of Way network		
	Receptors using areas of open space		Negligible-minor adverse
	Receptors at place of work		Negligible
	Long Distance Views		
	Residential receptors	Implementation of a CEMP	Negligible
	Receptors using the road network		
	Receptors using the Public Right of Way network		
	Receptors using areas of open space		
	Receptors at place of work		
Operation	Landscape		
	Impact of Development on landscape setting to heritage assets	Retention of landscape features, sitting and materiality of built form, implementation of landscape scheme	Negligible
	Impact of Development on topography	N/A	
	Impact of Development on vegetation	Retention of landscape features, implementation of landscape scheme	
	Impact of Development on settlement pattern	Setting of built form	Minor beneficial
	Impact of Development on land use	Retention of landscape features, implementation of landscape scheme	Minor adverse
	Impact of Development on open space	Implementation of landscape scheme	Minor beneficial
	Impact of Development on public rights of way	Inclusion of new routes	
	Impact of Development on national landscape character	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme	Negligible
	Impact of Development on county landscape character		
	Impact of Development on site level landscape character		Minor adverse
	Impact of Development on built form	Setting of built form	Minor beneficial
	Visual – Adjoining / Close Views		
	Residential receptors	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme	Negligible-minor adverse
	Receptors using the road network		
	Receptors using areas of open space		

Phase	Effect/ Receptor	Mitigation	Residual Significance
	Receptors at place of work		Negligible
	Middle Distance Views		
	Residential receptors	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme	Negligible-minor adverse
	Receptors using the road network		
	Receptors using the Public Right of Way network		Negligible
	Receptors using areas of open space		
	Receptors at place of work		
	Long Distance Views		
	Residential receptors	Retention of landscape features, siting and materiality of built form, implementation of landscape scheme	Negligible
	Receptors using the road network		
	Receptors using the Public Right of Way network		
	Receptors using areas of open space		
	Receptors at place of work		
BIODIVERSITY (CHAPTER 8)			
Construction	Impact of construction of designated sites	Precautionary working methods through a CEMP	Negligible
	Impact of construction of habitats	Protection of retained habitats	Minor adverse
	Impact of construction of amphibians	Toolbox Talk prior to commencement of works and removal of amphibians from working area	Minor adverse
	Impact of construction of bats	Construction lighting plan	Minor adverse
	Impact of construction of breeding birds	Nesting bird checks undertaken during nesting season	Minor adverse
	Impact of construction of brown hare	A pre-commenced check for young brown hare	Negligible
	Impact of construction of badgers	Precautionary working methods through a CEMP	Negligible
	Impact of construction of hedgehogs	Hand demolition of suitable hedgehog habitats	Negligible
	Impact of construction of invertebrates	N/A	Negligible
	Impact of construction of invasive species	The species will be removed to enhance the woodland following best practice guidelines	Minor beneficial
Operation	Impact of the Development on designated sites	Information packs will be delivered to local residences informing of the importance of designated sites	Negligible
	Impact of the Development on habitats	A Habitat Management Plan will be produced to secure implemented habitat creation/ retention. The landscape plans will be implemented within the Site to provide areas of tree planting, wildflower meadow and native shrub planting.	Moderate adverse
	Impact of the Development on amphibians	A Hibernaculum will be installed within the Site.	Negligible
	Impact of the Development on bats	Lighting plans will be produced, and bat boxes will	Minor beneficial (roosting bats)

Phase	Effect/ Receptor	Mitigation	Residual Significance
		be installed	Minor adverse (foraging bats)
	Impact of the Development on breeding birds	Nesting boxes will be installed within the Development	Negligible
	Impact of the Development on brown hare	N/A	Negligible
	Impact of the Development on badgers	A lighting plan will be produced A 20mph speed limit will be set within the Development	Minor adverse
	Impact of the Development on hedgehogs	A number of hedgehog houses will be installed Gaps in boundary fences are proposed	Negligible
	Impact of the Development on invertebrates	An insect hotel will be provided	Negligible
	Impact of the Development on invasive species	A Habitat Management Plan will be produced detailing eradication of invasive species if identified within the Development.	Minor beneficial
BUILT HERITAGE (CHAPTER 9)			
Construction	Impact of construction on North East Lodge to Halsnead Park	Proposed plantings within rear gardens along eastern boundary of the site, and along either side of proposed new road within the southern part of the site which would soften the visual impact. Implementation of a CEMP.	Negligible
	Impact of construction on Gate Piers beside North East Lodge to Halsnead Park		Negligible
	Impact of construction on Halsnead Park landscape	Retention of surviving elements of the parkland surrounding the site, including the woodland and pond to the north/north east. Implementation of a CEMP.	Negligible-minor adverse
	Impact of construction on non-designated elements of the former Halsnead Park Estate		Negligible-minor adverse
Operation	Impact of the Development on North East Lodge to Halsnead Park	Proposed plantings within rear gardens along eastern boundary of the site, and along either side of proposed new road within southern part of the site which would soften the visual impact. Landscape Management Plan.	Negligible
	Impact of the Development on Gate Piers beside North East Lodge to Halsnead Park		Negligible
	Impact of Development on Halsnead Park landscape	Retention of surviving elements of the parkland surrounding the Site, including the woodland and pond to the north/north-east. Landscape Management Plan.	Negligible-minor adverse
	Impact of Development on non-designated elements of the former Halsnead Park Estate		Negligible-minor adverse
AIR QUALITY (CHAPTER 10)			
Construction	Fugitive dust emission impacts on amenity and ecological designations as well as increased PM10 concentrations at human health receptors	Implementation of a CEMP to control fugitive dust emissions during construction to an acceptable level	Negligible
	Road traffic exhaust emissions associated with	None required	

Phase	Effect/ Receptor	Mitigation	Residual Significance
	construction vehicles travelling to and from the Site		
Operation	Road traffic vehicles exhaust emissions associated with vehicles travelling to and from the Development	Implementation of Travel Plan	Minor adverse
TRANSPORT (CHAPTER 11)			
Construction	Impact of construction on severance	Implementation of Construction Traffic Management Plan which will include details of construction working hours, construction traffic routing, construction vehicle types and movement periods and appropriate mitigation measures, such as, wheel washing facilities.	Negligible
	Impact of construction on driver delay		Negligible
	Impact of construction on pedestrian amenity and delay		Negligible
	Impact of construction on fear and intimidation		Negligible
	Impact of construction on accidents and safety		Negligible
Operation	Impact of the Development on severance	Implementation of a Travel Plan to encourage sustainable travel amongst residents and minimising the need to travel by private car.	Negligible
	Impact of the Development on driver delay		Negligible
	Impact of the Development on pedestrian amenity and delay		Negligible
	Impact of the Development on fear and intimidation		Negligible
	Impact of the Development on accidents and safety	N/A	Negligible
	Impact of the Development on public transport users	Implementation of a Travel Plan to encourage sustainable travel amongst residents and minimising the need to travel by private car.	Negligible
	Impact of the Development on delay and amenity impacts on non-vehicular public access routes		Negligible

Interactive Effects

- 12.4 Regulation 4 (2) states that an ES must include a description of the aspects of the environment likely to be significantly affected by the Development and the interrelationship between these effects. There is no published methodology for determining the significance of interactive or synergistic effects. Combining effects with respect to one environmental discipline with another has to be qualitative and is necessarily based on judgment. Therefore, a matrix system has been used to indicate where such effects would likely occur for the construction and operational phases, highlighting where effects occur to a common receptor. This has been informed by the residual effects of the Development (as identified above in Table 12.1) and professional judgment. The findings of this exercise are set out in Table 12.2 below.

Table 12.2: Interactive Effects

Effect	Local Population and Site Users	Landscape and Views	Users of the Local Road Network	Biodiversity
Construction				
Effects to Employment, Economic Output and Expenditure	*			
Loss of habitat and boundary planting	*	*		*
Effects of construction dust and air quality	*			*
Disturbance of above ground built heritage assets	*	*		
Operation				
Housing provision	*			
Enhanced planting and habitat provision	*	*		*
Views of the Development	*	*		
Change of setting of built heritage assets		*		
Improvements to the road network	*		*	
Operational road and plant pollutant emissions	*		*	*
New open space creation	*	*		*

*indicates where a significant effect may occur.

- 12.5 Appropriate mitigation during the construction phase has been identified in the ES as necessary, such as best practice measures to reduce or eliminate potential adverse environmental effects of construction as far as possible. Furthermore, the Construction Methodology and Programme Chapter (Chapter 5) proposes a programme and approach to works which will ensure that the Development would be implemented in the most efficient and least intrusive manner. This includes measures set out and secured through the implementation of the CEMP for the Development (see Chapter 5 for further details). Relevant legislative requirements would also be adhered to.

- 12.6 During the construction and operational phases of the Development, it is considered that interactions could potentially occur as set out in Table 12.2. It is considered that interactive effects during construction on the surrounding area will be minor and not significant. Any significant adverse effects would be temporary in duration and are likely to be associated only with the peak periods of construction activity. It is considered that the interactive effects during operation of the Development on the surrounding area will be minor and not significant.

Cumulative Effects Summary

- 12.7 Each of the technical assessments considers the likely significant cumulative effects of the Development with the cumulative schemes set out in Chapter 2. The technical assessments identified the following significant beneficial cumulative effects:

- Temporary effects on employment during construction (Moderate-Major beneficial); and
- Permanent effect on resident labour supply during operation (Major beneficial).

- 12.8 The technical assessments identified that there are no significant adverse cumulative effects.

Summary/Conclusions

- 12.9 The Development will result in the following significant adverse residual effects only:

- The impact of the completed development on ecological habitats (Moderate adverse).