Land at Lickers Lane, Whiston

Environmental Statement Volume 2

Technical Appendices

Prepared on behalf of Vistry Partnerships North West

September 2022

bartonwillmore.co.uk

BARTON WILLMORE now Stantec

Land at Lickers Lane, Whiston

Environmental Statement Volume 2

Technical Appendices

Prepared by Barton Willmore on behalf of
Vistry Partnerships North West

Project Ref:	34161/A5/ES2022	34161/A5/ES2022
Status:	Draft	Final
Issue/Rev:	01	02
Date:	July 2022	September 2022
Prepared by:	NS	NS
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Date: September 2022

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LOCATION OF INFORMATION WITHIN THE ES

Appendix 1.1: Location of Information within the ES Required by Schedule 4 of the EIA Regulations, as amended

Specified Information		Location within ES
1. A description of the development, including in particular		
(a)	a description of the location of the development	Chapter 3 Site & Development, and Technical Chapters 6-11.
(b)	a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases	Chapter 3 and Chapter 5 Construction Methodology and Phasing.
(c)	a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used	Chapter 3.
(d)	an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases	Technical Chapters 6-11.
2	A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.	Chapter 4 Alternatives & Design Evolution.
3	A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.	Baseline Conditions sections set out within Chapters 6-11.
4	A description of the factors specified in regulation 4(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydromorphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.	Scope of the ES set out in Chapter 2 and assessed in technical Chapters 6-11.
5 A description of the likely significant effects of the development on the environment resulting from, inter alia:		
(a)	the construction and existence of the development, including, where relevant, demolition works	Chapter 3 and 5
(b)	the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable	Chapters 2 and 8 Biodiversity

Specified Information		Location within ES
	availability of these resources	
(c)	the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste	Chapter 10 Air Quality & Chapter 11 Transport. Noise and Vibration and Waste were scoped out of the ES as no likely significant effects are anticipated.
(d)	the risks to human health, cultural heritage or the environment (for example due to accidents or disasters)	Chapter 6 Population and Human Health and Chapter 2 setting out the scope of the EIA. Chapter 9 Built Heritage.
(d)	the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources	Cumulative Effects sections within Chapters 6-11.
(f)	the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change	Climate as a separate chapter scoped out of the ES.
(g)	the technologies and the substances used	Chapter 5 and technical assessments in Chapters 6-11.
	The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).	Likely Significant Effects sections within Chapters 6-11.
6	A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved	Assessment Methodology sections with Chapters 6-11.
7	A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.	Mitigation Measures sections within Chapters 6-11.
8	A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents	Risk of accidents scoped out of the ES. Refer to Chapter 3 and accompanying appendices

Specified Information		Location within ES
	and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU(**c**) of the European Parliament and of the Council or Council Directive 2009/71/Euratom(**d**) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.	which include details of EIA Scoping.
9	A non-technical summary of the information provided under paragraphs 1 to 8.	Standalone Document (NTS).
10	A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.	Provided at the end of each chapter of the ES.

APPENDIX 1.2
STATEMENT OF EXPERTISE

Appendix 1.2: Statement on the Expertise and Qualifications of the Competent Experts Contributing to the Land at Lickers Lane, Whiston ES as Required by Regulation 14 (1 and 2) of the 2017 EIA Regulations (as amended)

Chapter No.	Chapter Title	Expertise/Competence/Qualifications
1	Introduction	The ES has been coordinated and managed by Barton Willmore's, now Stantec Environmental Planning Team. The team is made up of qualified EIA Practitioners with extensive experience and relevant qualifications. Barton Willmore are registrants to the Institute of Environmental Management and Assessment EIA Quality Mark programme which involves annual assessment of Barton Willmore's, now Stantec EIA quality and standards.
2	EIA Methodology	
3	Site and Development	
4	Alternatives & Design Evolution	
5	Construction Methodology	
6	Population and Human Health	This chapter has been prepared by Barton Willmore now Stantec's Development Economics Team who have an established track record in the preparation of both Socio-Economic and Population and Human Health ES chapters. In particular, the analysis has been undertaken by Debbie Mayes, an Associate within the Team, who holds a BA (Hons) in Geography and MA in Town Planning and has over 20-years of professional experience in the field of socio-economic research in both the public and private sector specialising in social and economic impact assessment.
7	Landscape and Visual	The chapter has been prepared by Urban Green Ltd. and as required by the 2017 EIA Regulations, professional accreditation/competency.
8	Biodiversity	The chapter has been prepared by E3P Ltd and, as required by the 2017 EIA Regulations, has been produced by suitably qualified ecologist, Celia Barlow BSc (Hons) MSc MIEnvSc CEnv MCIEEM, Associate Director at E3P. A Preliminary Ecological Appraisal of the site was undertaken by Huw Morgan BSc (Hons) and Rhian Keating on 26th August 2021. An updated PEA was undertaken in April 2022 by Huw Morgan.
9	Built Heritage	The chapter has been prepared by Lanpro Services Ltd, an ISO 9001, ISO 14001, and ISO 45001 Registered Company. Lanpro Services Ltd's Chartered Institute for Archaeologists (CIfA) Registered Organisation application is at committee for validation, but the individuals involved with the production of this chapter are individually accredited by CIfA, at either ACIfA or MCIfA level.
10	Air Quality	The Chapter has been prepared by Redmore Environmental and, as required by The Town and Country Planning (Environmental Impact Assessment (EIA)) Regulations 2017, has been completed by 'competent experts'. The lead author, Emily Macey BSc (Hons) MSc GradIEMA, is a Senior Air Quality Consultant at Redmore Environmental and has been responsible for conducting air quality studies for a range of projects, including residential, commercial, employment and industrial schemes with a particular emphasis on dispersion modelling of road vehicle exhaust emissions. The reviewer, Jethro Redmore, BEng (Hons), MSc, MIAQM, MIEnvSc, PIEMA, CEnv, is the Director of Redmore Environmental and has worked as a professional environmental scientist for approximately 16 years. He has undertaken air quality assessments for a wide variety of residential schemes, from individual properties to large scale 'eco-towns'. These studies have been carried out for Environmental Statements, planning applications and to investigate potential nuisance issues, and have often made reference to relevant industry guidance produced by the Department for Environment, Food and Rural Affairs (DEFRA) and the Institute of Air Quality Management (IAQM), amongst others.
11	Transport	Eddisons Transport Planning and Design are an independent transport planning consultancy formed in early 2011 who operate throughout the United Kingdom. We specialise in providing

Chapter No.	Chapter Title	Expertise/Competence/Qualifications
		detailed highways design, transport, and traffic advice to predominantly private sector clients. The Transport ES Chapter was authored by Marty Rae, who has been with Eddisons (formerly Croft Transport Planning and Design for almost 10 years and have over 25 years' experience in traffic, transportation and highway engineering, gained in the private sector. Marty has been involved in the design and implementation of a wide range of development projects for a variety of clients and have considerable experience and knowledge in the design and implementation of major residential, retail and regeneration schemes. Relevant to this particular proposal, Marty has also been involved in other residential schemes which make up part of the wider Halsnead Garden Village development.
12	Summary	Barton Willmore, now Stantec – as above

APPENDIX 2.1
EIA SCOPING REPORT

Land at Lickers Lane, Whiston

Environmental Impact Assessment Scoping Report

June 2022

bartonwillmore.co.uk

BARTON WILLMORE now Stantec

Land at Lickers Lane, Whiston

Environmental Impact Assessment Scoping Report

Prepared on behalf of Vistry Partnerships North West

Project Ref:	34161/A5/EIAScoping	
Status:	Draft for client comment	Final
Issue/Rev:	01	02
Date:	June 2022	June 2022
Prepared by:	NS	NS
Checked by:	NP	NP

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1 INTRODUCTION

1.1 This Environmental Impact Assessment ("EIA") Scoping Report has been prepared by Barton Willmore, now Stantec, IEMA qualified assessors, on behalf of Vistry Partnerships North West (the "Applicant"). The report accompanies a request for an EIA Scoping Opinion from Knowsley Metropolitan Borough Council ('KMBC') in accordance with Regulation 15 of the *Town and Country Planning (EIA) Regulations 2017*, as amended[1] (the "EIA Regulations") with respect to proposed development on land at Lickers Lane, in Whiston, Knowsley.

1.2 In accordance with the EIA Regulations, a person who is minded to make an EIA application may ask the relevant planning authority to state in writing their opinion as to the information to be provided in the Environmental Statement (ES) (a "Scoping Opinion").

1.3 Regulation 15 (2) states that a scoping request must be accompanied by:

(i) a plan sufficient to identify the land;

(ii) a brief description of the nature and purpose of the development, including its location and technical capacity;

(iii) an explanation of the likely significant effects of the development on the environment; and

(iv) such other information or representations as the person making the request may wish to provide or make.

1.4 The purpose of the Scoping Report is to provide sufficient information on the proposed development and its potentially significant environmental effects to allow KMBC to adopt an informed Scoping Opinion.

1.5 EIA Scoping is a statutory process through which the content and detailed methodology of the EIA process is agreed, formally, with KMBC and statutory consultees. It is best practice and ensures that any future planning application is accompanied by a suitably proportionate and focused ES that takes all significant environmental issues into account.

1.6 Informal screening discussions have taken place between the Applicant and KMBC and KMBC have requested that an EIA be undertaken.

[1] SI 2017/571 as amended by SI 2018/695 and SI 2020/505

2 THE SITE AND PROPOSED DEVELOPMENT

The Site

Site Context

2.1 The site (see Location Plan at Appendix 1) is located immediately south of Lickers Lane, on the southern edge of the town of Whiston, in Merseyside, within the administrative boundary of KMBC.

2.2 The north of the site is bound by Lickers Lane, which runs east-west along the southern edge of Whiston. The north east of the site is bound by 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 some open greenspaces are located to the west of the site.

2.3 Immediately to the west of the Site, an outline planning application (ref: 20/00399/OUT) was consented by KMBC in June 2022. The application comprises a proposed residential development within the Halsnead Masterplan, 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 (refer to Table 8.1 later in the report).

2.4 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.

2.5 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.

2.6 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) 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 Lickers Lane Local Wildlife Site (LWS) is located immediately adjacent to the site along the north eastern boundary. A portion of the Lickers Lane LWS is also located approximately 100m to the west of the site.

2.7 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 100m north east of the site. The site is not located within a Conservation Area. The nearest Conservation Area to the site is Prescot Town Centre Conservation Area, located approximately 2km to the north of the site.

2.8 The site is located entirely within Flood Zone 1, which is considered to be at the lowest risk of fluvial flooding.

2.9 The site is not located within an Air Quality Management Area (AQMA), and no AQMAs have been designated within KMBC.

2.10 The site is not located within an Archaeological Priority Area (APA).

Site Description

2.11 The site (shown on Appendix 1) extends to approximately 2.6 hectares (ha) and is irregular in shape, the northern portion of the site currently comprises a dense area of trees and shrub. The southern portion of the site comprises open greenspace, with some scattered trees. There are also hedgerows and trees present along the perimeter of the site, to the east, south and west.

2.12 The site appears to have tracks that are associated with agricultural use, including around the perimeter of the southern portion of the Site, which exit the site on the western site boundary.

2.13 Vehicular access to the site is provided from Lickers Lane to the north of the site.

Planning Context

2.14 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. The land, referred to as South of Whiston, is allocated for residential development.

2.15 The site is located within an allocated area within the KMBC Core Strategy (2016-2028). The overall site allocated is called 'South of Whiston' and is 110.3 hectares in area. The site is allocated for residential land use and is given a notional capacity to provide up to 1,503 dwellings.

2.16 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 at different times.

The Proposed Development

"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."

2.17 The proposed development is being submitted in full and comprises 120 new residential dwellings, along with associated landscaping, drainage, and access.

2.18 The proposed vehicular access for the site will be from Lickers Lane to the north of the site.

2.19 In terms of buildings heights, it is anticipated that the maximum height of the new residential dwellings will be up to 3 storeys in height.

3 SCOPING

3.1 This scoping exercise has been informed by desk-based research, professional judgement, and other information available for the site. Table 1 provides a summary of the scoping exercise.

Table 1: EIA Scoping Summary

Topics	Potential Construction Phase Effects	Potential Operational Phase Effects	Likely Significant Effects (Pre-Mitigation)	Comments
Population and Human Health	✓ - T	✓ - P	✓	Topic scoped into the ES
Landscape and Visual Effects	✓ - T	✓ - P	✓	
Biodiversity	✓ - P/T	✓ - P	✓	
Built Heritage	✓ - T	✓ - P	✓	
Air Quality	✓ - T	✓ - P	✓	
Transport and Access	x	x	x	Topic scoped out of the ES
Noise and Vibration	x	x	x	
Water Resources and Flood Risk	x	x	x	
Land Contamination	x	x	x	
Archaeology	x	x	x	
Wind Microclimate	x	x	x	
Daylight, Sunlight and Overshadowing	x	x	x	
Agricultural Land	x	x	x	
Waste	x	x	x	
Lighting	x	x	x	
Accidents and Disasters	x	x	x	
Climate Change and Greenhouse Gases	x	x	x	

Key: ✓ Likely Significant Effect / x No Likely Significant Effect.
T – Temporary Effect / P – Permanent Effect

Environmental Disciplines Scoped Out

3.2 Further information on the topics scoped out of the EIA in Table 1 is set out in the following sections.

Transport and Access

3.3 The construction works will affect residents adjacent to the site and, as the proposed development progresses, residents of the site. Construction traffic will be mitigated accordingly through the implementation of a Construction Environmental Management Plan (CEMP) and a Construction Logistics Plan (CLP), which would be secured by planning condition. The CEMP will set out best practice methods of minimising transport effects from

construction, such as avoiding construction traffic in peak hours, clear construction road signage and stipulate working hours, and ensuring the contractors are as considerate as practicable.

3.4 Once the proposed development is complete and occupied, transport effects would be from road traffic associated with the proposed development which could impact the existing road network. However, given the scale of the proposed development (120 dwellings), this would not result in a large increase in operational traffic movements, and it is considered that traffic and transport effects would not be significant. Furthermore, a Travel Plan and Traffic Assessment will be submitted in support of the planning application. The Travel Plan will set out mitigation measures to encourage active and public modes of transport from new residents, mitigating the impact of additional road traffic. It is therefore proposed to scope this discipline out of the ES.

Noise and Vibration

3.5 Due to the nature of the proposed 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.

3.6 Once complete and occupied, noise and vibration effects would primarily be from road traffic associated with the proposed 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 Assessment will be submitted with the planning application. It is therefore proposed to scope this discipline out of the ES.

Water Resources and Flood Risk

3.7 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.

3.8 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.

3.9 A Flood Risk Assessment (FRA) and a Sustainable Drainage Strategy will be submitted in support of the planning application which will outline how the proposed development will comprise appropriate drainage and landscaping to reduce the risk of flooding.

3.10 Due to the site being at no to very low risk of flooding from a variety of sources, it is considered that a standalone water resources and flood risk chapter can be scoped out of the ES.

Land Contamination

3.11 The site currently comprises a mixture of open greenspace, with areas of scattered trees, shrub and hedgerows. The general typography of the site is uniform with a gradual slope to the south of the site. There are frequent ruts and ditches caused by off-road vehicles across the site. Historical mapping does not indicate the presence of any building or structures having been erected on the site.

3.12 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. The Phase 1 Geo-Environmental Site Assessment (Appendix 2) indicates that the site is predominantly underlain by a principal bedrock aquifer (Kinnerton Sandstone Formation) and in the west underlain by a secondary A aquifer (Pennine Middle Coal Measures Formation). These may be afforded protection by the overlying low permeability glacial till deposits, however, BGS borehole record's surrounding the site only show glacial till to a depth of 2-3m.

3.13 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.

3.14 The site does not comprise a history of polluting or contaminating uses. The Phase 1 Geo-Environmental Site Assessment (Appendix 2) identified localised areas of potential heavy metal contamination, such as localised areas of Made Ground that may be present along former field boundaries. There is some risk of ground gas due to probable coal workings in the western corner of the site. This risk will be assessed over a 3-month period by the

installation of wells and monitoring. Off-site infilled ponds are only considered to be a low-potential source of ground gas due to the likely presence of low-permeability drift deposits.

3.15 The site is not located within a drinking water safeguard zone. 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 can be scoped out of the ES.

Archaeology

3.16 The site predominantly comprises undeveloped open greenspace and is not located within an Archaeological Priority Area. The Archaeological Desk Based Assessment (ADBA) for a consented scheme within the Halsnead Garden Masterplan (Ref: LP Archaeology. Archaeology DBA. Halsnead Garden Village North, Knowsley) 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.

3.17 Given the above, significant effects on archaeology are not anticipated. An Archaeological Desk-Based Assessment will be prepared and submitted with the planning application. Therefore, it is proposed to scope archaeology out of the ES.

Wind Microclimate

3.18 The proposed development will not include any high-rise buildings which could influence wind patterns, therefore likely significant wind effects are not anticipated, and this topic is proposed to be scoped out of the ES.

Daylight, Sunlight and Overshadowing

3.19 The scale and massing of the proposed development will not cause changes to daylight or sunlight availability or cause overshadowing of residents or amenity space. It is therefore proposed to scope this discipline out of the ES.

Agricultural Land

3.20 The site includes areas of open greenspace, particular in the south of the site. However, as the site area only extends to 2.6ha, the proposed development would not result in a loss of more than 20ha of Best and Most Versatile (BMV) agricultural land (Natural England Technical Information Note 049[2]), which is considered the threshold for likely significant effects. The proposed development will therefore not generate significant effects on agricultural land, and it is proposed to scope this topic out of the ES.

Lighting

3.21 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 Light[3] and BS 5489-1:2013[4] and BS EN 13201-2:2015[5]. Therefore, the proposed development is not anticipated to produce a significant lighting impact. Where appropriate, lighting will be considered within the ES, including the Biodiversity chapter of the ES. Lighting has therefore been scoped out of the ES.

Waste

3.22 The proposed 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.

3.23 Operational waste would 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 this topic is proposed to be scoped out of the ES.

Accidents and Disasters

[2] Natural England (December 2012) Technical Information Note TIN049 Second edition, Agricultural Land Classification: protecting the best and most versatile agricultural land.
[3] Guidance Note 01/20. Guidance Notes for the Reduction of Obtrusive Light (2020). Institute of Lighting Professionals.
[4] British Standards EN 13201-2:2015 Road Lighting Performance requirements.
[5] British Standards EN 13201-2:2015 Road Lighting Performance requirements.

3.24 The proposed 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.

3.25 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 it is proposed to scope this topic out of the ES.

Climate Change

3.26 The Applicant will consider how climate change may affect the proposed development from the outset as part of the design process. Considerations will include future-proofing and resilience measures. The proposed 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 Assessment will be submitted in support of the planning application, outlining how the operational development can reduce its greenhouse gas emissions.

3.27 Accordingly, an assessment of climate change and greenhouse gases, as a separate chapter, is proposed to be 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 proposed 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.

Environmental Disciplines Scoped In

3.28 For each of the topics scoped into the assessment further information on the details to be included in the assessment and the methodology to be employed are set out below.

4 POPULATION AND HUMAN HEALTH

Introduction

4.1 An assessment will be undertaken of the likely significant effects of the proposed development on population and human health.

Technical Scope

4.2 Given the proposed nature of the proposed development, the following socio-economic receptors are considered to be those with the potential for likely significant effects and therefore proposed for inclusion in the assessment:

- Housing;
- Early years education;
- Primary Education;
- Secondary Education;
- GP provision;
- Wider Human Health; and
- Employment.

Approach

4.3 A desktop study will be undertaken to determine baseline conditions at the local and Borough level. Existing baseline conditions will focus on:

- The size and age profile of the resident population;
- The current housing stock profile by tenure and type of accommodation;
- Identifying (and mapping) existing non-domestic, registered early years facilities, state-maintained primary/secondary schools and GP practices, and establishing current and forecast capacities of this provision where possible;
- The local employment profile including economic activity, the number of jobs and industrial/occupation profile from a resident-based and workplace-based perspective; and
- the health profile of the resident population.

4.4 The existing baseline will be established using a combination of data sources including nationally published statistics from the Office for National Statistics (ONS), Department for

Education (DfE), Ofsted, National Health Service (NHS) and KMBC where relevant. This includes the national Census 2011 (or 2021 if published at the time of writing), Sub National Population Projections (SNPP), Sub National Household Projections (SNHP), Mid-Year Population Estimates (MYPE), GP Workforce Statistics, Childcare Providers and Inspections and School Capacity. Relevant policy and supplementary planning guidance produced by KMBC will be consulted.

4.5 The assessment will consider the likely significant effects of the proposed development during the construction and operational phases.

4.6 The likely significant effects during the construction phase are predominantly related to employment (creation) and human health (impacts on health from construction activities). Effects on housing, education and GPs during the construction phase are proposed to be scoped out of the assessment as it is anticipated that the construction workforce will not move to the area and therefore not place any additional demand on these services. There would either be no effect during the construction phase on these receptors or effects would be so small as to be insignificant.

4.7 The operational phase has the potential for significant effects on all of the socio-economic receptors outlined in paragraph 3.3 through: housing delivery; demand from the new residential population for local community services and infrastructure including school and GP places; creation of a resident labour force; and overall health and wellbeing of the population.

4.8 Assessment will be made using quantitative and qualitative methods.

4.9 The number of direct jobs generated during the construction phase will be calculated using the Construction Industry Training Board (CITB), Labour Forecasting Tool (LFT) which is regarded as an industry standard. Indirect employment during the construction phase will give regard to ONS, Type 1 Employment Multipliers.

4.10 No employment will be created by the proposed development during the operational phase. However, the operational phase of the proposed development will contribute to KMBC's resident labour force, as a proportion of the proposed development's future resident population will be economically active; the number will be determined through the application of local economic activity rates established in the existing baseline conditions.

4.11 Effects on housing delivery will be assessed quantitively based on the contribution that the proposed development will make to the identified housing needs established by planning policy.

4.12 The number of people expected to live in the proposed development will be calculated using projected household size for the KMBC area in the anticipated year of completion according to the ONS 2018-based household projections.

4.13 The assessment will assume that all residents of the proposed development will need to register within a local health practitioner. Capacities of existing GP provision will be based on the HUDU standard of 1 GP for 1,800 patients.

4.14 Demand for early years, primary and secondary school places arising from the proposed development will be determined using child yield multipliers used by KMBC, assessed against forecast capacities for the relevant School Planning Areas.

4.15 Wider human health considerations that fall within the wider scope of the ES will be considered and summarised drawing on the conclusions of other ES Chapters relevant to human health, including air quality.

4.16 There are no published assessment guidance and technical significance criteria to assess population and human health effects. Accordingly, the evaluation of effects will be undertaken based on professional experience and judgement, having regard to the existing baseline position.

4.17 Mitigation measures will be recommended where any significant adverse effects are assessed to reduce potential adverse effects.

4.18 Consideration will be given to inter-project cumulative effects, subject to availability of cumulative scheme information in the public domain.

Summary

4.19 Table 3.1 contains a summary of the likely significant population and human health effects of the proposed development.

Table 3.1: Population and Human Health Effects

Receptor	Effects	Scoped In?
Employment	Increase in short term construction employment and creation of long-term resident labour force	✓
Housing	Increase in housing stock and contribution towards policy requirements in the operational phase	✓

Receptor	Effects	Scoped In?
Early years/childcare	Increased demand for early years/childcare places in the operational phase	✓
Primary Education	Increased demand for primary school places in the operational phase	✓
Secondary Education	Increased demand for secondary school places in the operational phase	✓
GP Provision	Increased demand for GP places during the operational phase	✓
Human Health	Potential effects on human health from the proposed development including air quality	✓

5 LANDSCAPE AND VISUAL EFFECTS

Introduction

5.1 An assessment will be undertaken of the likely significant effects of the proposed development on the environment in respect of Landscape and Visual issues.

Approach

5.2 An assessment of Landscape and Visual Impacts (LVIA) will be undertaken to consider the potential effects of the proposed development on the character of the surrounding Landscape, and the potential visual effects on identified key receptors.

5.3 The chapter will be informed by and make reference to the following policy documents:

- The National Planning Policy Framework (Department for Communities and Local Government; revised 2021) - specifically those chapters considered relevant to landscape and visual amenity;
- Knowsley Local Plan Core Strategy adopted (2016), and Knowsley Replacement Unitary Development Plan (2006) - specifically those chapters considered relevant to landscape and visual amenity.

5.4 The methodology draws upon the following established best practice guidance:

- Guidelines for Landscape and Visual Impact Assessment Third Edition (GLVIA) (Landscape Institute) (LI) and Institute of Environmental Management & Assessment (IEMA, 2013); and
- Landscape Character Assessment: Guidance for England and Scotland (Countryside Agency and Scottish Natural Heritage, 2002).

5.5 The extent of the area within which the proposed development will be likely to result in significant visual effects or indirect effects on landscape character is limited by the local landform, mature vegetation and the extent of existing built form in the vicinity of the site. The study area has initially been set at a radius of 2km from the centre of the site. This is in line with GLVIA (paragraphs 5.2 and 6.2). The current baseline for the 2km study area comprises the settlements of Whiston and Rainhill, including a mixture of commercial, civic, industrial, leisure, open space, and residential uses, the M62 transport corridor and arable farmland (Refer to the Site Location and Study area figure in Appendix 3).

5.6 Based upon an initial, high-level, desk-based survey of the study area, the following landscape and visual receptors are considered most likely to be affected by the proposed development. It is these elements and those within the site which are thus likely to form the main focus of the chapter.

- Existing land use;
- Existing open space in close proximity to the site;
- Existing vegetation within and in close proximity to the site;
- Site landform; and
- Existing landscape character within and in close proximity to the site.

5.7 There are 26 listed buildings located within the 2km radius of the site (Refer to the Heritage Assets figure in Appendix 3). These include:

- 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.

5.8 There is one Conservation Areas located within the 2km radius of the site:

- Town End, Cronton Conservation Area.

5.9 In addition to landscape receptors and heritage assets, there are a number of key views anticipated to experience views towards the site. These include:

- 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.

5.10 A broad and representative selection of views suitable to illustrate the existing character of the study area and the potential effects of the proposed development are proposed for inclusion within the chapter. The viewpoints are representative of views typically available to the site from the surrounding area.

5.11 An initial list of 18 viewpoints will be issued to KMBC for consultation and agreement. Following feedback with KMBC and further site assessment, the viewpoints may be subject to further refinement. Viewpoints, Close Range and Viewpoints figures in Appendix 3 illustrate the 18 representative viewpoints for consideration for inclusion within the assessment.

5.12 An appraisal of the character of the landscape will be made in the baseline assessment. It will be made through desk-based assessment and field study of aspects of landscape character, including landscape features, landscape character, designated landscapes, and aesthetic/perceptual aspects. It will be informed by consideration of the landscape fabric of the area and will be made with reference to aspects of landscape, their nature and sensitivity. The appraisal will include the classification and description of Landscape Character Areas (LCAs).

5.13 Assessment of the degree and nature of potential change to the LCAs as a result of the proposed development will be made with reference to the viewpoints from within the areas, which will show the likely degree of change to the typical and important character attributes of each area.

5.14 The visual assessment will consider the effects of the proposed development on the specific views scoped into the chapter and on the general visual amenity experienced by people.

5.15 For both landscape and visual effects, the effect significance will be established based on the:

- The sensitivity of the receptors (landscape or visual), which depends upon the value attached to the landscape or view and the susceptibility to harm due to the proposed development; and
- The magnitude of the effect (the change brought about by the proposed development), which depends upon the scale and geographical extent of the change, and its duration and reversibility.

5.16 Sensitivity and magnitude will be determined using a combination of quantitative (objective) and qualitative (subjective) methods and will be assessed using professional judgement.

5.17 The assessment will follow step-by-step approach:

- Description of the existing landscape, with an evaluation of different areas;
- Consideration of the potential effects of the proposed development, and of receptor sensitivity to those effects;
- Assessment of the magnitude of each effect (involving judgements relating to the scale, extent and duration/reversibility of effects); and
- Assessment of the significance of each effect (involving judgements relating to how sensitivity and magnitude combine). At this stage, a separate judgement is made as to whether an effect is beneficial, neutral or adverse.

5.18 Judgements about the sensitivity of the landscape or visual receptor and the magnitude of the effect on said receptor will be combined to draw conclusions about the effect significance on a case-by-case basis. Note that for both landscape and visual receptors, *"there are no hard fast rules about what makes a significant effect, and there cannot be a standard approach since circumstances vary with the local and landscape context and with the type of proposal"*.[6]

5.19 For those assessments, effects of moderate or major significance will be considered 'significant' in that they are the principal landscape or visual effects of the proposed development. The identification of 'significant' effects equally does not necessarily mean that said effects would be unacceptable. Equally, effects considered to be 'not significant' should not be completely disregarded,[7] but are effects which are considered, with professional judgement, to be less important in decisions regarding the landscape and visual effects of the proposed development.

Summary

5.20 Table 4.1 contains a summary of the likely significant effects of the proposed development in relation to Landscape and Visual issues.

Table 4.1: Landscape and Visual Effects

Receptor	Effects	Scoped In?
Existing land use	Change of land use	✓
Existing open space in close proximity to the site including those accessed from Lickers Lane	Impact on open space	✓
Existing vegetation	Removal of existing vegetation	✓
Site landform	Impact on the existing topography	✓

[6] (Landscape Institute (LI) and the Institute of Environmental Management and Assessment (IEMA), 2013, paragraphs 5.56 and 6.44).
[7] (LI and IEMA, 2013; paragraph 3.34).

Receptor	Effects	Scoped In?
Existing landscape character within and in close proximity to the site and the study area	Impact on landscape character at a local level	✓
Residents of dwellings including those on Lickers Lane, Fox Bank Lane, Windy Arbor Road, Main Drive and Blundell Lane	Visual impact on the residential visual receptors	✓
Users of the local public right of way network including those using Footpath St Helen's 201	Visual impact on receptors using the local public right of way network	✓
Users of the local road network including those using Lickers Lane, Fox Bank Lane, Windy Arbor Road, Main Drive and Blundell Lane	Visual impact on receptors using the local road network	✓
Users of local areas of open space including those using accessed from Lickers Lane	Visual impact on receptors using public open space	✓
Setting of local heritage assets including Sandfield House, Gate Piers Beside North East Lodge to Halsnead Park, North East Lodge to Halsnead Park, Barn at Snape Gate, Old Halsnead, Church of St Nicholas, Ropers Bridge, Dean's Farmhouse, range of Adjoining Farm Buildings in L Plan (Rear of Dean's Farmhouse) and Town End, Cronton Conservation Area.	Visual impact on the setting of local heritage assets	✓

6 BIODIVERSITY

Introduction

6.1 An assessment will be undertaken of the likely significant effects of the proposed development on the environment in respect of Biodiversity.

Baseline Conditions

6.2 A detailed Preliminary Ecological Appraisal (PEA) of the site was undertaken in August 2021, following the methodology as per 'Guidelines for Preliminary Ecological Appraisal'[8]. A vegetation and habitat plan has been produced for the site and the immediate surrounding area. The mapping is based on the Joint Nature Conservation Committee Phase I Habitat Survey Methodology (JNCC, 2010).

6.3 The site was found to comprise broadleaved woodland, dense scrub, semi-improved grassland, tall ruderal, arable and scattered trees. The site had the potential to support protected species including bats, badgers, amphibians, hedgehogs, brown hare and nesting birds. Invasive species rhododendron and Japanese knotweed were identified within the site. No further protected species surveys have been undertaken on the site.

Approach

6.4 A Biodiversity Net Gain (BNG) Metric Calculation will be undertaken on the site, based on the proposals, using the Department for Environment, Food and Rural Affairs' (DEFRA) Biodiversity Metric 3.1 2022.

6.5 An Ecological Impact Assessment (EcIA) will be undertaken based on the standard best practice methodology provided by the Guidelines for Ecological Impact Assessment[9]. The assessment will identify 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), and inclusion on Red Data Book Lists or Local Biodiversity Action Plans. The importance of an ecological feature will be considered within a defined geographical context.

[8] (CIEEM, 2017).
[9] (CIEEM, 2018).

6.6 For the purpose of the 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 assessment, a significant effect has been defined as a moderate effect or above for both beneficial/ adverse effects.

Summary

6.7 Based on the proposed development, there is anticipated to be impacts on Biodiversity, due to activities during the construction phase and throughout occupation. It is also likely that the proposed development will result in the loss of habitat units within the Biodiversity Net Gain metric.

6.8 Table 5.1 contains a summary of the likely significant effects of the proposed development.

Table 5.1: Environmental Topic Effects

Receptor	Effects	Scoped In?
Designated Sites	Increased visitor effects anticipated in absence of mitigation.	✓
Habitats	Habitat loss anticipated as a result of proposals.	✓
Amphibians	Killing or injuring as a result of the construction phase.	✓
Bats	Risk of disturbance throughout construction phase and occupation.	✓
Breeding Birds	Killing or injuring as a result of the vegetation clearance.	✓
Brown Hare	Killing or injuring as a result of the vegetation clearance.	✓
Badgers	Reduced foraging habitat as a result of development.	✓
Hedgehogs	Killing or injuring as a result of the construction phase.	✓
Invertebrates	Reduction in habitat as a result of the construction phase.	✓
Otter and Water Vole	No effects anticipated due to lack of waterbodies within proximity to the site.	x
Reptiles	No effects anticipated due to lack of suitable habitat.	x

7 BUILT HERITAGE

Introduction

7.1 An assessment will be undertaken of the likely significant short and long term effects of the proposed development on the environment in respect of designated and non-designated heritage assets within the site and surrounding area.

Approach

7.2 An Historic Environment Desk-based Assessment (HEDBA) will be undertaken to meet the requirements of the National Planning Policy Framework (NPPF) in order to provide a baseline assessment of the site and a 1km buffer for both archaeology and heritage. Archaeology has been scoped out of the ES however, with only heritage being assessed in this chapter. The HEDBA will assess the significance of heritage assets including their setting.

7.3 The baseline assessment will draw on the following sources:

- National Heritage List for England (NHLE);
- Merseyside Historic Environment Record (HER);
- Relevant archives and local studies resources;
- Historic maps, LiDAR, and available aerial imagery; and
- Consultation with appropriate consultees including from KMBC and Historic England.

7.4 Initial baseline assessment reveals that there are no designated heritage assets and only one non-designated heritage asset recorded on the HER[10], the site of Halsnead Park (HER MME15147), within which the whole of the site is situated. Halsnead Park is a late 18th or early 19th century park first shown on Yate's 1876 map of Lancashire. It is said that Halsnead Park came into the possession of the Willis family in 1684 but it is unclear if this means the park was extant or if this is referring to the estate by its later name.

7.5 There are eight designated heritage assets in the form of listed buildings within 1km of the site. A Pre-Application response from KMBC stated that there are a number of designated and non-designated heritage assets located adjacent to or within the vicinity of the site. However, not all of the identified heritage assets (receptors) will be included in the assessment, some have been 'scoped out' (Table 6.1).

7.6 Four designated assets have been scoped out of the assessment, which are: Old Halsnead

[10] (Halsnead Park, HER MME15147)

(NHLE 1261787); Carr House Farmhouse (NHLE 1253441); The Paddocks and the Stables (NHLE 1253505); and Barn at Snape Gate (NHLE 1253250). These have been scoped out due to the lack of intervisibility and any historical association with the site. They are considered not to be sensitive to development within the site.

7.7 Two of the non-designated heritage assets identified in the Pre-Application response (but not recorded on the HER) have been scoped out of the assessment. These are: Walled Garden and Outbuilding; and Ponds and Streams. These have been scoped out due to the lack of intervisibility and any historical association with the site. They are considered not to be sensitive to development within the site.

7.8 The remaining designated and non-designated assets will be considered in the assessment as there is either intervisibility between the asset and the site or potential historical association. However, through the process of detailed assessment this may result in these heritage assets being scoped out.

7.9 The assessment will be based upon current legislation, national planning policy, local plan policy and other material considerations. Professional guidance will be followed where applicable including guidance from the Chartered Institute for Archaeologists and Historic England.

7.10 Following establishment of baseline conditions and the likely direct and indirect impacts of the proposed development on heritage assets, the chapter will set out a strategy to appropriately mitigate the impacts upon the heritage resource. Impacts during the construction and operational phases of the proposed development will be assessed, as well as Cumulative impacts.

7.11 Following identification of any impacts, mitigation strategies including mitigation by design or investigation and recording will be put forward. Residual effects will then be identified.

Summary

7.12 Table 6.1 contains a summary of the likely significant effects of the proposed development on significant receptors identified from the Pre-Application response from KMBC.

Table 6.1: Environmental Topic Effects

Receptor	Effects	Scoped In?
Church of St Nicholas (1261894)	Setting	✓
Sandfield House (1253251)	Setting	✓
North East Lodge to Halsnead Park (1253249)	Setting	✓

Receptor	Effects	Scoped In?
Gate Piers Beside North East Lodge to Halsnead Park (1253429)	Setting	✓
Old Halsnead (1261787)	Setting	x
Carr House Farmhouse (1253441)	Setting	x
The Paddocks and the Stables (1253505)	Setting	x
Barn at Snape Gate (1253250)	Setting	x
19th century lodge, stone gate piers at the entrance to the main drive (MME18748)	Setting	✓
Route of Main Drive	Setting	✓
Remains of Princes House Farm (MME13083 and MME6857)	Setting	✓
Site of Halsnead Hall (MME6856)	Setting	✓
Walled Garden and outbuilding	Setting	x
Woodland Clumps and Belts	Setting	✓
Ponds and Streams	Setting	x
Designed and dynamic views across the landscape formed by the open landscape between routes, water features and tree clumps/belts.	Setting	✓
Estate Walls (MME 15681)	Setting	✓

8 AIR QUALITY

Introduction

8.1 An assessment will be undertaken of the likely significant effects of the proposed development on the environment in respect of Air Quality.

Baseline Conditions

Local Air Quality Management

8.2 As required by the Environment Act (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 Air Quality Strategy are currently below the relevant Air Quality Objectives (AQOs). As such, no Air Quality Management Areas (AQMAs) have been designated within the Borough.

Air Quality Monitoring

8.3 Monitoring of air quality is undertaken by KMBC throughout their area of jurisdiction. A review of the most recent data indicates that there are two nitrogen dioxide (NO_2) monitors within a 1km radius of the site. Recent results are shown in

8.4 Table 7.2.

Table 7.2: Air Quality Monitoring Results

Monitoring Site		Monitored NO_2 Concentration (µg/m^3)		
		2017	2018	2019
H11	Outside 12 Windy Arbor Brow	28.6	26.4	28.9
H12	Halsnead development	35.5	33.5	32.8

8.5 As shown in

8.6 Table 7.2, annual mean NO_2 concentrations were below the relevant AQO of 40µg/m^3 at both monitoring locations in recent years.

8.7 KMBC do not monitor particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}) or particulate matter with an aerodynamic diameter of 2.5µm ($PM_{2.5}$) concentrations within the vicinity of the site.

Background Concentrations

8.8 The total concentration of a pollutant is comprised of explicit local emission sources (such as roads and industrial sources) and the background component. The background component consists of indeterminate sources which are transported into an area from further away by meteorological conditions. Background pollutant concentrations are therefore the ambient level of pollution that is not affected by local sources of pollution.

8.9 Predictions of background pollutant concentrations on a 1km by 1km grid basis have been produced by Department for Environment, Food and Rural Affairs (DEFRA) for the entire UK to assist local authorities in their review and assessment of air quality. The site is located within grid square NGR: 347500, 390500. Data for this location was downloaded from the DEFRA website[11] and is summarised in Table 7.3.

Table 7.3: Background Pollutant Concentrations and Air Quality Objective/Limit Value

Pollutant	Predicted 2022 Background Concentration ($\mu g/m^3$)	Air Quality Objective/Air Quality Limit Value	
		Concentration ($\mu g/m^3$)	Averaging Period
NO_2	13.62	40	Annual Mean
PM_{10}	12.56	40	Annual Mean
$PM_{2.5}$	8.09	20	Annual Mean

8.10 As shown in Table 7.3, background pollutant concentrations of NO_2, PM_{10} and $PM_{2.5}$ are well below the relevant annual mean AQOs and Air Quality Limit Values (AQLVs) at the site.

Approach

8.11 The proposed 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 proposed development during operation.

8.12 Potential construction phase air quality impacts from fugitive dust emissions as a result of earthworks, construction and trackout activities will be assessed in accordance with the Institute of Air Quality Management (IAQM) guidance 'Assessment of Dust from Demolition and Construction V1.1'.

8.13 Potential operational phase air quality impacts from road traffic exhaust emissions will be

[11] https://uk-air.defra.gov.uk/data/pcm-data

assessed using dispersion modelling. Predicted pollutant concentrations will be compared against the Air Quality Objectives, as defined in the UK Air Quality Strategy and associated regulations. The significance of potential impacts will be determined based on the predicted magnitude of change in pollutant concentrations at sensitive locations as a result of the proposed development and the criteria provided within the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'.

8.14 If required following assessment of potential impacts, suitable mitigation measures will be identified in order to reduce air quality effects to an appropriate level. These will be based on best practice guidance documents. Assessment of the residual effects of the proposed development during construction and operation will then be assessed, following the implementation of mitigation measures.

Summary

8.15 Table 7.4 contains a summary of the likely significant effects of the proposed development that will be considered within the Air Quality ES Chapter.

Table 7.4: Air Quality Effects

Receptor	Effects	Scoped In?
Human receptors within the vicinity of the site, including future residents and users of the proposed development.	Dis-amenity due to dust deposition associated with emissions from construction phase activities.	✓
Human and ecological receptors within the vicinity of the local road network.	Increases in pollutant concentrations associated with traffic generated by the proposed development during the operational phase.	✓

9 CUMULATIVE EFFECTS

9.1 The ES will consider the potential for likely significant effects on the environment resulting from committed developments in the area. PPG[12] identifies that:

> *"…There are occasions where other existing or approved development may be relevant in determining whether significant effects are likely as a consequence of a proposed development..."*

9.2 Following a search of the planning register in June 2022, four committed schemes have been identified in the surrounding area of up to 2 km from the site boundary. These are outlined in Table 8.1 below. The Applicant seeks confirmation from KMBC as part of this Scoping exercise of any additional schemes that should be considered in the assessment of likely significant cumulative effects on the environment.

Table 8.1: Cumulative Schemes

Site and Planning Reference	Description of Development	Planning Status	Distance from the site
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).	Consented June 2022	Immediately adjacent to the site to the west
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
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	Consented in March 2021	Approximately 470m south west

[12] https://www.gov.uk/guidance/environmental-impact-assessment

	matters reserved for future approval).		
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 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.	Consented in March 2022	Approximately 620m south

Consultation

9.3 The following statutory and other consultees will be consulted through the EIA process:

- National Highways;
- Environment Agency;
- Natural England;
- Historic England;
- KMBC (various departments);
- Merseyside County Council (MCC); and
- This will also include any other stakeholder that KMBC nominates.

9.4 The feedback received through the consultation will be summarised in the ES and written up in full in the Statement of Community Involvement submitted in support of the planning application.

10 ENVIRONMENTAL STATEMENT STRUCTURE

10.1 The ES will contain two main volumes as set out in Table 9.1 below.

Table 9.1: Environmental Statement Structure

Volume 1: ES Main Text and 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 proposed 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 the effects of the proposed development on population and human health issues.
7	Landscape and Visual Effects	Effects of the proposed development on landscape and visual amenity.
8	Biodiversity	Assessment of the effects of the proposed development on biodiversity and ecology at the site.
9	Built Heritage	Assessment of the effects of the proposed development with respect to built heritage receptors.
10	Air Quality	Assessment of the effects of the proposed development relating to air quality.
11	Summary and Residual Effects	Summary of the residual and interactive effects of the proposed 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.

10.2 The first five chapters of the ES would be introductory and provide essential information for the subsequent technical chapters. Further information on these chapters is set out below.

Introduction

10.3 This chapter will provide background to the EIA, describe the structure of the ES and identify the project team. It will be supported by an appendix setting out the professional qualifications and experience of the contributors to the ES to comply with the EIA Regulations' requirement for "competent experts" to undertake EIA.

EIA Methodology

10.4 This chapter will set out the methodology used in the EIA, state the assumptions applicable to all disciplines, summarise the EIA Scoping process undertaken and summarise the public consultation process. Bespoke methodologies, limitations and assumptions will be contained in the technical chapters of the ES where required.

10.5 The significance of an environmental effect is determined by the interaction of magnitude and sensitivity, whereby the effects can be positive or negative. Generic criteria to be used in carrying out this process are detailed below. Some technical chapters will use discipline-specific criteria with their own terms for magnitude, sensitivity and significance. This will be explained in the relevant chapter.

Prediction of Impact Magnitude

10.6 The methodology for determining the scale or magnitude of impact is set out in Table 9.2 below.

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.

10.7 The sensitivity of a receptor is based on the relative importance of the receptor using the scale set out in Table 9.3 below.

Table 9.3: Methodology for Determining 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.

Assessment of Effect Significance

10.8 Effect significance will be calculated using the matrix in Table 9.4. This illustrates the interaction between impact magnitude and receptor sensitivity.

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

Site and Development Description

10.9 This chapter will describe the setting of the site and the existing conditions on the site, as well as explaining and setting out the proposed development. The detailed plans will be included as figures to the chapter.

10.10 This chapter will also outline the climate change mitigation and adaptation measures to be incorporated into the proposed development.

Alternatives

10.11 This chapter would describe the evolution of the proposed development based on environmental constraints. It will include a high level comparison of the environmental effects of any alternatives studied by the Applicant.

Construction Methodology and Phasing

10.12 This chapter will outline the anticipated construction programme, phasing and methodology and explain the assumptions made. This chapter will form the basis of the construction phase assumptions documented in each of the technical chapters of the ES.

Technical Assessments

10.13 Each ES chapter will follow the headings set out below to ensure the final document is

transparent, consistent and accessible.

- Introduction;
- Planning Policy Context;
- Assessment Methodology;
- Baseline Conditions;
- Likely Significant Effects;
- Mitigation Measures;
- Residual Effects;
- Cumulative Effects; and
- Summary.

10.14 Each chapter sub-heading is explained in further detail in Table 9.5 below.

Table 9.5: Technical Chapter Format and Content

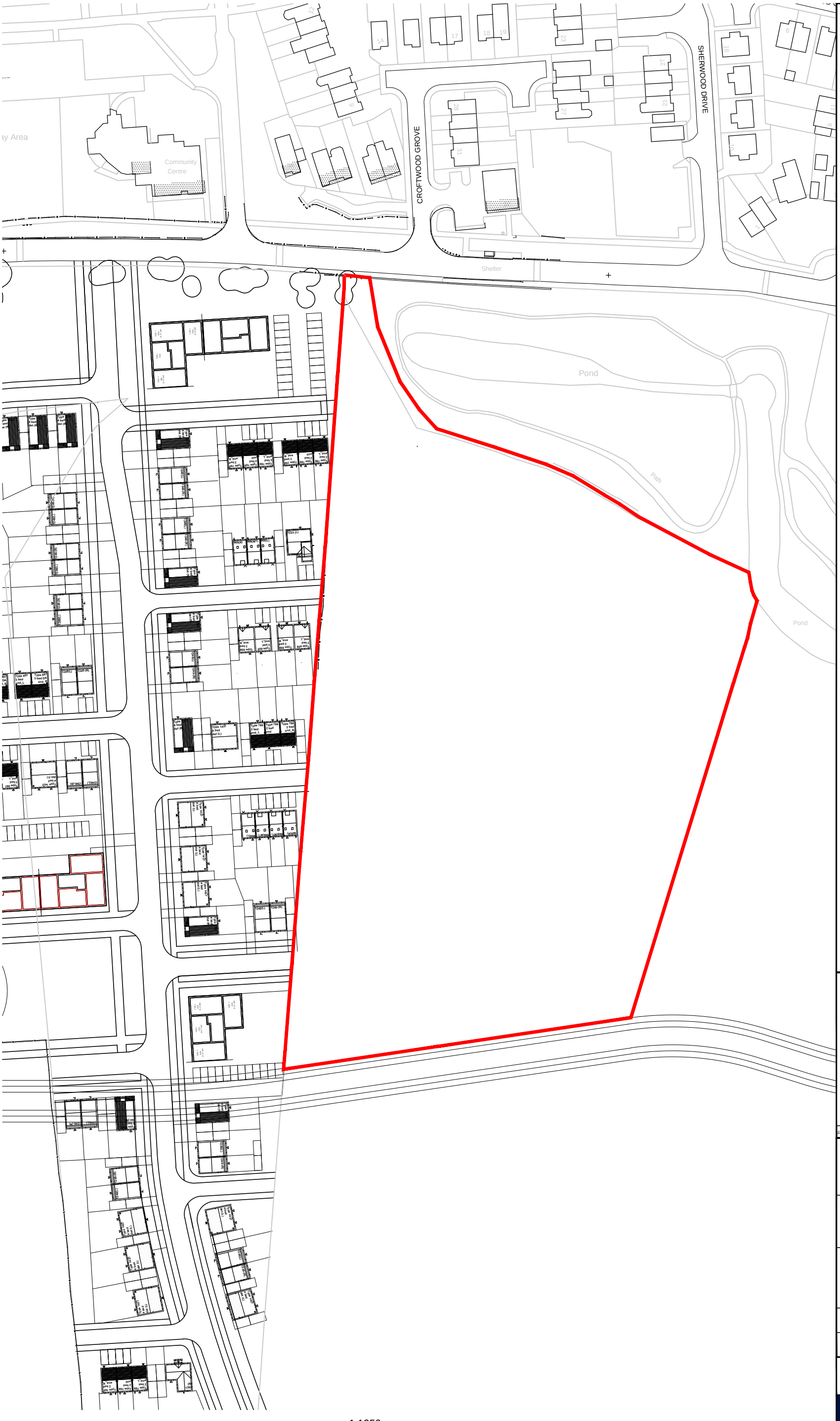
Sub-Heading	Content
Introduction	• This section will introduce the assessment discipline and the purpose for which it is being undertaken.
Planning Policy Context	• This section will include a summary of national, regional and local policies of relevance to the environmental discipline and assessment. Where applicable, relevant legislation will also be summarised.
Assessment Methodology	• This section will provide an explanation of methods used in undertaking the technical study with reference to published standards, guidelines and best practice. The application of significance criteria will also be discussed. • It will also outline any difficulties encountered in compiling the required information.
Baseline Conditions	• This will include a description of the environment as it is currently (2022) and as it is expected to change given the project were not to proceed (i.e. 'do-nothing' scenario). The method used to obtain baseline information will be clearly identified. Baseline data will be collected in such a way that the importance of the particular subject area to be affected can be placed in its context and surroundings so that the effects of the proposed changes can be predicted.
Likely Significant Effects	• This section will identify the likely significant effects on the environment resulting from the construction and operational phases of development.
Mitigation Measures	• Adverse effects will be considered for mitigation and specific mitigation measures put forward, where practicable. Mitigation measures considered may include modification of the project, compensation and the provision of alternative solutions (including alternative technology) as well as pollution control, where appropriate. • The extent of the mitigation measures and how these will be effective will be discussed. Where the effectiveness is uncertain or depends upon assumptions about operating procedures, data will be introduced to justify the acceptance of these assumptions. • Clear details of when and how the mitigation measures will be carried out will be given. When certainty of impact magnitude and/or effectiveness of mitigation over time exists, monitoring programmes will be proposed to enable subsequent adjustment of mitigation measures, as necessary. • The opportunity for enhancement measures will also be considered, where appropriate. • Information will be included on the mechanism by which the mitigation will be

Sub-Heading	Content
	secured (e.g. by planning condition) with outline arrangements for monitoring and responsibilities for doing so, where necessary.
Residual Effects	• The residual effects, i.e. the effects of the proposed development assuming implementation of proposed mitigation, will be determined. The residual effects represent the overall likely significant effect of the development on the environment having taken account of practicable/available mitigation measures.
Cumulative Effects	• The cumulative effects of the proposed development and the identified committed developments will be assessed.
Summary	• A summary of the assessment and conclusions will be provided at the end of each technical chapter.

Summary and Residual Effects

10.15 The residual effects of the proposed development will be summarised in one table at the end of the ES setting out the overall beneficial and adverse effects of the proposed development. This chapter will also set out any interactive effects that are likely to arise. These effects are defined as multiple effects on a single receptor. (e.g. noise and dust on a designated ecological site).

APPENDIX 1
SITE LOCATION PLAN



1:1250

25m 0 25m 50m 75m 100m 125m

- The Copyright of this drawing belongs to MPSL Planning & Design Ltd. and shall not be used or reproduced in any form without its express permission.
- Do not scale from this drawing - Work to figured dimensions only. All dimensions to be checked on site prior to the execution of any work.
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Rev	Date	Revision	Initial

+ Client

Vistry Partnerships

+ Drawing Title

SITE LOCATION PLAN

+ Project

Parcel 2C, Halsnead Garden Village

Lickers Lane, Whiston

Job No	Drg No	Drawn	Rev
21062	00	AC	-
Scale	Date	Stage	
1:1250 @ A3	APRIL 2022	DRAFT	

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APPENDIX 2
PHASE 1 GEO ENVIRONMENTAL SITE ASSESSMENT

e3p

Phase I Geoenvironmental Site Assessment
Land South of Lickers Lane, Whiston

Reference:15-065-R1-1
Date: November 2021

PHASE I GEOENVIRONMENTAL SITE ASSESSMENT

Land south of Lickers Lane
Whiston
Prescot
L35 3JE

Prepared for:

Vistry Partnerships

Report Ref: 15-065-R1-1
Date Issued: November 2021

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QUALITY ASSURANCE

PROJECT NUMBER	15-065		
VERSION	Version 1		
REMARKS	Draft for Comment		
DATE	Date 04/10/2021		
PREPARED BY	J. Beer		
QUALIFICATIONS	BSc (Hons)		
CHECKED BY	R Horseman		
QUALIFICATIONS	BSc (Hons), FGS, CEnv		
AUTHORISED BY	M Dyer		
QUALIFICATIONS	BSc, FGS, PIEMA, MIEnvSc, CEnv		

Cert No 18890
ISO 9001 (2015)
ISO 14001 (2015)
ISO 45001 (2018)

EXECUTIVE SUMMARY

Site Address	Land south of Lickers Lane, Whiston, Prescot, L35 3JE	
Grid Reference	E 347490, N 390400.	
Site Area	2.55 Ha.	
Proposed Development	At the time of this letter being prepared E3P understands that Vistry Partnerships considering the proposed acquisition and future redevelopment of a parcel of land to the south of Lickers Lane, Whiston for low rise residential housing with associated adopted estate roads and utility infrastructure.	
Current Site Use	The site is roughly rectangular in shape and is located to the south of Lickers Lane, Prescot. Two connected bodies of water border the site on the northern boundary. The general typography of the site is uniform with a gradual slope to the south of the site. There are frequent ruts and ditches caused by off-road vehicles across the site. Access is most effectively gained from the northern entrance of the site off Lickers Lane. Upton entering site, the northern third of the site is overgrown with a mix of mature and semi mater trees and shrubbery. The areas south of the mature and semi-mature trees consist of waist-high vegetation. Historical mapping does not indicate the presence of any building or structures having been erected on the site. The site is currently open to the public, during the site walkover people were seen using the site for dog walking and other recreational activities.	
Site History	A review of the pertinent Ordnance Survey mapping dating from circa 1850 to the present day confirmed the site has remained undeveloped agricultural land. Mapping indicates that Pre 1937 the site has several trees with a field boundary traversing from north-west to southeast. 1975 mapping illustrates the field boundary has been removed and replaced with another boundary running from east to west within the northern central sector of the site. The site also forms part of the Halsnead Park.	
Environmental Setting	Drift Geology	Glacial Till – SAND, CLAY, GRAVEL to a depth of 2-3m
	Bedrock Geology	Kinnerton Sandstone Formation – SANDSTONE Pennine Middle Coal Measures Formation – MUDSTONE, SILTSTONE, SANDSTONE
	Faults	The Ecclestone fault runs through the west of the site trending N-S.
	Hydrogeology	Secondary Undifferentiated aquifer (drift) overlying a Principle and secondary A aquifer (solid). Two groundwater abstractions have been identified within a 1 km radius.
	Hydrology	Unnamed water features 7 m to the North East of the site.
	Flood Risk	The site is primarily located in an area that has limited potential for groundwater flooding to occur. The South West corner of the site is regarded as having potential for groundwater flooding of properties located below ground level.

Utility Locations	A full ground penetrating radar (GPR) survey has not been undertaken for the site. However, service plans have been obtained showing a, 11Kv overhead electric cable travelling along the Western Boundary of the site.
Landfill Sites and Ground Gases	The Enviro Check report has not identified any landfills, historic or present within 250 m of the site. The closest recorded Landfill is located 794 m to the North West of the site.
Radon	Unaffected – no special precautions required.
Coal Mining	The site is located in a coal mining reporting, with the western sector of the site falling into the development high-risk area. The 1:10,000 geological mapping for the area indicated that the Eccleston Fault (trending N/S) bisects the western sector of the site, with the Higher and Lower Bug Coal Seams (now known as Higher and Lower Florida) outcropping on site. The Cheshire Mine Coal is present roughly 50 m to the north of site and the Coal With Cannel is present roughly 200 m to the south. All four coal seams shown outcropping on or in close proximity to the site are shown to be dipping in a south-westerly direction. The direction of dip indicated that the Higher and Lower Bug Coal may be present beneath the south-western tip of the site. Wardell Armstrong have completed a Coal Mining Risk Assessment (ref: GM11893-001/FINAL – dated July 2021).
Hazardous Installations	No hazardous installations that could potentially prejudice the proposed construction of highly sensitive residential dwellings have been identified within influencing distance of the subject site.
Initial Conceptual Site Model	Contaminant Sources: • Made Ground (infilled field boundaries) – Polycyclic Aromatic Hydrocarbons (PAHs), heavy metals, Asbestos Containing Material (ACM), gases Pathways: • Direct contact and ingestion • Volatilisation/indoor explosion • Vapour inhalation • Dust inhalation Receptors • Future site users (proposed residential end-users and construction workers) • Buildings (proposed residential units) • Unnamed watercourse and Underlying aquifer (Secondary A bedrock aquifer)
Conclusion	As the site and the surrounding area has experienced limited historical development significant source of Made Ground and contamination are not

	anticipated onsite.
Recommendations	A detailed Phase II intrusive Geo-Environmental Ground Investigation should be undertaken in order to confirm the findings of the initial conceptual site model and value engineer a development solution. The site investigation should include: • An assessment of the general ground conditions; • Sampling of natural and Made Ground strata's; • Installation of dual gas and groundwater monitoring wells; and • A series of rotary boreholes to investigate the presence of coal working in the south-western tip of the site.

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DRAWING LIST

15-065-001 - Site Location Plan
15-065-003 - Historical Features Plan
15-065-004 - Site Features Plan

1. INTRODUCTION

1.1. BACKGROUND

E3P Ltd has been commissioned by Vistry Partnerships (the client) to undertake a Phase I Geoenvironmental Site Assessment at land to the south of Lickers Lane, L35 3JE.

This report is required to determine potential contaminated land liabilities and geotechnical constraints as part of a proposed site redevelopment,

1.2. PROPOSED DEVELOPMENT

At the time of this report being prepared E3P understands that Vistry Partnerships considering the proposed acquisition and future redevelopment of a parcel of land to the south of Lickers Lane, Whiston for low rise residential housing with associated adopted estate roads and utility infrastructure.

1.3. OBJECTIVES

- The objectives of the geoenvironmental investigation are as follows:
- Review historical plans, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available in order to complete a desk study in line with Environment Agency (EA) document Land Contamination: Risk Management (LC:RM) (2019)
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors.
- Assess the desk-study information and, where possible, provide preliminary recommendations in relation to foundations, pavement construction and floor slabs.
- Provide recommendations regarding future works required and undertake a preliminary pre-construction cost appraisal.

1.4. SOURCES OF INFORMATION

Background information was sought from the following sources:

- Envirocheck Search;
- Historical mapping dated 1850 – 2021. A selection of historical maps are reproduced in Appendix V;
- On-line planning records held by Knowsley Metropolitan Borough Council;
- Consultations with representatives of Knowsley Metropolitan Borough Council;
- Magic Map Groundwater Vulnerability Map;
- Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007);
- British Geological Survey Map;
- Groundsure IO database;
- https://zeticauxo.com/downloads-and-resources/risk-maps/; and,
- https://flood-map-for-planning.service.gov.uk.

1.5. LIMITATIONS

The limitations of this report are presented in Appendix I.

1.6. CONFIDENTIALITY

E3P has prepared this report solely for the use of the client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.

1.7. RISK CLASSIFICATION

E3P has utilised the available data to classify the site on the basis of its likely contaminated land liability and potential for geotechnical constraints in relation to the site development. The risk classification definitions are summarised in Table 1.1.

TABLE 1.1 RISK CLASSIFICATION

RISK	DEFINITION
Low	There are unlikely to be significantly contaminated land liabilities/geotechnical constraints associated with the property.
Low Moderate	There are unlikely to be significantly contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of future redevelopment of the site.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or

	undertake further environmental improvements. Redevelopment of the site will likely require further site investigation.
Moderate High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment, including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine to level of risk and associated liability.

2. SITE SETTING

2.1. SITE DETAILS

Site Address	Land south of Lickers Lane, Whiston, Prescot, L35 3JE
National Grid Reference	E 347490, N 390400.
Site Area	2.55 Ha.

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 15-065-001.

2.2. CURRENT SITE USE

E3P has undertaken a site walkover of the entire site and a description of the key findings is summarised in Table 2.1.

TABLE 2.1 SITE DESCRIPTION

Occupancy/Use	The site is roughly rectangular in shape and is located to the south of Lickers Lane, Prescot. Two connected bodies of water border the site on the northern boundary. The general typography of the site is uniform with a gradual slope to the south of the site. There are frequent ruts and ditches caused by off-road vehicles across the site. Access is most effectively gained from the northern entrance of the site off Lickers Lane. Upton entering site, the northern third of the site is overgrown with a mix of mature and semi mater trees and shrubbery. The areas south of the mature and semi-mature trees consist of waist-high vegetation. Historical mapping does not indicate the presence of any building or structures having been erected on the site. The site is currently open to the public, during the site walkover people were seen using the site for dog walking and other recreational activities.	
Surface Cover (%)	**Buildings**	0%
	Hardstand	0%
	Soft Cover	100%
Structures	There are no structures identified on the site.	
Access	Pedestrian access can be gained via the footpath off Lickers Lane in the northwest of the site. There is an unmade track also on the north boundary of the site off Lickers Lane, that could be used for vehicular access.	
Slope	The site is approximately 50m above sea level and slopes gently downwards from northeast to southwest.	
Retaining Structures	There have been no retaining structures identified on the site.	

Vegetation/Ecology	Overgrown vegetation is present across the site including bracken and nettles. The northwest section of the site just south of Lickers Lane comprises of dense mature trees. More sporadic trees are present throughout the rest of the site while very few trees are present in the grass field in the south of the site. A habitat survey will be required to support the planning application.
Hazardous Material Storage	No above-ground storage tanks (ASTs) or underground storage tanks (USTs) were observed at the site during the preliminary site walkover. Due to the previously undeveloped nature of the site, it is unlikely that hazardous materials storage will have occurred on the site.
Asbestos-Containing Material (ACM)	No evidence of ACM was noted across the site during the site walkover. Due to the lack of any structures on the site, it is unlikely there will be any asbestos present on the site.
Polychlorinated Biphenyls (PCBs)	There is no equipment identified that may contain PCBs within the site boundary.
Waste Storage	Potentially hazardous waste streams are unlikely to be generated at the site and none were observed during the preliminary site inspection.
Drainage	A formal drainage survey has not been completed for the site.

2.3. SURROUNDING AREA

The surrounding area land uses are summarised in Table 2.2.

TABLE 2.2 SURROUNDING LAND USES

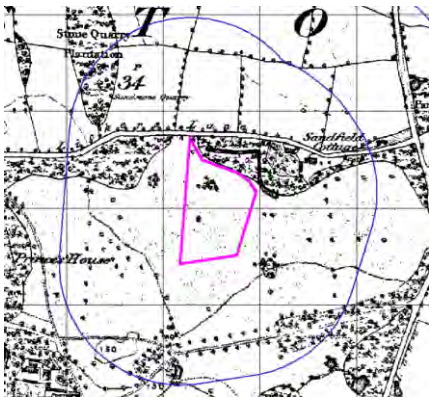
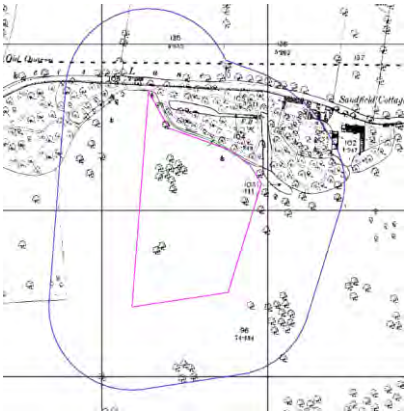
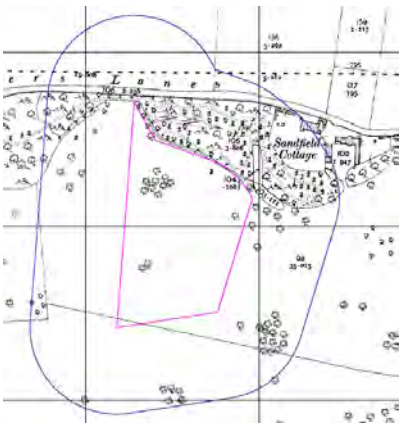
DIRECTION	LAND USE
North	Residential units, St Leo's Park, Knowsley Seventh Day Adventist Church
East	Agricultural land
South	Agricultural land
West	Agricultural land

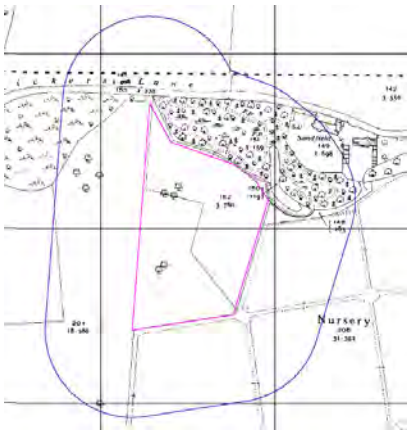
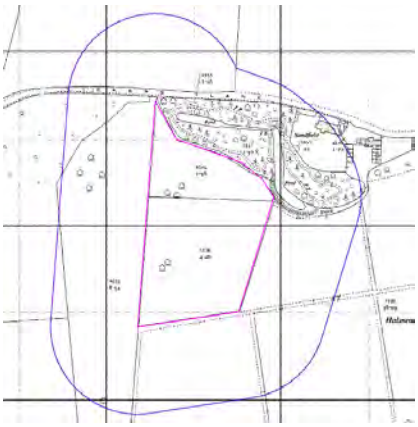
3. SITE HISTORY

3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 3.1. In addition, historical site features are presented in Drawing No 15-065-003 in Appendix III.

TABLE 3.1 HISTORICAL DEVELOPMENT

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1850 **1:10,000**	The site is open greenfield land forming part of a larger parcel of land. There is a large collection of trees in the centre of the site and mature trees flank the northern boundary of the site.	
1892 **1:2,500**	Serval additional trees have been mapped in the east of the site. There are no other significant changes to the site.	
1907 **1:2,500**	A field boundary has been erected in the eastern tip of the site. There are no other significant changes to the site.	

1937 **1:2,500**	The field boundary at the eastern tip of the site has been removed. The site has been segregated into two paddocks with a saw-toothed shaped field boundary through the centre of the site, forming a north-western and a south-eastern paddock. Serval of the trees in the centre and the east of the site are no longer mapped. There are no other significant changes to the site.	
1959 **1:2,500**	The saw-toothed field boundary has been removed, with a new field boundary being created in the northern sector of the site. The field boundary bisects the site east to west forming a larger paddock in the southern sector of the site. There are no other significant changes to the site.	
1985 **1:2,500**	The southern tip of the site is now mapped as Halsnead Park. The trees across the site are no longer mapped. There are no other significant changes to the site.	

1999 **1:10,00**	The field boundary in the northern sector of the site is no longer mapped. There are no other significant changes to the site.	
2006 **1:10,000**	A path is mapped in the northern sector of the site bisecting the site from east to west. There are no other significant changes to the site.	
2021 **1:10,000**	The path in the northern sector of the site is no longer mapped, with this sector of the site now being denoted as rough grassland. The wider site is no longer mapped as Halsnead Park. There are no other significant changes to the site.	

3.2. OFF-SITE HISTORICAL DEVELOPMENT

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250 m radius of the site is summarised in Table 3.2.

TABLE 3.2 SURROUNDING HISTORICAL DEVELOPMENT

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Pond **Then: Infilled**	180 m	Pre 1850–Pre 1985 Pre 1985–Present	South
Sandstone Quarry **Then: Infilled**	200 m	Pre 1850–Pre 1959 Pre 1959–Present	Northwest

3.3. PLANNING HISTORY

E3P has undertaken a review of online planning records held by Knowsley Metropolitan Borough Council and no environmentally pertinent information has been obtained for the site.

3.4. ANECDOTAL INFORMATION

No anecdotal information is available for this site.

3.5. PREVIOUS REPORTS

The following previous coal mining risk assessment has been provided to E3P for review:

Wardell Armstrong: Coal Mining Risk Assessment (ref: GM11893-001/FINAL – dated July 2021).

The key findings of the coal mining risk assessment are summarised below and where necessary data is used to support the E3P geoenvironmental site assessment.

- There are no recorded mine entries recorded to be present on the site, however, the coal authority reports the presence of possible unrecorded mine entries.
- Unrecorded mine entries may be treated or untreated.
- Requires further assessment or investigation within south
- Should unrecorded shafts be located the shafts should be treated.
- The absence of unrecorded mine shafts being encountered is not definitive proof that any entries do not exist on site.
- The area is considered to represent a high risk in terms of coal mining legacy issues.
- Geological and mining settings should be confirmed by site investigation prior to confirming the layout of the development.
- Mining remedial works are likely to be required in parts of the site to ensure the future stability and safety of the proposed development.

4. ENVIRONMENTAL SETTING

4.1. GEOLOGY AND HYDROGEOLOGY

The British Geological Survey (BGS) map (Sheet 107SE) for the site, (1:50,000, Solid and Drift editions) and online records indicate the site is underlain by the geological sequence presented in Table 4.1.

TABLE 4.1 SUMMARY OF UNDERLYING GEOLOGY

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift	Glacial Till	SAND, CLAY and GRAVEL	Secondary undifferentiated
Solid	1. Kinnerton Sandstone Formation 2. Pennine Middle Coal Measures Formation	1. SANDSTONE 2. MUDSTONE, SILTSTONE, SANDSTONE	1. Principal aquifer 2. Secondary A aquifer

TABLE 4.2 SUMMARY OF BGS BOREHOLE RECORDS

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
600 m South	3.42 m	0.00-1.20 m	Red gravelly fine to medium sand 1.20-2.00 m	Sandstone >2.0 m bgl

TABLE 4.3 FAULTING

LOCATION	DESCRIPTION
Eccleston Fault	Observed fault trending N-S in the west area of the site.

The Envirocheck report indicates that the site is located within groundwater source protection zone III (total catchment). There are two groundwater/potable abstractions within 1 km of the site associated with Blundells Hill Golf Club Ltd and United Utilities Water Plc respectively.

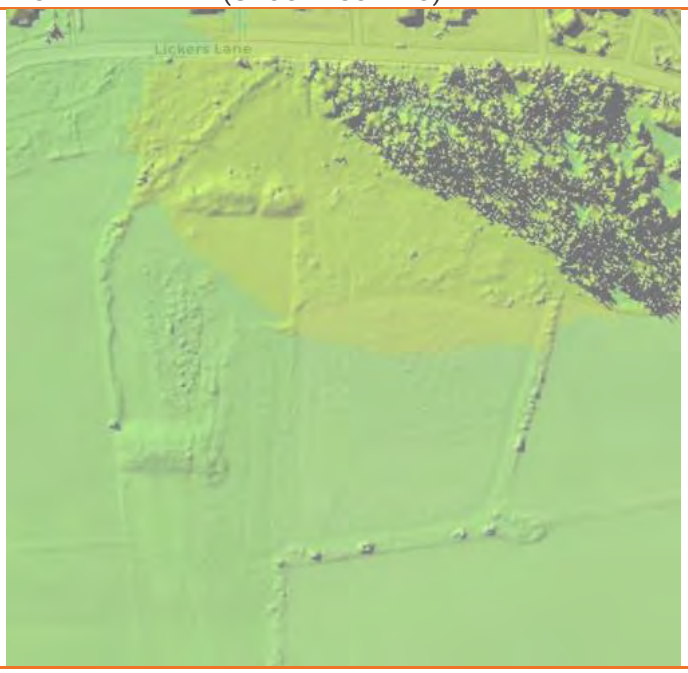
Based on the local topography, the location of surface watercourses, it is considered likely that shallow groundwater, if present, will flow in a south-westerly direction, following the topographical gradient.

4.2. NATURAL LANDFORM AND GEOMORPHOLOGY

Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological assessment of the landform and its possible mechanism for formation.

The lidar image in figure 4.2 indicates that the north of the site is raised slightly when compared to the southern sector. This sector of the site also has denser scrub vegetation and due to the result of the lidar imagine this may contribute to the illusion of a slightly elevated level. Along the eastern and western boundaries, there is a low ridge. This may have been constructed to segregate the adjacent agricultural land, which may have been built up slightly over time. The site has not been subject to significant anthropogenic changes with the current site topography broadly representing the natural landform.

FIGURE 4.2 SURFACE LIDAR DATA (GROUNDSURE IO)



https://groundsure.io/

4.3. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in Table 4.4.

TABLE 4.4 SUMMARY OF GEOTECHNICAL DATA

HAZARD	DESIGNATION
Shrink-Swell Clay	Very low risk
Landslides	Very low risk
Ground Dissolution	No hazard
Compressible Ground	No hazard
Collapsible Deposits	Very low risk
Running Sand	Very low risk

4.4. COAL MINING

The Envirocheck report states the site is in an area that may be affected by coal mining.

A CA mining report was obtained (Ref: 51002685519001) dated 4th October 2021

The CA operates a risk-based approach to the assessment of potential instability issues associated with the future development of land located within the predefined CA consultation areas. This risk-based approach subdivides the potential risk into “low” and “high” risk categories.

The risk categories can be defined as:

Low-Risk Sites – Deemed to be land where coal mining has taken place, however, it was at such depth not to pose a risk to new development and it, therefore, contains no known recorded risks and as such no further assessment is required.

For low-risk sites, the CA categorically states:

> *If your proposed development is within the Development Low Risk Area there is no need for you to submit any coal mining information with your planning application and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice.*

High-Risk Sites – Deemed to be landholdings located within an area known to contain legacy risks that include:

- Mine entries (shaft or adit);
- Shallow coal workings (recorded and probable);
- Workable coal seam outcrops;
- Mine gas sites and areas;
- Recorded coal-mining-related hazards;
- Geological features (fissures and break lines); and
- Former surface mining sites (sometimes using historic opencast extraction methods).

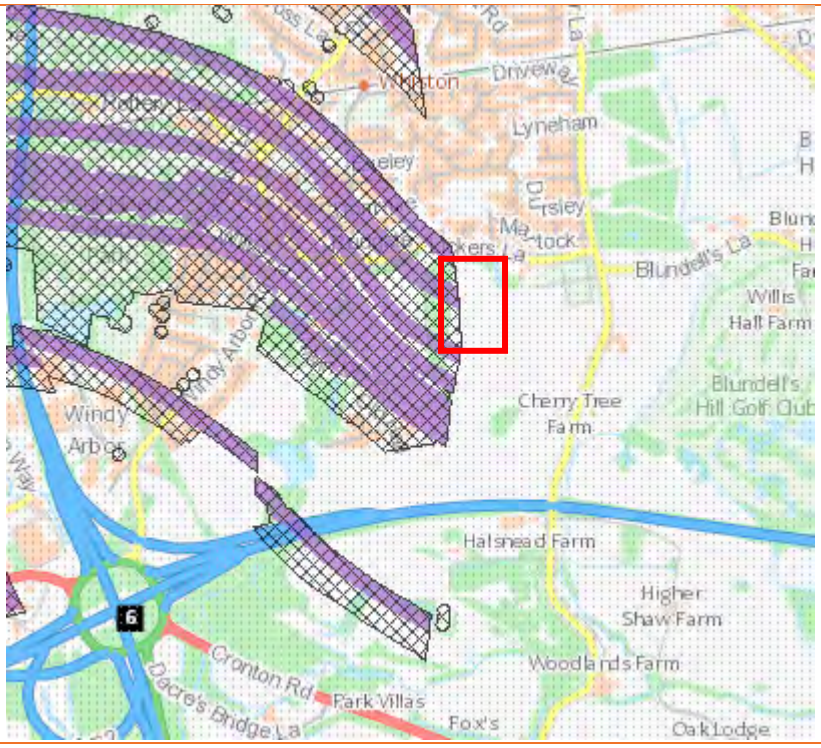
4.5. COAL MINING INFORMATION

Prior to the enactment of the Coal Mines Regulation Act (1872), which came into force on the 1st January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the CA has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth that could result in a subsidence event in the future (through successive cavitation) associated with a failure of the subsurface support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires the consideration of a wide range of information and E3P has completed a review of relevant information in relation to potential coal mining activities.

In the first instance, E3P has reviewed the Coal Authority Online Viewer and an excerpt of this is presented in Figure 4.3. This map shows that the west area of the site lies within a development high risk area. Furthermore, there are coal seams that appear to dip below the site. The map also indicates that there is the potential for shallow workings beneath the site.

FIGURE 4.3 EXCERPT OF THE COAL AUTHORITY ONLINE VIEWER



As the site is within an area affected by Coal Mining E3P have consulted with the Coal Authority who have provided a Consultant Coal Mining Report for the site (ref: 51002685519001).

Table 4.5 provides a summary of pertinent coal mining information with this report.

TABLE 4.5 COAL MINING INFORMATION

SOURCES OF INFORMATION	SUMMARY
Known Past Underground Mining	Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, are included. Seam – dip (degrees) – extraction thickness (cm) – depth (m) – year Wigan Four Feet – 11.2 – 160 – 151 – 1902 Rushy Park – 13.4 – 130 – 339 – 1896 Rushy Park – 9.4 – 130 – 370 – 1890 Rushy Park – 9.5 – 130 – 427 – 1886
Probable Unrecorded shallow workings	YES
Spine Roadways at Shallow Depth	No spine roadway recorded at shallow depth
Mine Entries within 100m of the site	No mine entries were recorded within 100m of the subject site

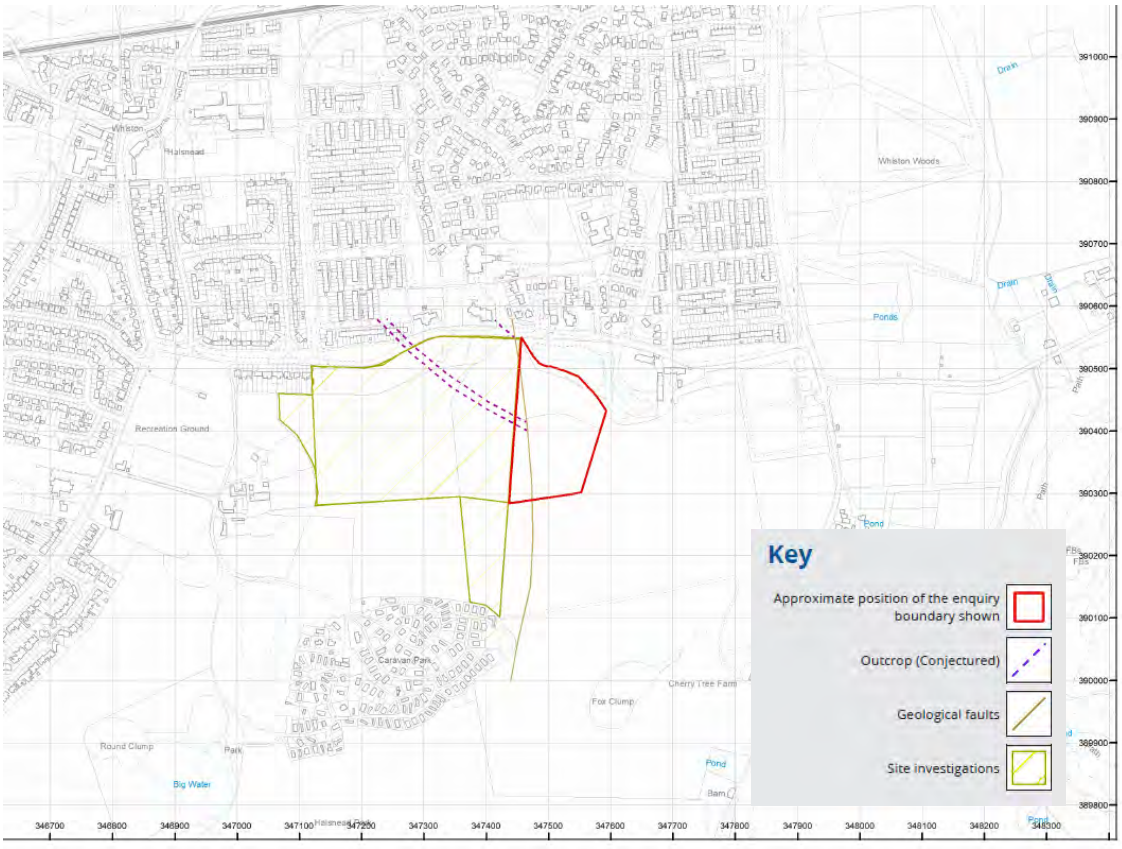
SOURCES OF INFORMATION	SUMMARY
Mine Abandonment plans	No
Known outcrops	Seam Name – Workable: Yes/ No Higher Florida – Yes Higher Pigeon House (Pigeon House) – Yes Lower Florida – Yes
Faults / Fissures	Eccleston fault trending N-S runs through the western secotor of the site.
Opencast mines	None recorded within 500m of the subject site.
Coal Authority Managed Tips	None recorded within 500m of the subject site.
Remediated Sites	None recorded within 500m of the subject site.
Coal Mining Subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.
Mine Gas	None recorded within 500m of the subject site.
Mine Water	None recorded within 500m of the subject site.
Future Underground Mining	None recorded
Coal Authority Development Advice	'The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.'
British Geological Survey Mapping	The 1:10,000 geological mapping for the area indicated that the Eccleston Fault (trending N/S) bisects the western sector of the site. The western tip of the site falls with the Coal Measures with the Higher and Lower Bug Coal Seams (now known as Higher and Lower Florida) outcropping on site. The Cheshire Mine Coal is present roughly 50 m to the north of the site and the Coal With Cannel is present roughly 200 m to the south. All four coal seams shown outcropping on or in close proximity to the site are shown to be dipping in a south-westerly direction. The direction of dip indicated that the Higher and Lower Bug Coal may be present beneath the south-western tip of the site. In addition to the coal seam, there is a historic coal pit mapped roughly 500m to the west of the subject site.
Review of Coal Authority Archive	No CA archives/mine abandonment plans are made available.

Historical Ordnance Survey Mapping	A review of the 1:10,000 Ordnance Survey mapping from circa 1850, which has records of mine workings that predate the Mining & Regulation Act of 1872, identified the following features indicative of historical mine workings in proximity to the application site: • Coal pit – 500 m west. In consideration of the historical mining features in proximity to the site and potential for coal close to the surface it is considered possible that coal extraction has occurred, underlying the site at relatively shallow depths; a further investigation would be required to determine the extent and depth of any worked seams.
Historical Site Investigations	The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations. The site requires further investigation and may influence how you approach your risk assessment.

4.5.1. COAL AUTHORITY PLAN

The Coal Authority plan referenced: MR-LARGE-PLOT-51002685519001-1633351632984 shows the coal seams beneath the site along within the fault through the site.

FIGURE 4.1 COAL AUTHORITY PLAN FOR THE SITE

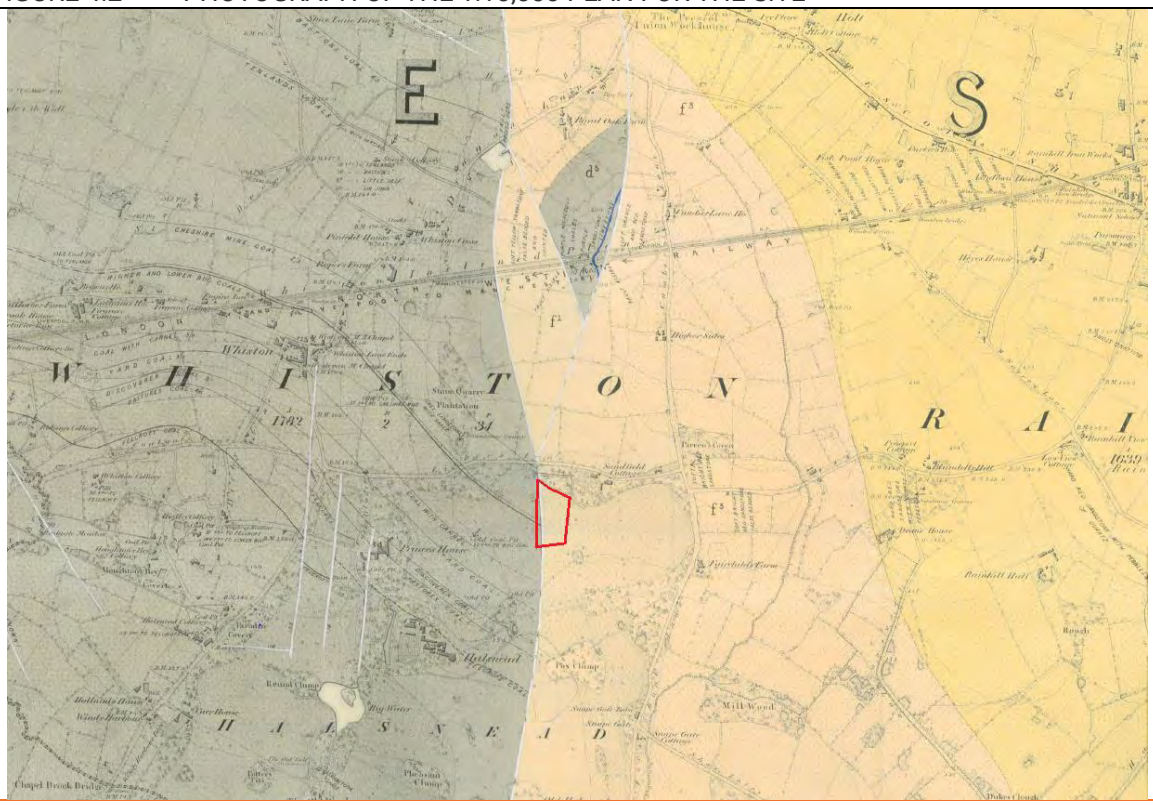


4.5.2. COAL MINING GEOLOGY

Figure 4.2 is a photograph of the 1:10,000 plan for the site which shows the Higher and Lower Bug Coal Seams (now known as Higher and Lower Florida) in the western sector of the site. The Cheshire Mine Coal is present roughly 50 m to the north of the site and the Coal With Cannel is present roughly 200 m to the south.

The Eccleston Fault trends north south through the western sector of the site.

FIGURE 4.2 PHOTOGRAPH OF THE 1:10,000 PLAN FOR THE SITE



4.6. COAL MINING RISK ASSESSMENT

This risk assessment comprises a desk-based review of all available information on coal mining issues that are relevant to the application site deemed to be located within a high-risk area. This includes:

- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- Demonstrating to the local planning authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The coal mining risk assessment is summarised in Table 4.6.

TABLE 4.6 SUMMARY OF COAL MINING RISK ASSESSMENT

COAL MINING RISK ASSESSMENT	YES/NO	RISK ASSESSMENT
Recorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Low
Recorded Underground Coal Mining at Shallow Depth (> 30 m)	Yes	Moderate
Evidence of Unrecorded Surface Extraction of Coal Outcrop	Yes - > 250 m from site	Low
Probable unrecorded Underground Coal Mining at Shallow Depth (< 30 m)	Yes	High
Mine Entries (Shaft/Adits)	No	Low
Coal Mining Geology – Fractures/Fissures	Yes	High
Recorded Gas Emissions	No	Low
Recorded Mining Surface Hazard	No	Low
Surface Mining (Opencast)	No	Very Low/Low

Based on the above, a high risk of unrecorded coal mining at shallow depth and at a moderate risk as it is known that the Higher and Lower Florida seam was worked between 151-427 m. The CA, as a statutory consultee, will require a series of rotary open holes across the south-western tip of the site to determine the presence of any coal on site and to understand the nature of any coal workings.

4.7. RADON RISK POTENTIAL

The Envirocheck report indicates the site is situated in an area where less than 1% of homes are above the “Action Level” and that the BGS reports that full radon protective measures are not necessary in the construction of new dwellings or extensions.

4.8. PRELIMINARY GEOTECHNICAL ASSESSMENT

Based on the desk-study information, the following geotechnical assessment has been made:

- Given the predominantly undeveloped nature of the site, it is likely there will be limited Made Ground fill deposits and obstructions.
- Infilled field boundaries present onsite may be potential sources of Made Ground. An investigation will be required in order to assess these and undertake in-situ geotechnical testing to determine the likely foundation solution for plots in these areas.
- Any historically infilled ponds and reservoirs present within the site boundary may be potential sources of alluvial deposits, silts and possible organic peat deposits in addition to potential depths of Made Ground. An investigation will be required to assess these and undertake in-situ geotechnical testing to determine the likely foundation solution for plots in these areas.
- The site has a gentle slope downwards in a southwest direction. This may require a potential development platform however development a currently unknown.
- The presence of coal workings in the south-western sector of the site requires investigation.

4.9. HYDROLOGY

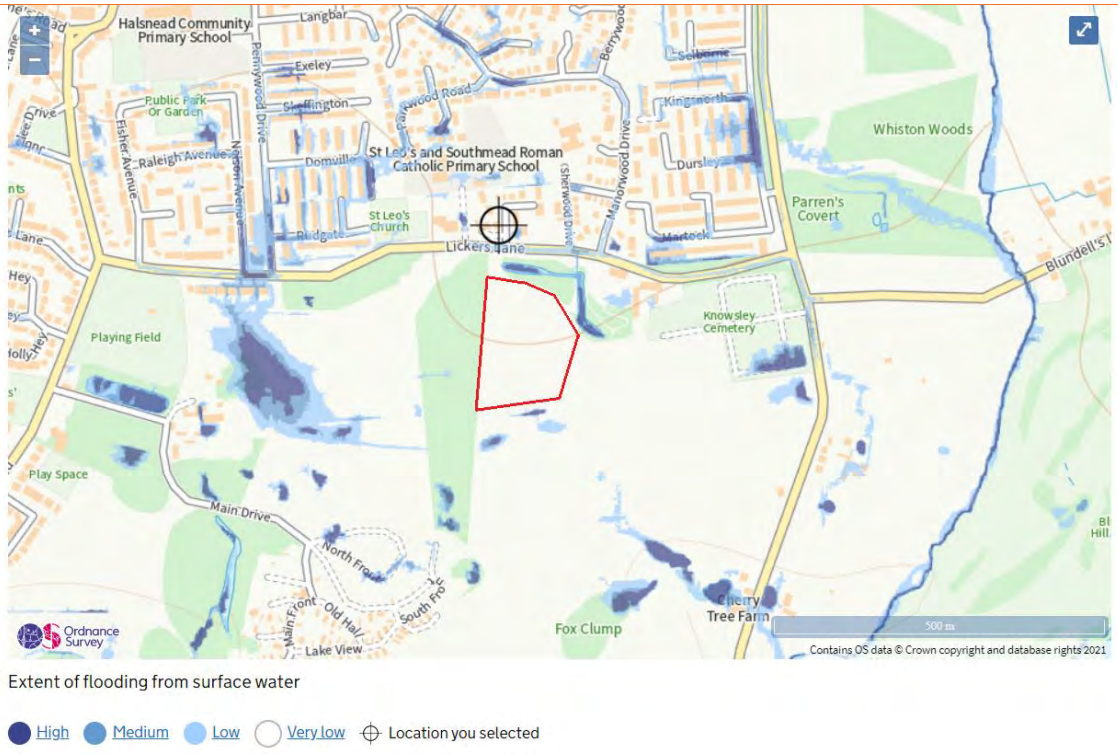
Surface water features within 250 m of the subject site are summarised in Table 4.8.

TABLE 4.8 SURFACE WATER FEATURES

SURFACE WATER FEATURE	QUALITY	DISTANCE (m)	DIRECTION
Pond	Unknown	7 m	Northeast
Pond	Unknown	10 m	North
Pond	Unknown	240 m	South

The site is predominantly located within a currently defined “Flood Risk Zone 1”; defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (< 0.1%), and as such is considered to be unaffected by river flooding. In addition, the Envirocheck report states there is a potential for groundwater flooding of property situated below ground level. The Environment Agency (EA) Flood Risk Map for the site is presented in Figure 4.1.

FIGURE 4.1 EA FLOOD RISK MAP



Source - https://flood-map-for-planning.service.gov.uk/

4.10. INDUSTRIAL LAND USES

The site is located within a predominantly residential and rural area with one entry into the trade directory for industrial land use within 250 m of the site and is currently listed as active:

- Greeting car publisher (167 m northeast).

There are further two active industrial land uses within 500 m, including a jewellery manufacturer and a door manufacturer.

There are no fuel station entries within 1 km of the site boundary.

4.11. SENSITIVE LAND USES

The closest residential properties are located north of Lickers Lane that is adjacent to the north boundary of the site with a primary school located roughly 220 m to the north. No other environmentally sensitive land uses have been identified within close proximity to the site.

4.12. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a "Moderate/High" sensitivity setting as discussed within Table 4.9.

TABLE 4.9 SITE SENSITIVITY ASSESSMENT

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The Envirocheck report indicates that the site is located within groundwater source protection zone III (total catchment). The site is not located within a Drinking Water Safeguard Zone.	**High**
Distance to the Closest Groundwater Abstraction Point	The closest groundwater abstraction point is 963m away associated with Blundells Hill golf club and is used for drinking, cooking sanitary and washing.	**Low**
Aquifer Classification in Superficial Drift Deposits	Secondary (undifferentiated).	**Moderate**
Aquifer Classification in Bedrock	Kinnerton Sandstone: Principal aquifer. Pennine Middle Coal Measures: Secondary A aquifer.	**High**
Is the Site Underlain by Low-Permeability Drift to Depths in Excess of 10 m?	The underlying superficial deposits are likely to comprise clayey gravelly sands interbedded with low-permeability clay soils to depths of 2 to 3m.	**High**
Is the Site Located Within 50 m of a Surface Watercourse?	The risk to surface water is negligible given the absence of a viable receptor within influencing distance of the site.	**Low**
Sensitive Land Uses	No sensitive land uses within 250m of the site	**Low**
OVERALL SITE ENVIRONMENTAL SENSITIVITY		**Moderate/High**

5. CONSULTATIONS

5.1. LANDFILL SITES AND WASTE TREATMENT SITES

There are no recorded/historical landfill sites or waste treatment sites within 250m of the site boundary.

5.2. REGULATORY DATABASE

The information summarised in Table 5.1 has been obtained from a commercially available environmental database. The summary table only includes records from within 250 m of the subject site and not otherwise detailed in the report.

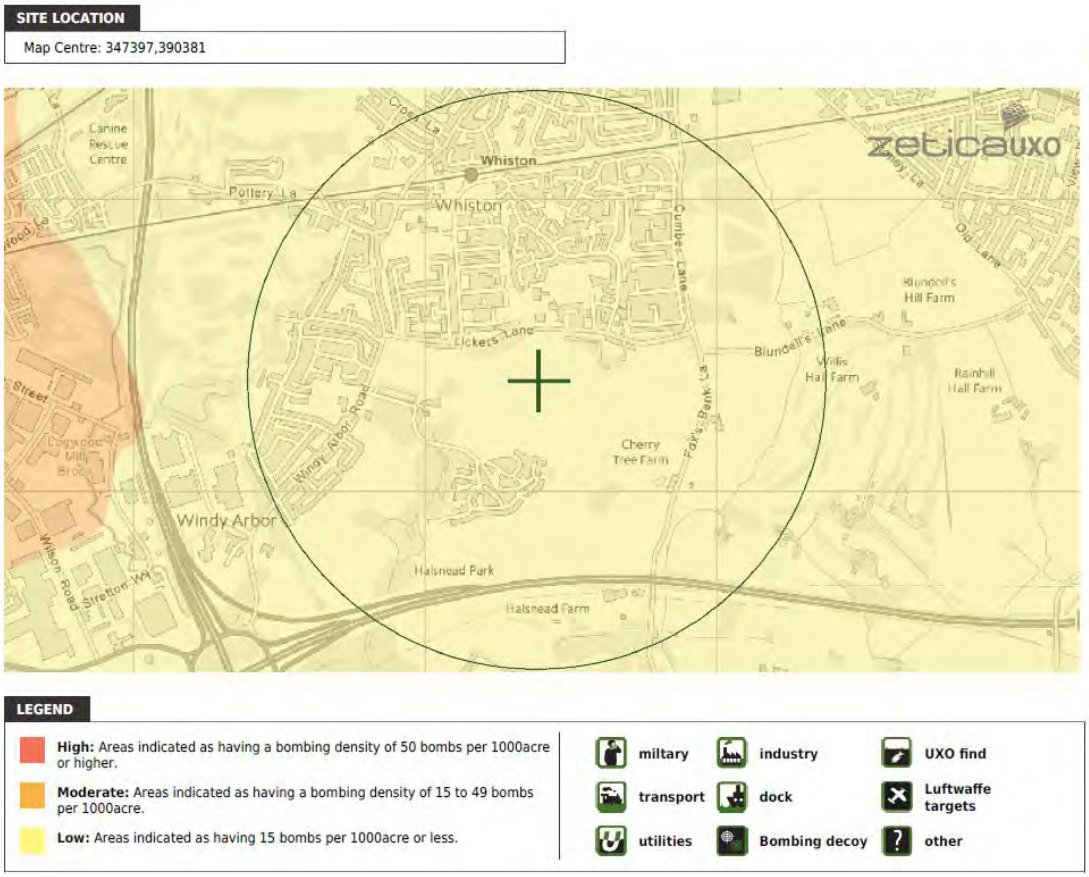
TABLE 5.1 SUMMARY OF ENVIRONMENTAL DATA

RECORD	ENTRIES WITHIN 250 m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified
Authorised Industrial Processes (IPC/IPPC/LAPPC)	0	None Identified
Fuel Stations Entries	0	None Identified
Licensed Radioactive Substances	0	None Identified
Enforcements, Prohibitions or Prosecutions	0	None Identified
Discharge Consents	0	None identified
Pollution Incidents	0	None Identified
Consents Issued Under the Planning (Hazardous Substances) Act 1990	0	None Identified
Control of Major Accident Hazard (COMAH) Sites	0	None Identified

5.1. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the site is in an area at low risk from possible unexploded ordnance (UXO) resulting from the Second World War. The Zeticia UXO Risk Map is presented in Figure 5.1.

FIGURE 5.1 ZETICA UXO RISK MAP



Source - https://zeticauxo.com/downloads-and-resources/risk-maps/

5.2. INITIAL CONCEPTUAL SITE MODEL

In accordance with EA LCRM (2019) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), E3P has developed an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised within Table 5.2.

ON-SITE SOURCES OF CONTAMINATION

The following potential on-site sources of contamination have been identified:

- Infilled field boundaries.

OFF-SITE SOURCES OF CONTAMINATION

The following potential off-site source of contamination have been identified:

- Infilled Ponds to the south;
- Infilled quarry to the northwest; and
- Local and historical land use.

5.3. CONCEPTUAL SITE MODEL

Following the completion of the intrusive site investigation, chemical analysis and risk assessment, the conceptual model shown in Table 5.2 has been prepared for the site.

TABLE 5.2 CONCEPTUAL MODEL

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL1 PL2	Heavy Metals, non-volatile PAH, TPHs (Made Ground – infilled field boundaries)	Dermal contact. Dermal contact and ingestion.	Future site users. Off-site receptors.	Low likelihood	Low	LOW
Discussion: Potential for the presence of heavy metals, non-volatile PAHs and TPHs within made ground deposits associated with historic infilled field boundaries. This may pose a short-term risk to construction workers, who may come into contact with impacted soils during earthworks. **Recommendation:** Intrusive ground investigation works and chemical analysis of the material used to infill the field boundaries. If the material is to be retained on site, a cover system to garden and landscaped areas will prevent exposure to future site users. Construction works completed with PPE and provision of welfare.						
PL3	ACM in Made Ground	Inhalation of dust.	Future site users. Buildings. Off-site land users.	Unlikely	Low	LOW
Assessment: The historical maps showed that no structures or buildings have been present on the site and therefore it is unlikely that any asbestos or ACMs are present. **Recommendation:** Any asbestos impacted soils must be managed with placement in areas of low future sensitivity or alternatively the impacted soils will require removal from the site by a licenced waste handler. Cover system to garden and landscaped areas will prevent exposure to future site users. Construction works completed with PPE and provision of welfare.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL4	Volatile contaminants such as hydrocarbons (Made Ground)	Inhalation of vapours. Migration through permeable strata and preferential pathways.	Future site users. Off-site receptors.	Unlikely	Low	LOW
Assessment: Volatile compounds are unlikely to be present onsite due to the undeveloped nature of the land and the lack of machinery / plant that will have been used on the site. Isolated spillages may be present associated with off road vehicles using the site, however, this is considered to be low. **Recommendation:** An intrusive investigation is required to confirm the conceptual site model. Construction works completed with PPE and provision of welfare.						
PL4	Methane, carbon dioxide (peat, coal measures and potentially infilled features on and within 250 m of the site)	Inhalation of gas. Migration through permeable strata and preferential pathways. Explosion in confined spaces.	Future site users. Buildings. Off-site land users.	Likely	Moderate	LOW
Assessment: The anticipated presence of limited Made Ground is considered to be a potential source of carbon dioxide and methane. The presence of probable coal working in the south western sector of the site is a potential source of ground gas. The historically infilled field boundaries located within 250m of the site are also potential sources of ground gas that may migrate beneath the site boundary. Carbon dioxide and methane have associated asphyxiation and explosive risks. **Recommendation:** Intrusive ground investigation with ground gas monitoring. Should a ground gas risk be identified to end users, the risks can be mitigated through the						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
adoption of suitable control measures within the building construction using guidance presented within CIRIA 665 (Assessing Risk Posed by Hazardous Ground Gases to Buildings) and BS8485 (Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments).						
PL5	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds	Surface runoff. Migration through permeable strata and preferential pathways. Perched waters migration.	Groundwater (Principal aquifer). Surface water (unnamed watercourse – Pond)	Low likelihood	Low	**LOW**
Assessment: The anticipated presence of limited Made Ground associated with infilled field boundaries presents a risk of mobile contaminants metals, PAHs and hydrocarbons to be present, although unlikely. Glacial till across the site may reduce downward migration into the underlying bedrock aquifer. **Recommendation:** Sampling of groundwater and surface water required. Intrusive investigation is required to confirm the conceptual site model.						
PL6	Sulphate (potential ash within Made Ground)	Sulphate attack on concrete.	Building structure.	Unlikely	Low	**LOW**
Assessment: Significant depths of Made Ground are not anticipated onsite. The presence of pH and sulphate within Made Ground deposits may result in corrosion of buried concrete within the proposed development. Assessment must be undertaken to confirm the levels of pH and sulphate within the underlying strata and in particular any Made Ground deposits so that a concrete classification can be determined. **Recommendation:** Intrusive investigation of made ground deposits used to infill pond in order to confirm low sulphate levels.						

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL7	Organic contaminants such as hydrocarbons, solvents (Made Ground)	Ingestion of tainted water supply.	Future site users. Water pipes.	Unlikely	Low	LOW
Assessment: Low likelihood probability as significant contamination not anticipated at pipeline depth across the site (0.75–1.35 m). **Recommendation:** An intrusive investigation is required to confirm the conceptual site model.						
PL8	Phytotoxic contaminants (Made Ground)	Direct Contact (plant uptake).	Flora.	Unlikely	Low	LOW
Assessment: Low likelihood as contamination considered possible, but not probable, which may be taken up by flora in soft landscaping/gardens. **Recommendation:** Investigation work as part of PL1.						

Main exposure pathways:
PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants;



6. CONCLUSIONS AND RECOMMENDATIONS

6.1. SITE SUMMARY

Current Site Use	The site is roughly rectangular in shape and is located to the south of lickers lane, prescot. two connected bodies of water border the site on the northern boundary. The general typography of the site is uniform with a gradual slope to the south of the site. there are frequent ruts and ditches caused by off-road vehicles across the site. Access is most effectively gained from the northern entrance of the site off lickers lane. Upton entering site, the northern third of the site is overgrown with a mix of mature and semi mater trees and shrubbery. The areas south of the mature and semi-mature trees consist of waist-high vegetation. Historical mapping does not indicate the presence of any building or structures having been erected on the site. the site is currently open to the public, during the site walkover people were seen using the site for dog walking and other recreational activities.
Historical Site Use	A review of the pertinent Ordnance Survey mapping dating from circa 1850 to the present day confirmed the site has remained undeveloped agricultural land. Mapping indicates that Pre 1937 the site has a number of trees with a field boundary traversing from north-west to southeast. 1975 mapping illustrates the field boundary has been removed and replaced with another boundary running from east to west within the northern central sector of the site. The site also forms part of the Halsnead Park.

6.2. CONTAMINATED LAND ASSESSMENT

Human Health	Due to the largely undeveloped nature of the site, there are limited potential sources of contamination identified. However, localised areas have been identified as being potentially impacted by heavy metals, PAHs and ground gas, such as localised areas of Made Ground that may be present on the position of infilled former field boundaries.
Controlled Waters	The site is predominantly underlain by a principal bedrock aquifer (Kinnerton Sandstone Formation) and in the west underlain by a secondary A aquifer (Pennine Middle Coal Measures Formation). These may be afforded protection by the overlying low permeability glacial till deposits, however, BGS borehole record's surrounding the site only show glacial till to a depth of 2-3m.
Ground Gas	The presence of Made Ground in isolated pockets of the site and probable coal workings in the western sector of the site gives rise to a risk of ground gas. The installation of wells and the monitoring over a 3 month period will enable the risk to be assessed.
Potable Water	Off-site infilled ponds are only considered to be a low-potential source of ground gas due to the likely presence of low-permeability drift deposits.

6.3. COAL MINING

Coal Mining	The site is located in a coal mining reporting, with the western sector of the site falling into the development high-risk area. The 1:10,000 geological mapping for the area indicated that the Eccleston Fault (trending N/S) bisects the western sector of the site, with the Higher and Lower Bug Coal Seams (now known as Higher and Lower Florida) outcropping on site. The Cheshire Mine Coal is present roughly 50 m to the north of the site and the Coal With Cannel is present roughly 200 m to the south. All four coal seams shown outcropping on or in close proximity to the site are shown to be dipping in a south-westerly direction. The direction of dip indicated that the Higher and Lower Bug Coal may be present beneath the south-western tip of the site. Wardell Armstrong have completed a Coal Mining Risk Assessment (ref: GM11893-001/FINAL – dated July 2021).

6.4. GEOTECHNICAL ASSESSMENT

Geological	A limited thickness of glacial till drift deposits (sand, clay, gravel) are anticipated. Underlain by Kinnerton Sandstone Formation in the majority of the site and the Pennine Middle Coal Measures Formation in the west of the site.
Civil and Structural	No buildings are located on site. No relict foundations are expected on site. The site slopes gently downwards towards the southwest.
Abnormal Foundations	An abnormal engineering solution may be required where if a significant thickness of made ground is identified. This is unlikely due to the ground coverage.

END OF REPORT

APPENDIX I
LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.3.

2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.

4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.

5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.

6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.

8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.

10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

APPENDIX II
GLOSSARY

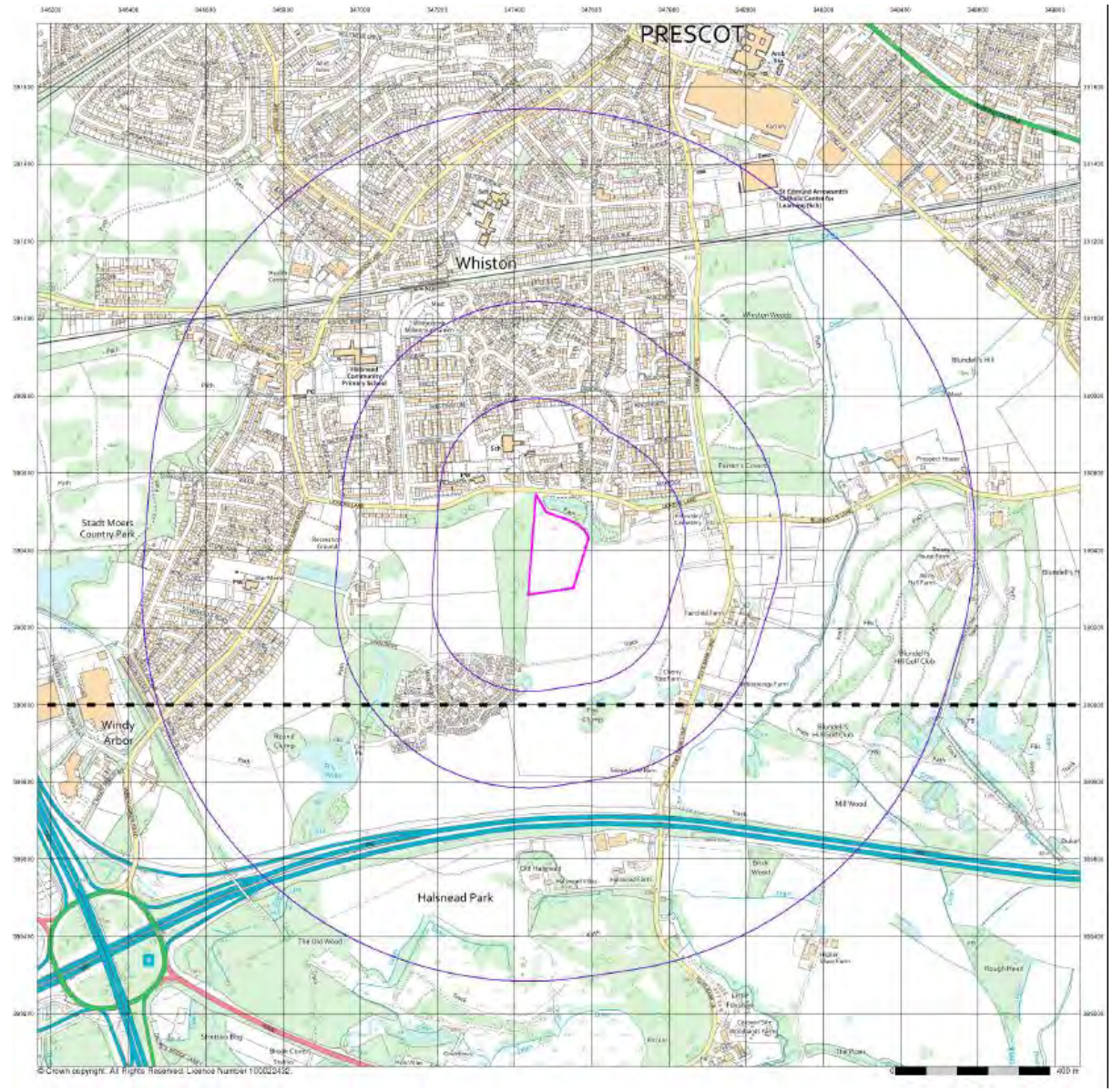
TERMS

ACM	Asbestos-containing material	**MMP**	Materials management plan
ADS	Acoustic design statement	**ND**	Not detected
AST	Above-ground storage tank	**NDP**	Nuclear density probe
BGS	British Geological Survey	**NMP**	Noise management plan
BSI	British Standards Institute	**NPSE**	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	**NR**	Not recorded
CA	Coal Authority	**PAH**	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	**PCB**	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	**PI**	Plasticity index
CIRIA	Construction Industry Research Association	**PID**	Photo ionisation detector
CLEA	Contaminated land exposure assessment	**POS**	Public open space
CML	Council of Mortgage Lenders	**PPE**	Personnel protective equipment
CoC	Contaminants of concern	**ProPG**	Professional practice guidance
CSM	Conceptual site model	**QA**	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	**SGV**	Soil guideline value
DWS	Drinking water standard	**SPH**	Separate-phase hydrocarbon
EA	Environment Agency	**SPT**	Standard penetration test
EQS	Environmental quality standard	**SVOC**	Semi-volatile organic compound
FFL	Finished floor level	**TPH**	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	**TPH CWG**	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	**UKWIR**	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	**UST**	Underground storage tank
HCV	Health criteria value	**VCC**	Vibro-concrete column
ICSM	Initial conceptual site model	**VOC**	Volatile organic compound
LEL	Lower explosive limit	**VRSC**	Vibro-replacement stone columns
LMRL	Lower method reporting limit	**VSC**	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	**WHO**	World Health Organisation
MCV	Moisture condition value	**WRAP**	Waste and Resources Action

			Programme
MIBK	Methyl isobutyl ketone	**WTE**	Water table elevation
m	Metres	**ppm**	Parts per million
km	Kilometres	**mg/m^3**	Milligram per metre cubed
% v/v	Percent volume in air	**m bgl bgl**	Metres below ground level
mb	Millibars (atmospheric pressure)	**m bcl**	Metre below cover level
l/hr	Litres per hour	**mAOD**	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	**kN/m^2**	Kilonewtons per metre squared
ppb	Parts per billion	**µm**	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	**SSRT**	Site Specific Remediation Target
PSD	Particle Size Distribution	**DD**	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	**Mc**	Moisture Content
ρ	Bulk Density	**GPR**	Ground Penetrating Radar
NDP	Nuclear Density Probe	**FFL**	Finished Floor Level
LEL	Lower Explosive Limit	**UKWIR**	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	**LOD**	Limit of Detection

APPENDIX III
DRAWINGS

DRAWING 15-065-001 – SITE LOCATION PLAN



APPENDIX IV
PHOTOGRAPHS

PLATE 1 WESTERN BOUNDARY FACING SOUTH



PLATE 2 CENTRAL SECTOR OF SITE



PLATE 3 NORTHERN SECTOR – ACCESS VIA LICKERS LANE



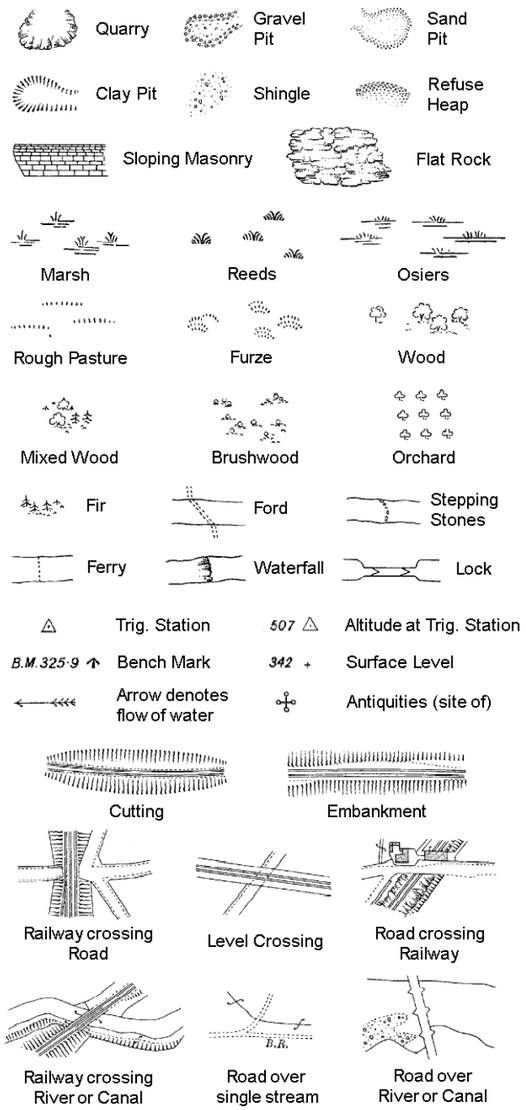
PLATE 4 OVERGROWN NORTHEN SECTOR OF SITE



APPENDIX V
HISTORICAL MAPS

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)

County & Civil Parish Boundary

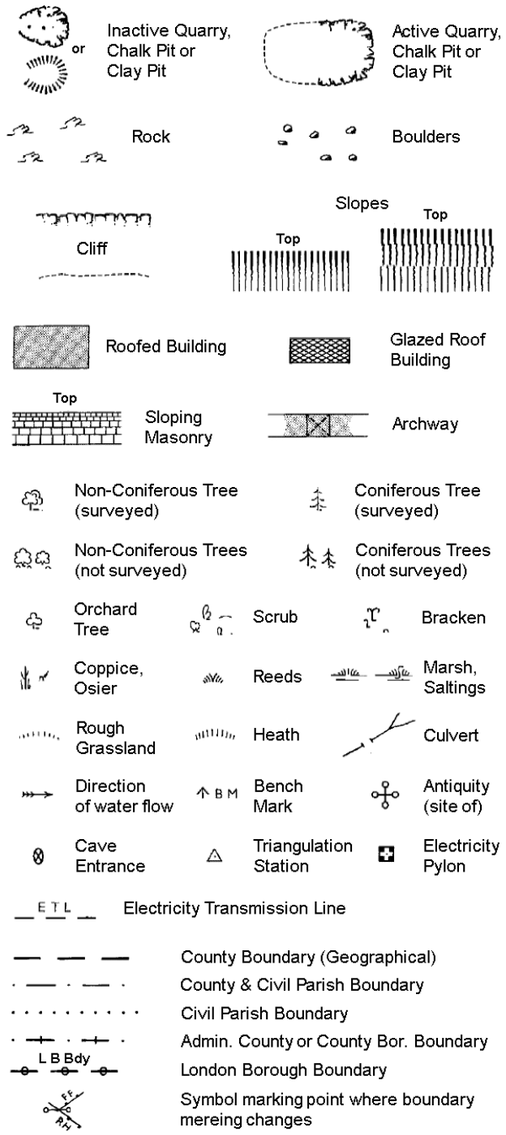
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

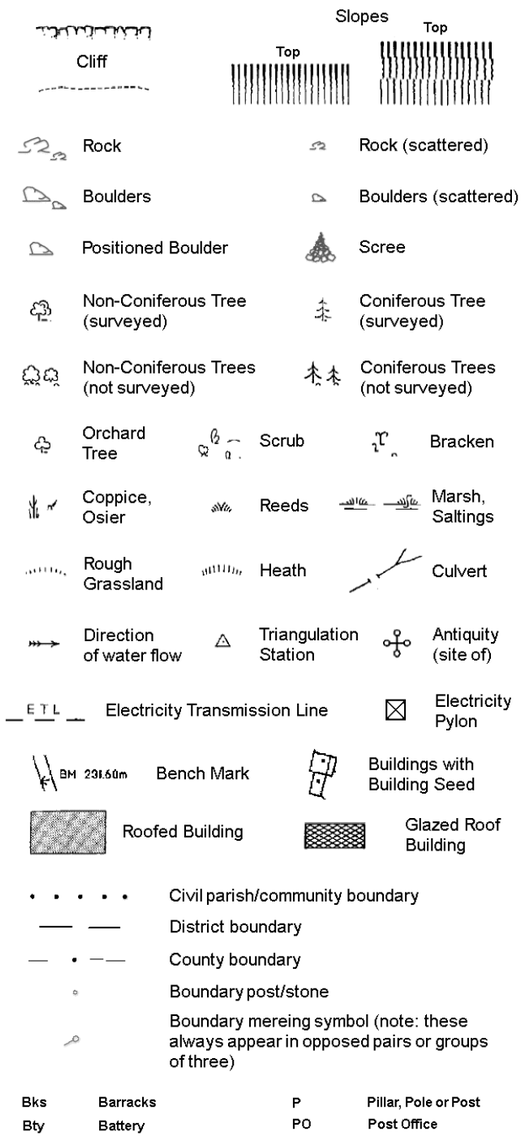
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

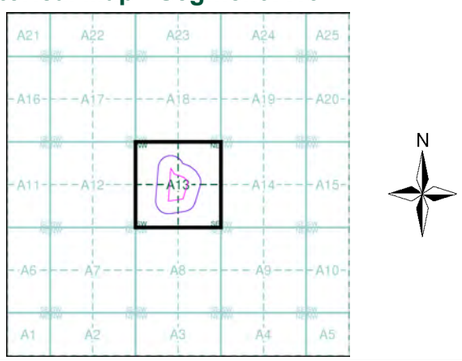
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

e3p

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1892	2
Lancashire And Furness	1:2,500	1907	3
Lancashire And Furness	1:2,500	1927	4
Lancashire And Furness	1:2,500	1937	5
Ordnance Survey Plan	1:2,500	1959	6
Ordnance Survey Plan	1:1,250	1974 - 1976	7
Supply of Unpublished Survey Information	1:2,500	1975	8
Additional SIMs	1:2,500	1985	9
Additional SIMs	1:2,500	1986	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:1,250	1994 - 1995	12
Large-Scale National Grid Data	1:1,250	1994	13
Large-Scale National Grid Data	1:1,250	1995	14
Large-Scale National Grid Data	1:1,250	1995	15
Large-Scale National Grid Data	1:1,250	1996	16
Large-Scale National Grid Data	1:1,250	1996	17
Large-Scale National Grid Data	1:1,250	1996	18
Historical Aerial Photography	1:2,500	2000	19

Historical Map - Segment A13



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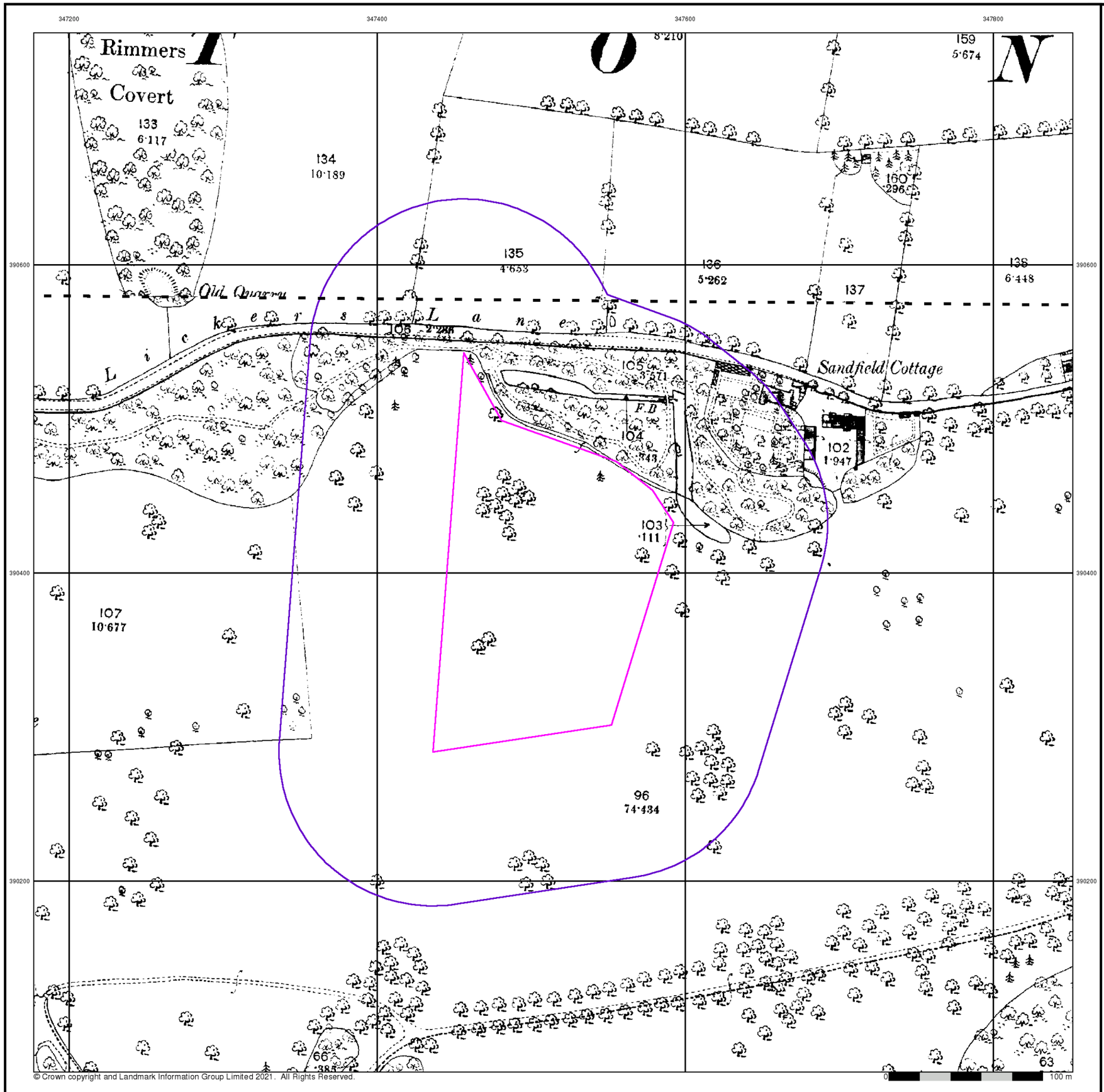
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Search Buffer (m): 100

Site Details

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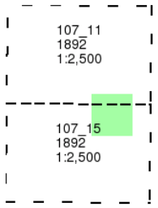
Lancashire And Furness

Published 1892

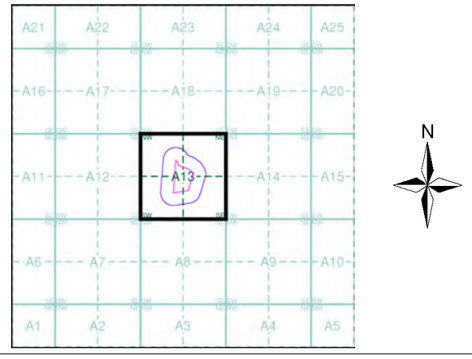
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



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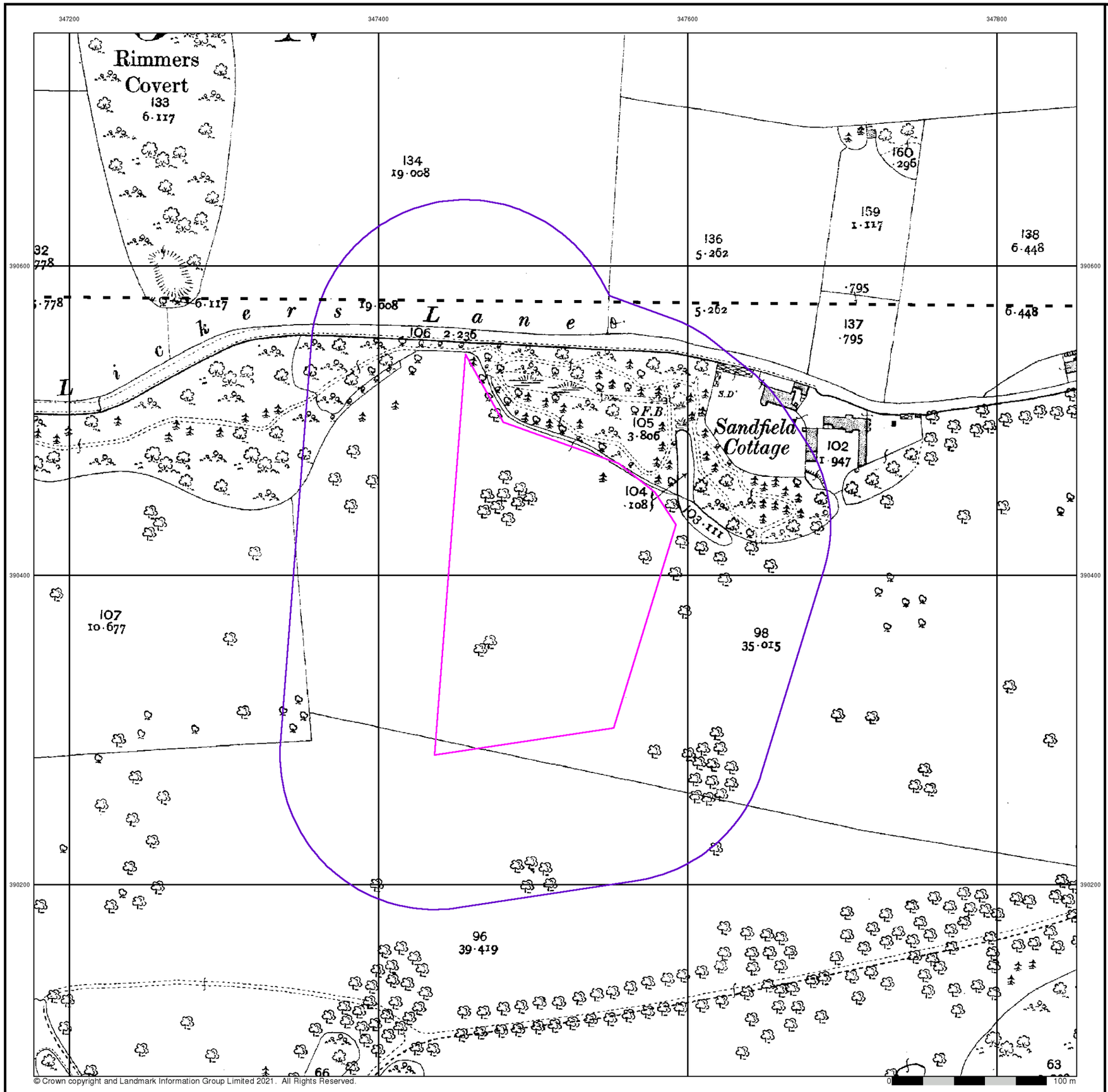
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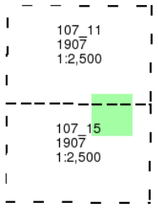
Lancashire And Furness

Published 1907

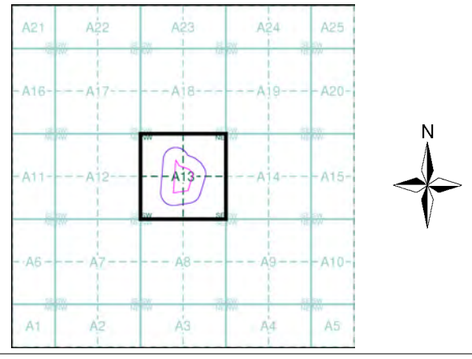
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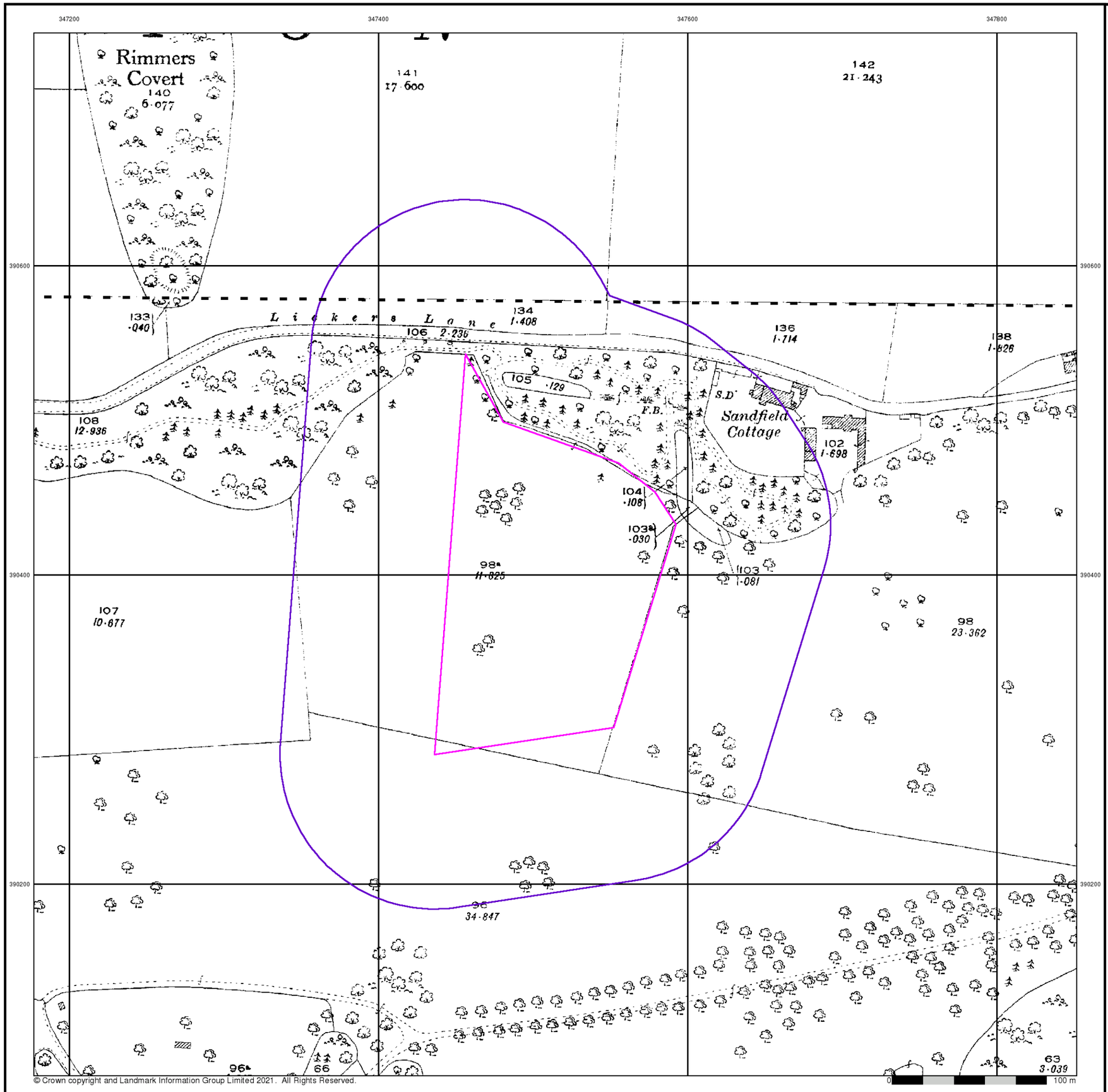
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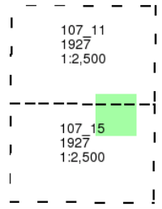
Lancashire And Furness

Published 1927

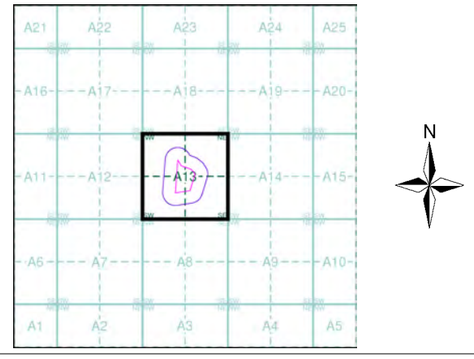
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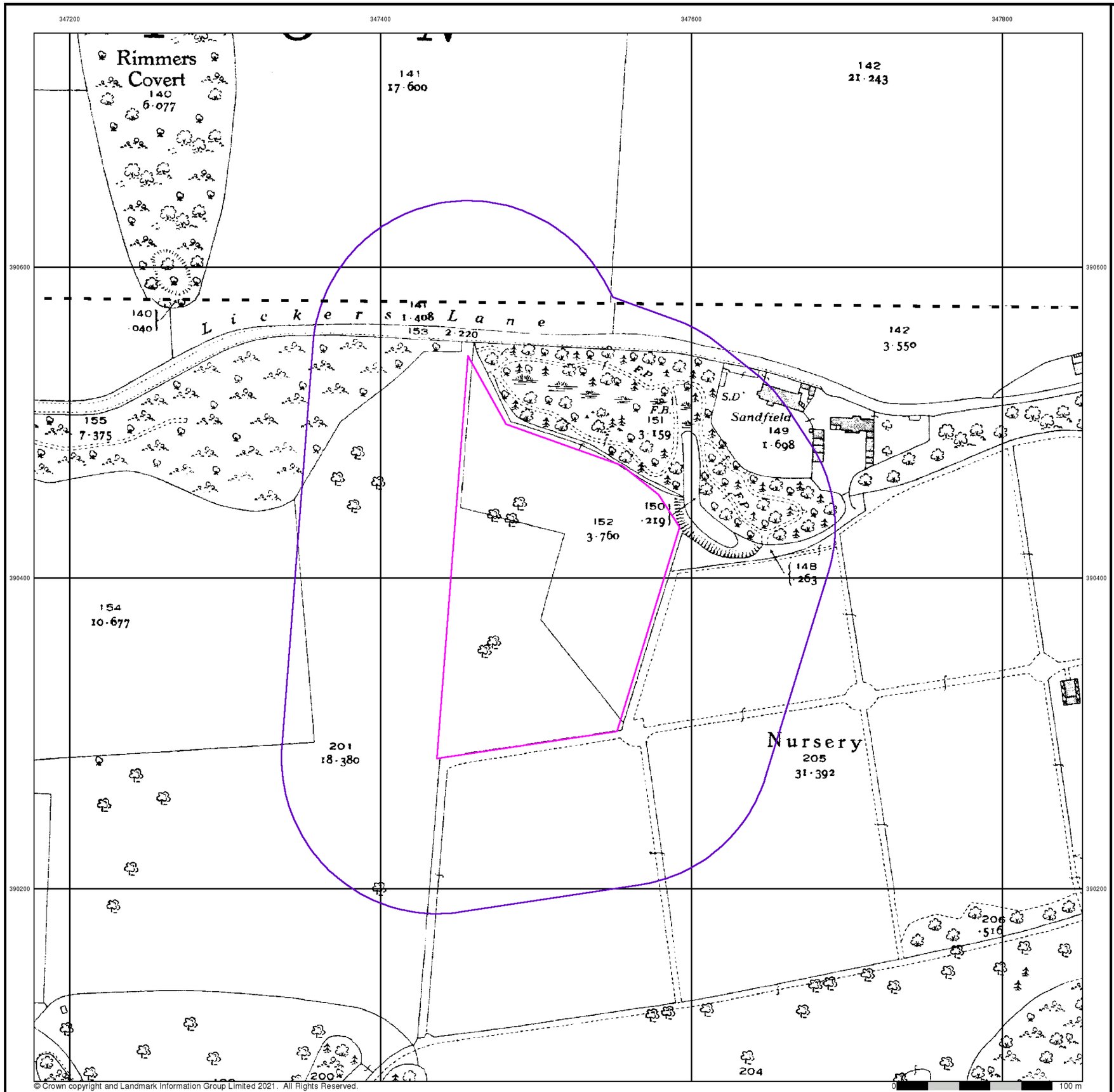
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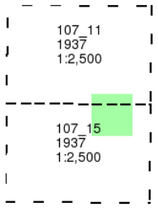
Lancashire And Furness

Published 1937

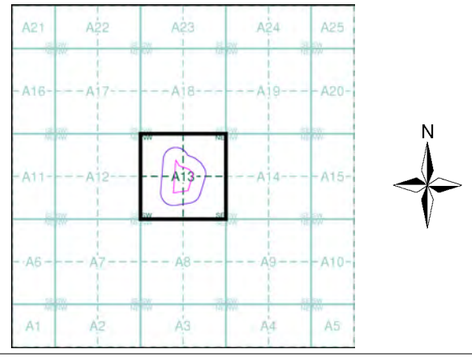
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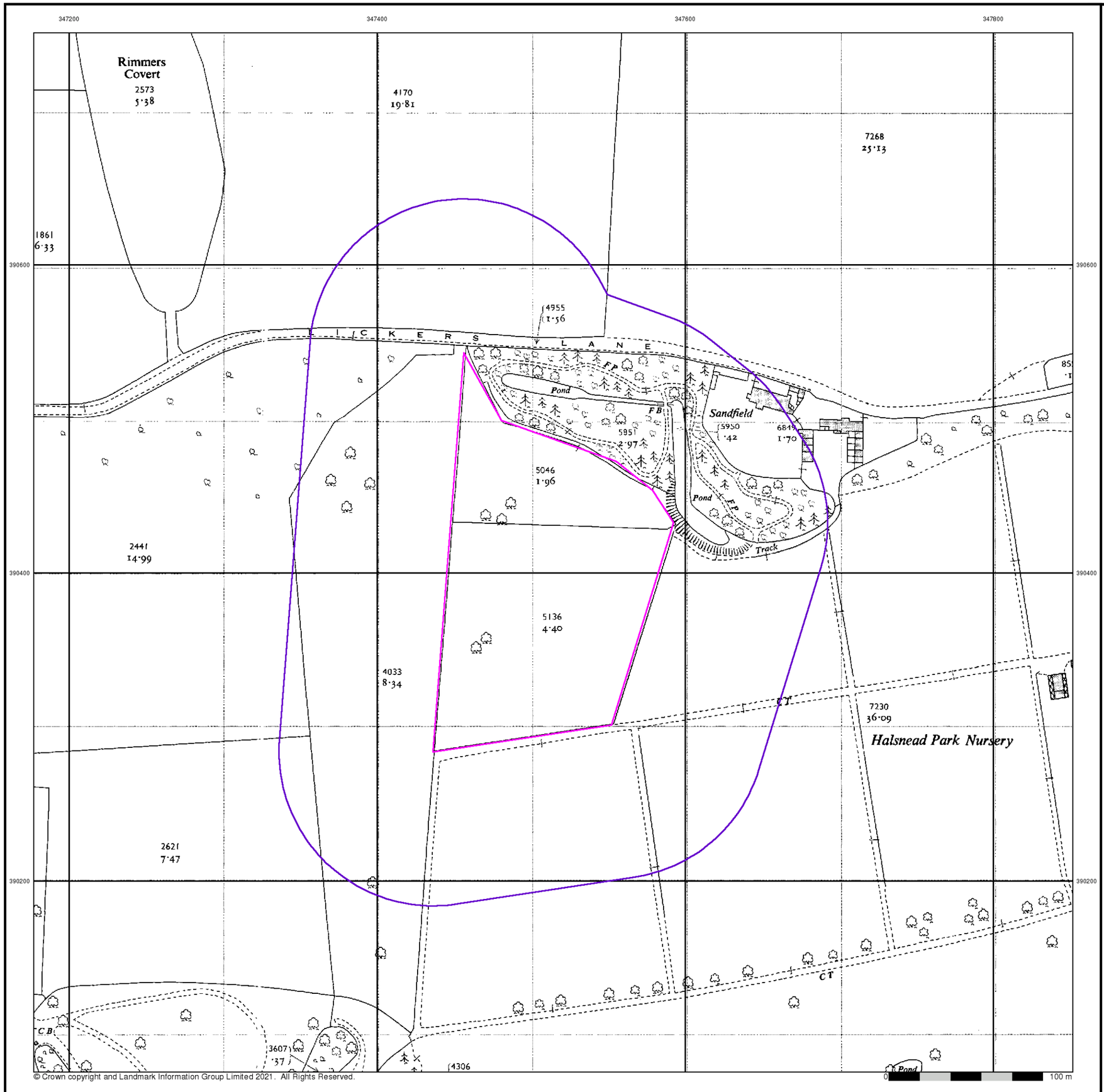
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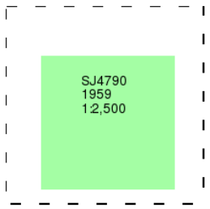
Ordnance Survey Plan

Published 1959

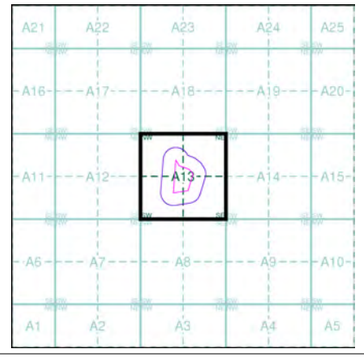
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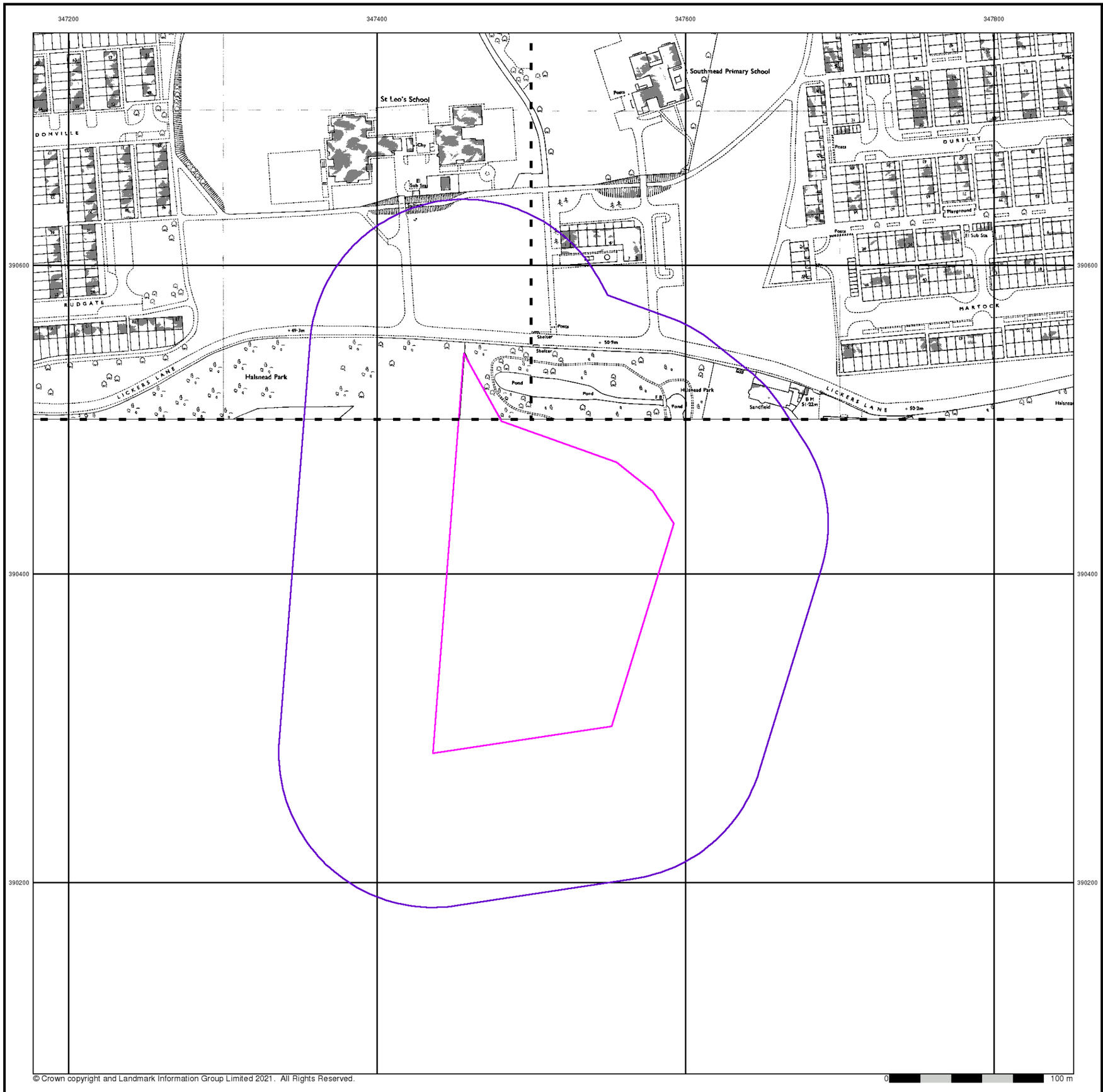
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Slice:	A
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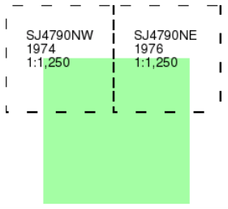
Ordnance Survey Plan

Published 1974 - 1976

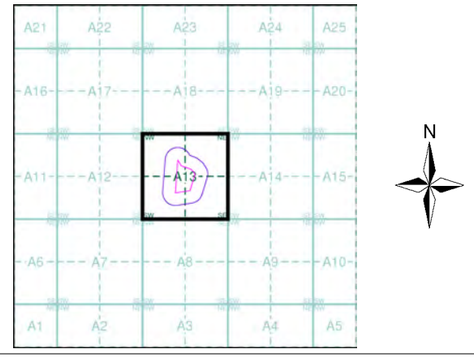
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

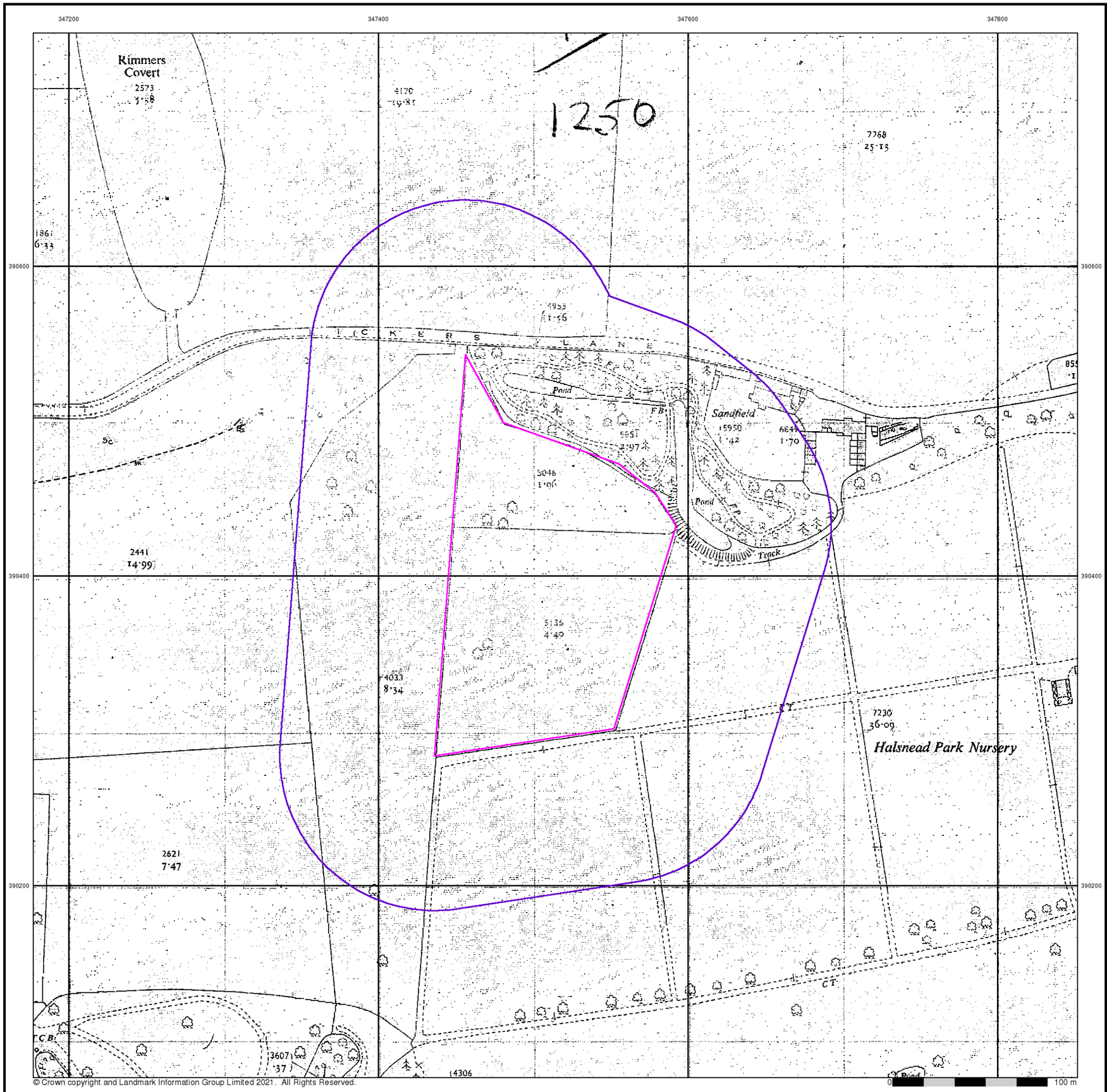
Order Number:	285280369_1_1
Customer Ref:	15-065-RH-A
National Grid Reference:	347490, 390400
Slice:	A
Site Area (Ha):	2.55
Search Buffer (m):	100

Site Details

Pats Shop, 32, Croftwood Grove, Whiston, PRESCOT, L35 3UT

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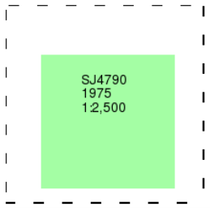
Supply of Unpublished Survey Information

Published 1975

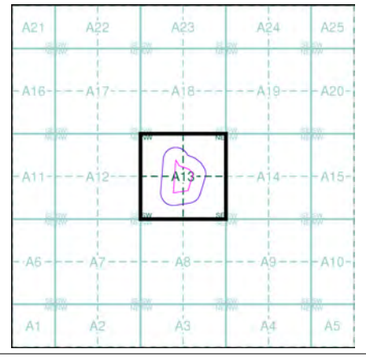
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a `work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



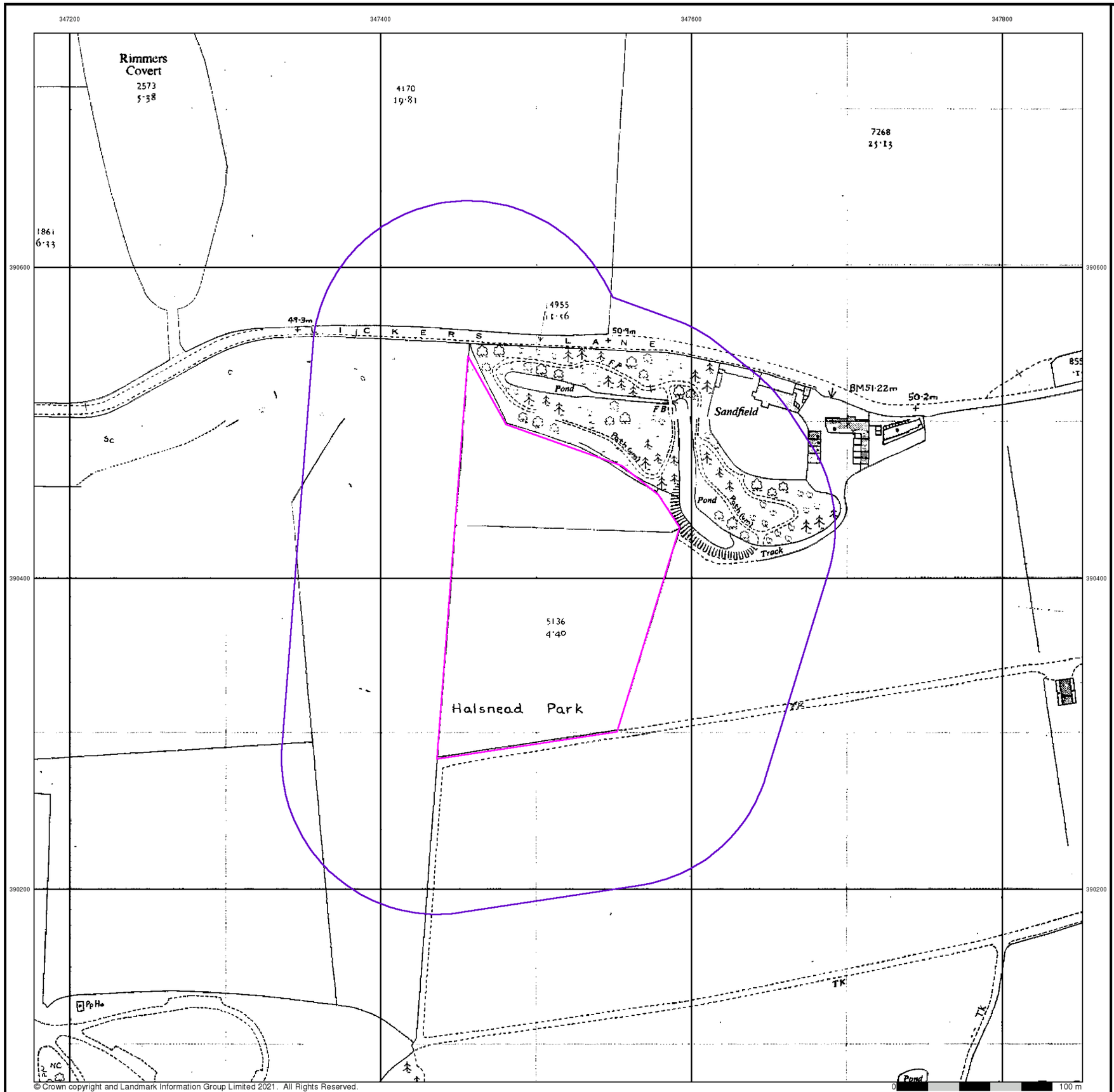
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Additional SIMs

Published 1985

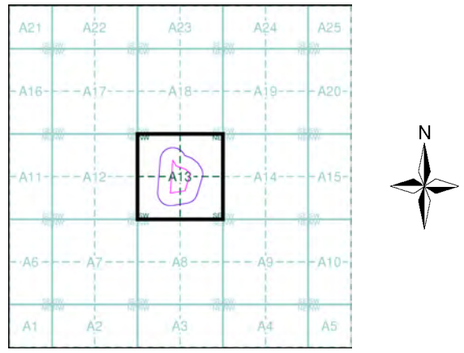
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ4790
1985
12,500

Historical Map - Segment A13



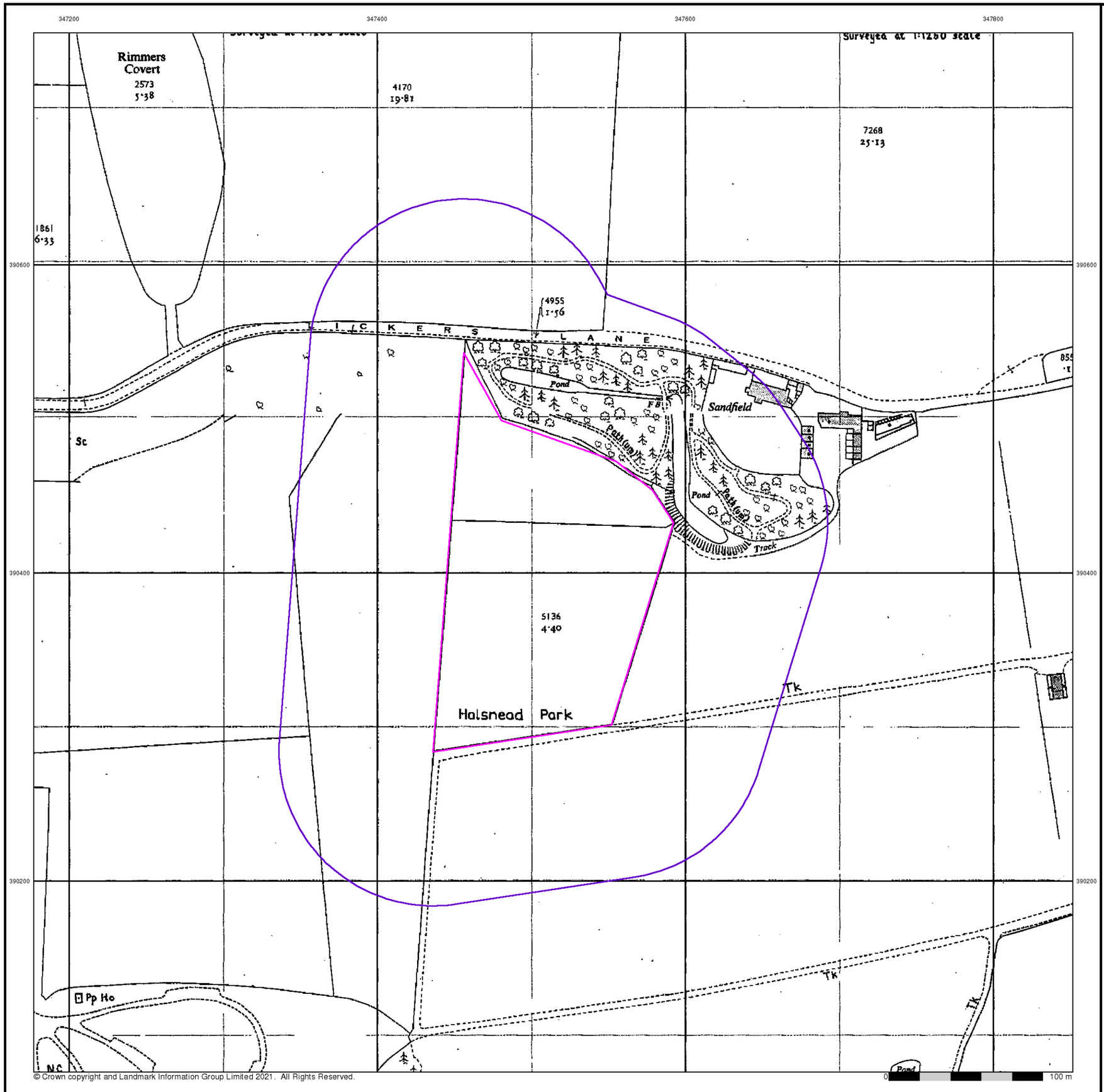
Order Details

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Additional SIMs

Published 1986

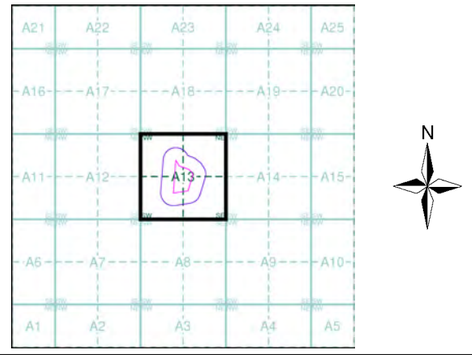
Source map scale - 1:2,500

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Map Name(s) and Date(s)

SJ4790
1986
1:2,500

Historical Map - Segment A13



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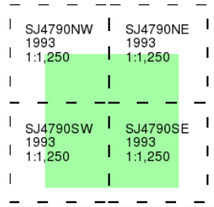
Large-Scale National Grid Data

Published 1993

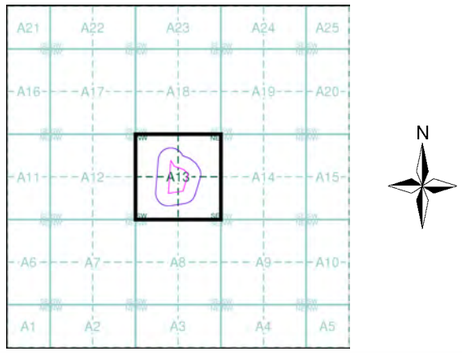
Source map scale - 1:1,250

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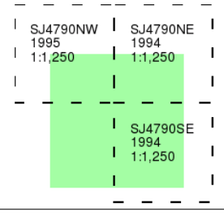
Large-Scale National Grid Data

Published 1994 - 1995

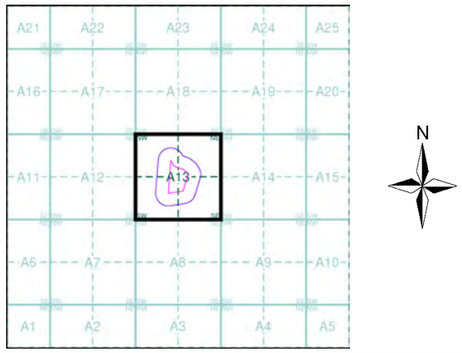
Source map scale - 1:1,250

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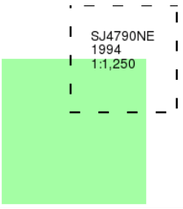
Large-Scale National Grid Data

Published 1994

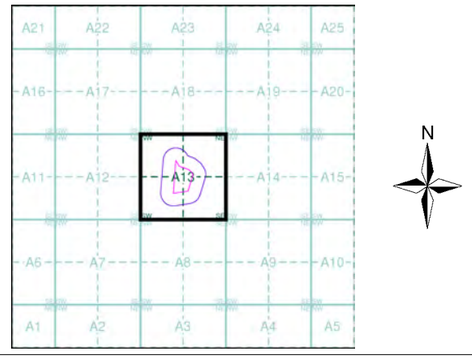
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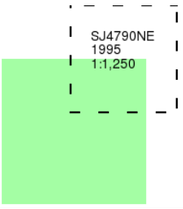
Large-Scale National Grid Data

Published 1995

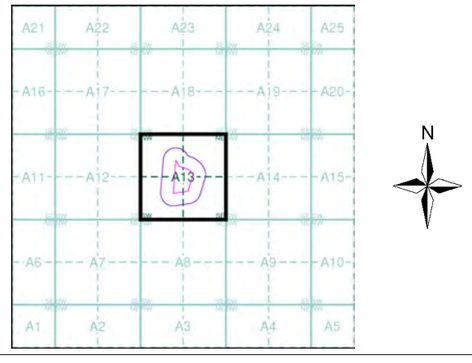
Source map scale - 1:1,250

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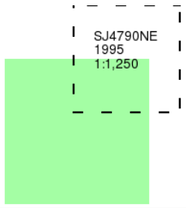
Large-Scale National Grid Data

Published 1995

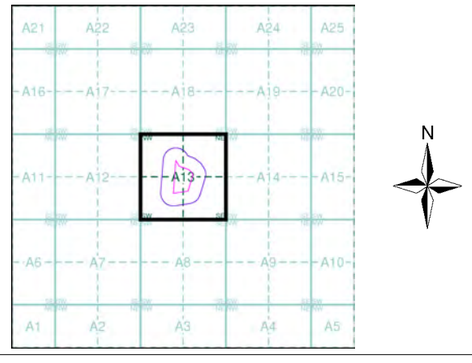
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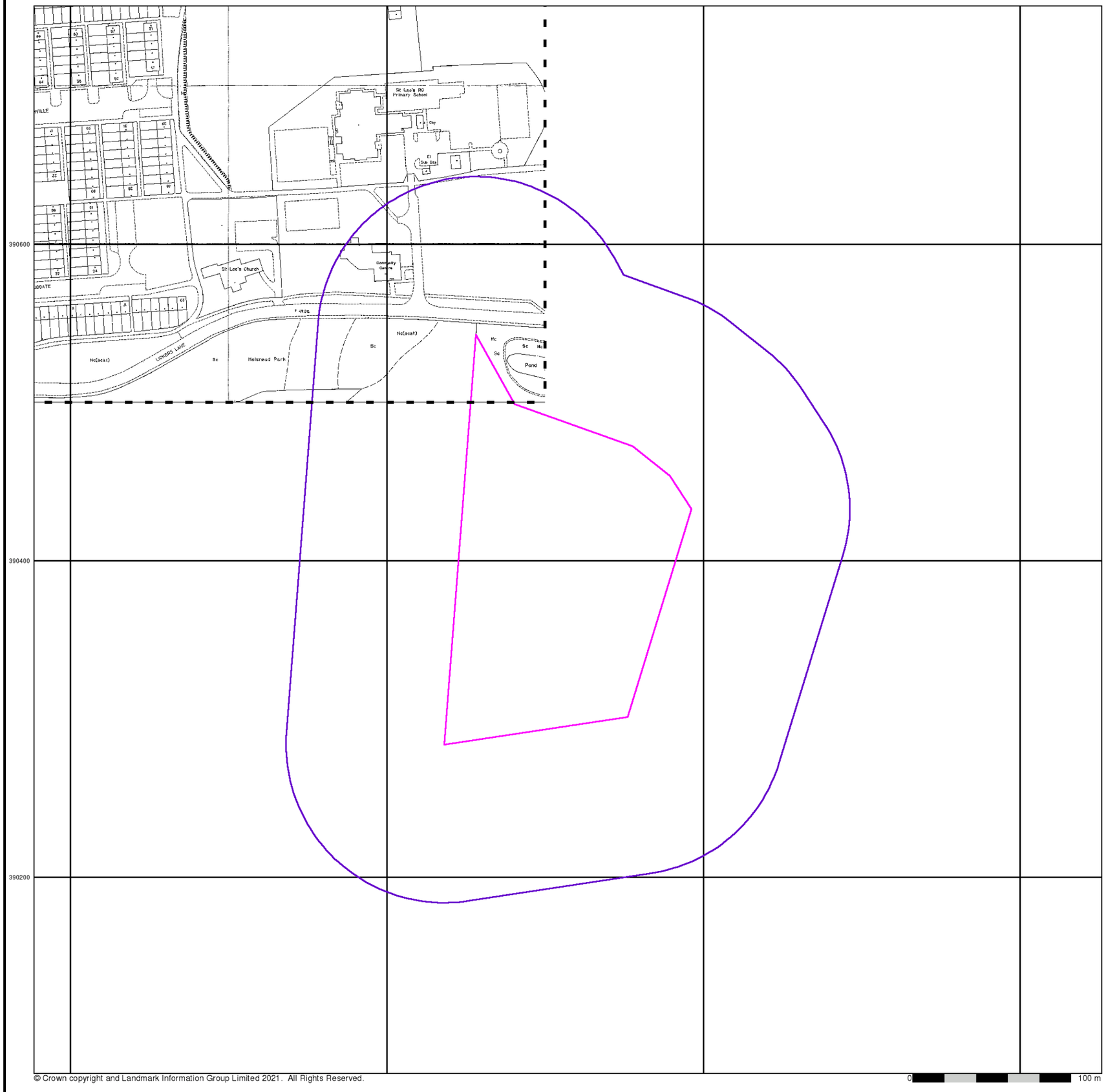
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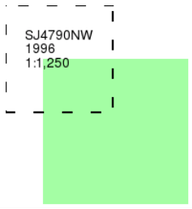
Large-Scale National Grid Data

Published 1996

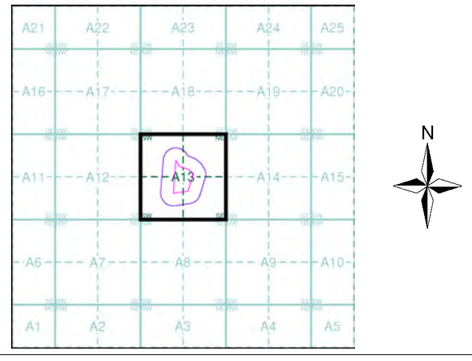
Source map scale - 1:1,250

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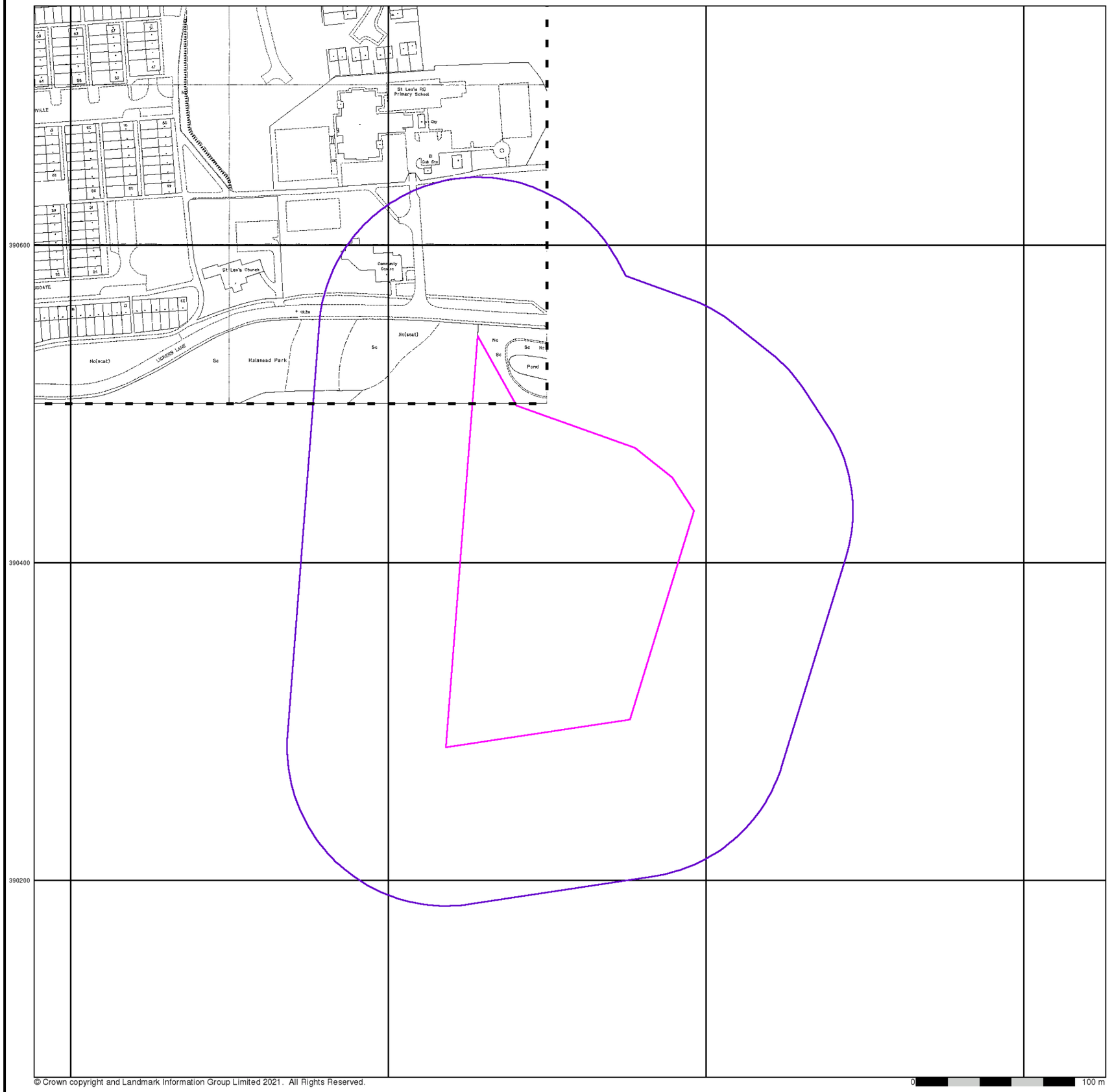
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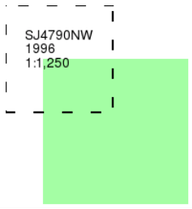
Large-Scale National Grid Data

Published 1996

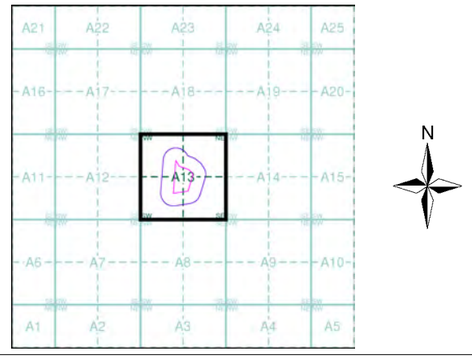
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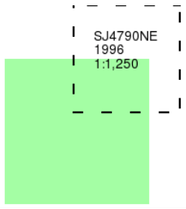
Large-Scale National Grid Data

Published 1996

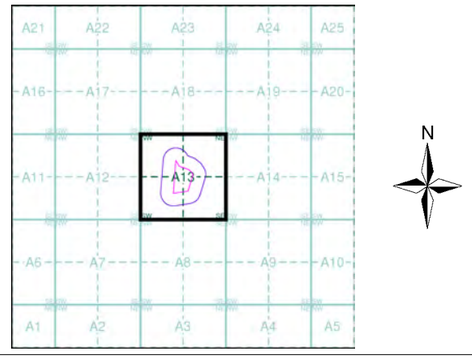
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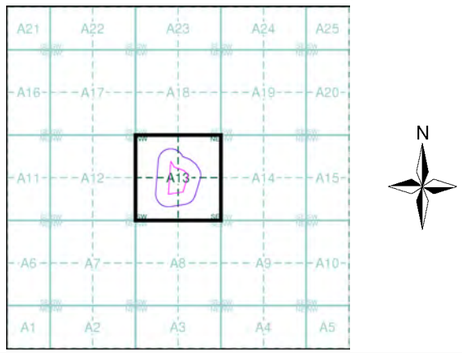


Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



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APPENDIX VI
COAL AUTHORITY REPORT PLANS

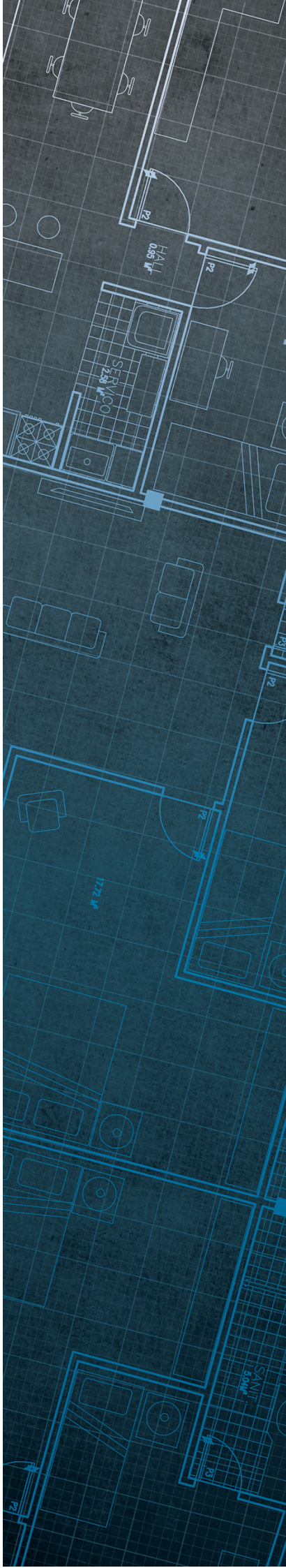
The Coal Authority

Consultants

Coal Mining Report

Croftwood Grove
Whiston
Knowsley
L35 3UT

Date of enquiry:	**4 October 2021**
Date enquiry received:	**4 October 2021**
Issue date:	**4 October 2021**
Our reference:	**51002685519001**
Your reference:	**15065-Jb-H**



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

E3P

Enquiry address

Croftwood Grove
Whiston
Knowsley
L35 3UT



Approximate position of property

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How to contact us

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NG18 4RG

www.groundstability.com

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/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	WIGAN FOUR FEET	Coal	3040	151	West	11.2	South	160	1902
unnamed	RUSHY PARK	Coal	304L	339	Beneath Property	13.4	South-West	130	1896
unnamed	RUSHY PARK	Coal	300F	370	North-West	9.4	South	130	1890
unnamed	RUSHY PARK	Coal	304I	427	West	9.5	South	130	1886

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

3671	NW638	4441
NW822	16820	PO0

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
HIGHER FLORIDA	Coal	Yes	Within	N/A	118
HIGHER PIGEON HOUSE (PIGEON HOUSE)	Coal	Yes	10.8	West	129
LOWER FLORIDA	Coal	Yes	Within	N/A	117

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Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property recorded.

Opencast mines

None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

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Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
1.1	West
0.8	West

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

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Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is in an area where a notice to withdraw support was given in 1979.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

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Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

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Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

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Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

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Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

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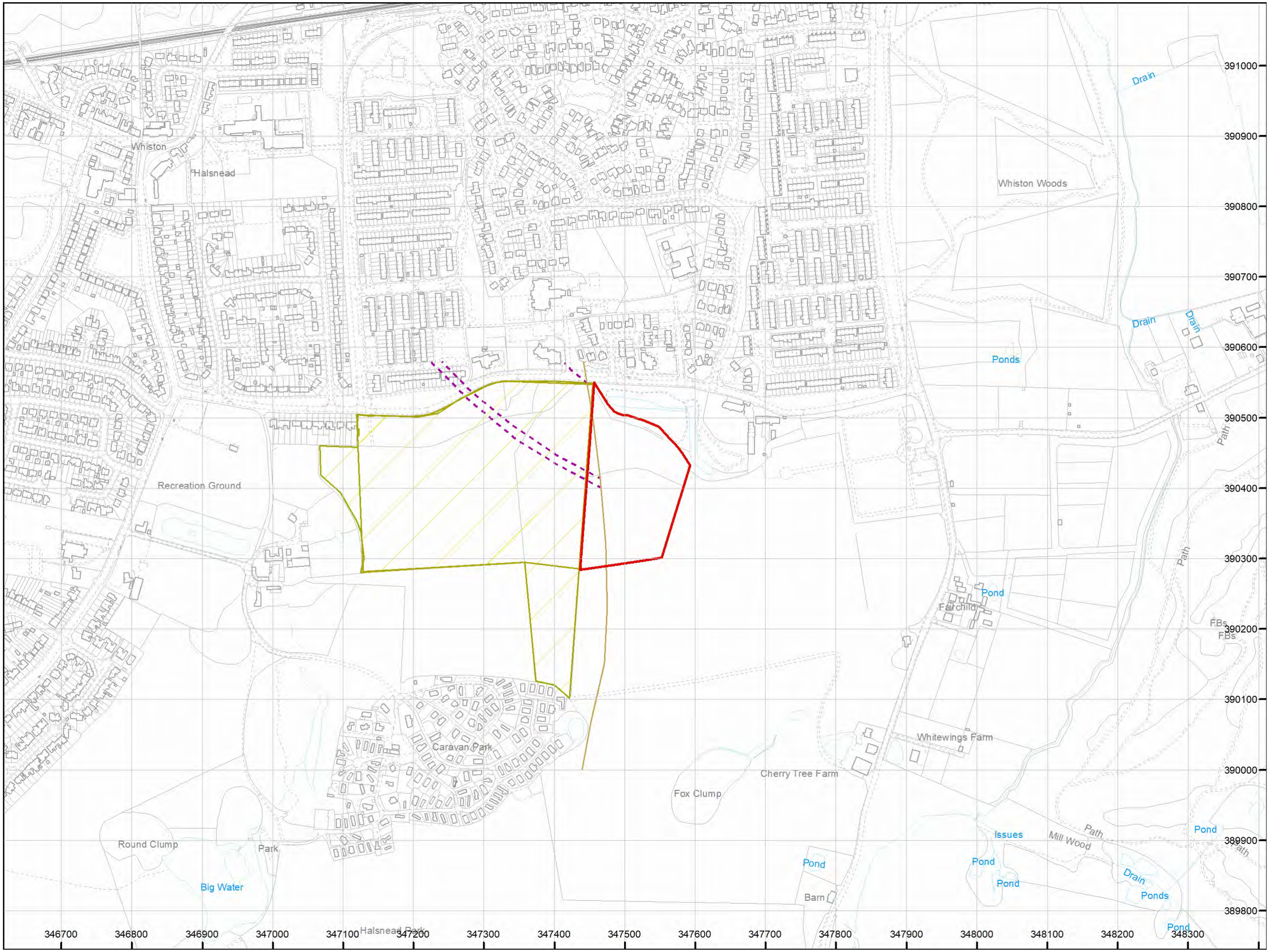
Summary of findings

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The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

- Approximate position of the enquiry boundary shown
- Outcrop (Conjectured)
- Geological faults
- Site investigations



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

APPENDIX 3
LANDSCAPE AND VISUAL FIGURES

KEY

- Site Boundary
- 1km
- 2km

0 200 400 600 800 1,000 m

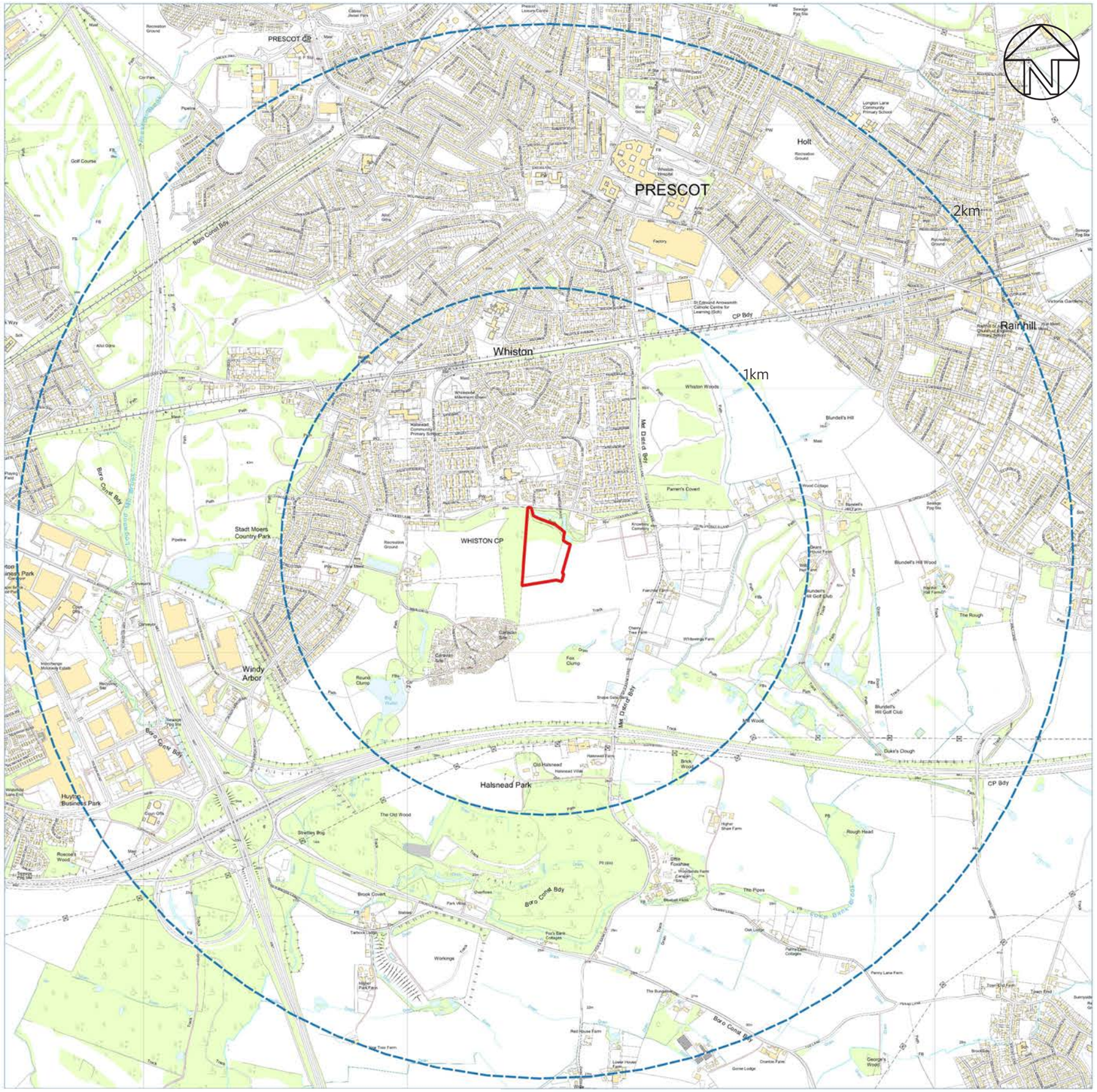


Figure 1 - Site Location and Study Area

Land at Lickers Lane, Whiston, Knowsley
EIA Scoping Supporting Figures - LVIA
Revision 01

URBAN GREEN

KEY

- Site Boundary
- 1km
- 2km

Heritage

- Listed Buildings
- Conservation Areas
- Scheduled Monuments
- Ancient Woodlands

0 200 400 600 800 1,000 m



Figure 2 - Heritage Assets

Land at Lickers Lane, Whiston, Knowsley
EIA Scoping Supporting Figures - LVIA
Revision 01

URBAN GREEN

KEY

- Site Boundary
- 1km
- 2km

PRoWs

- Footpaths

0 200 400 600 800 1,000 m

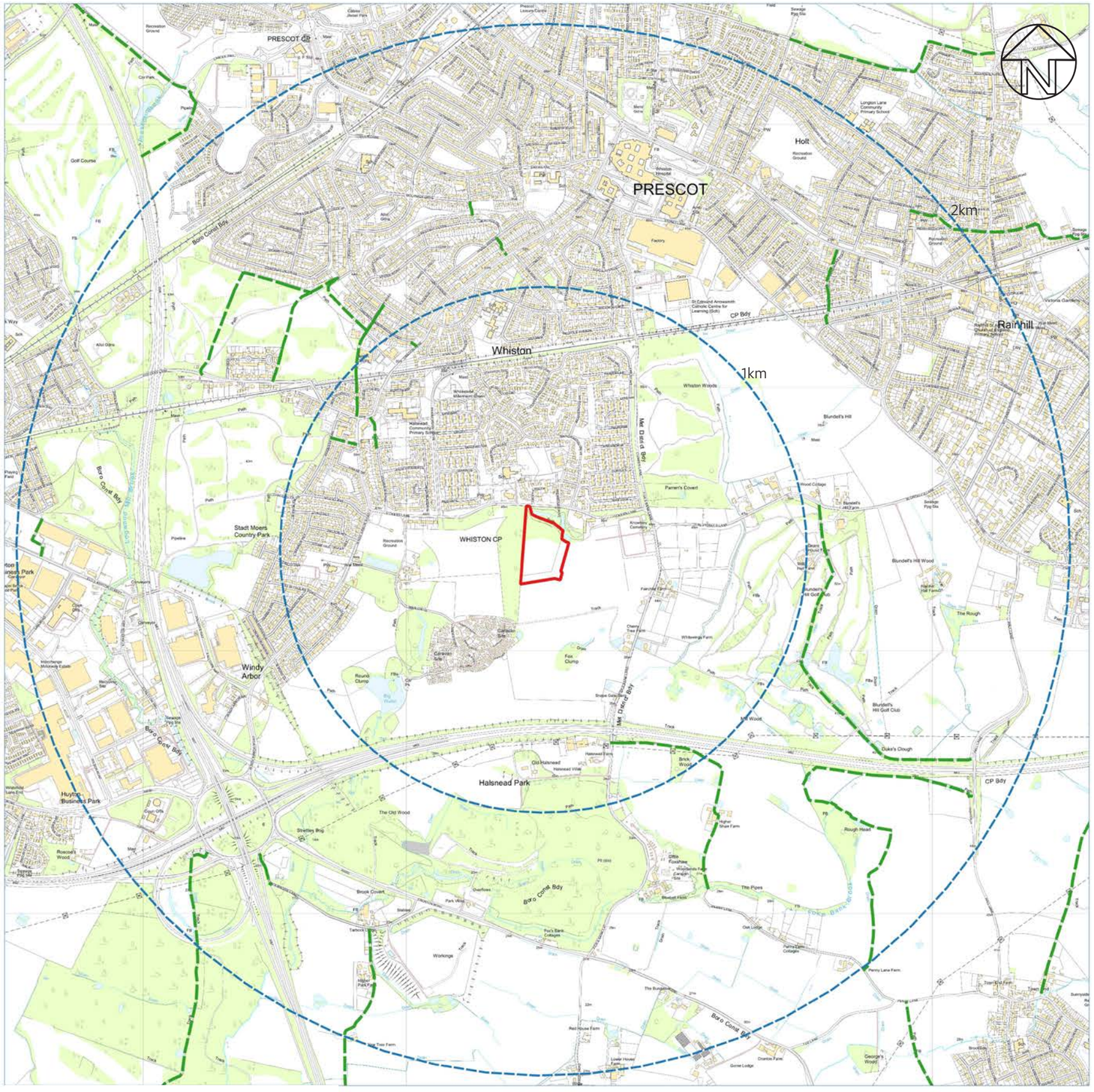


Figure 3 - Public Rights of Way (PRoWs)

Land at Lickers Lane, Whiston, Knowsley
EIA Scoping Supporting Figures - LVIA
Revision 01

URBAN GREEN

KEY

- Site Boundary
- 1km
- Viewpoints

0 100 200 300 400 500 m

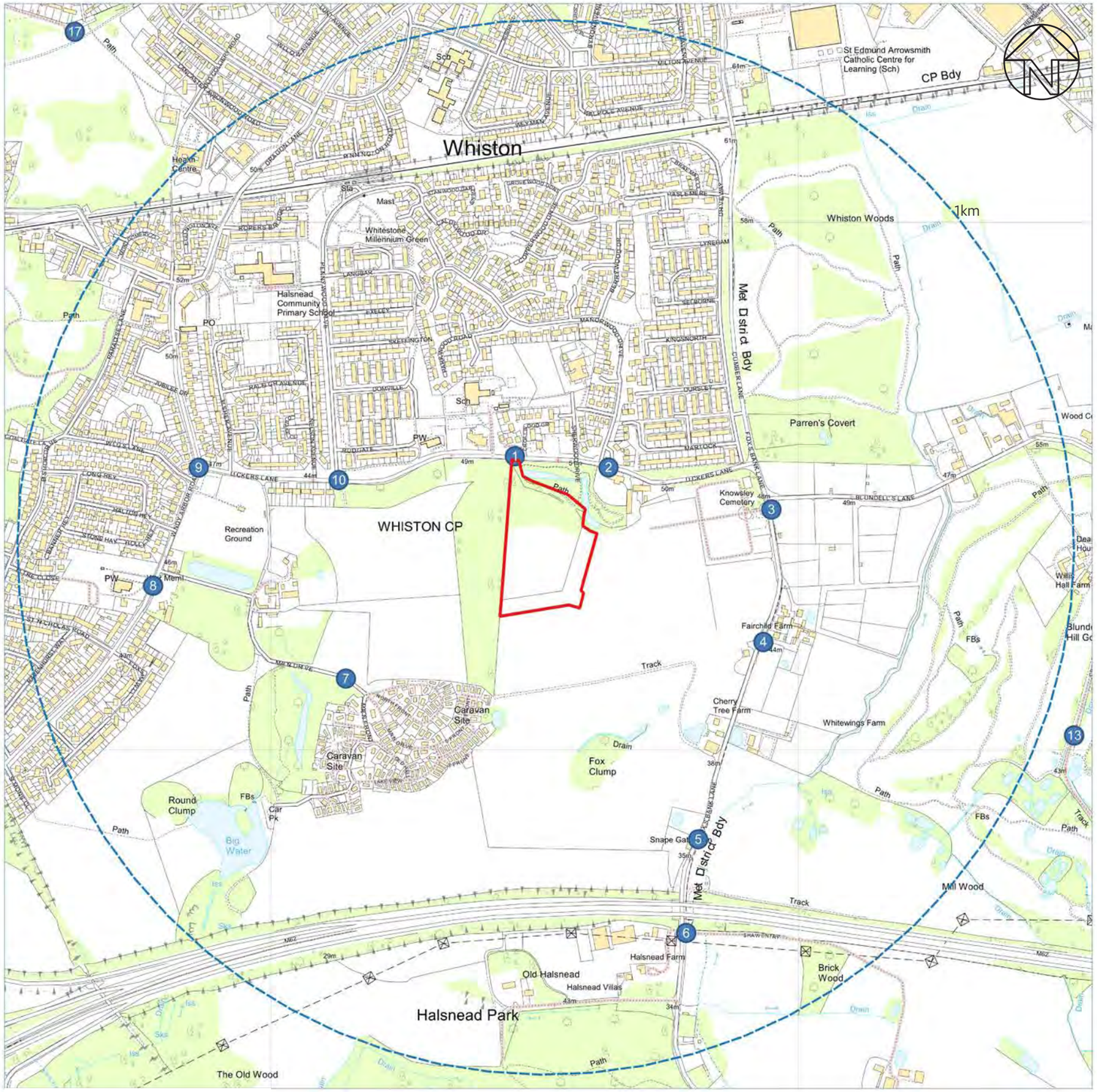


Figure 4 - Viewpoints, Close Range

KEY

- Site Boundary
- 1km
- 2km
- Viewpoints

0 200 400 600 800 1,000 m



Figure 5 - Viewpoints

Land at Lickers Lane, Whiston, Knowsley
EIA Scoping Supporting Figures - LVIA
Revision 01

URBAN GREEN

APPENDIX 2.2
EIA SCOPING OPINION

Knowsley Council

Mr N Purvis
Stantec UK Ltd
Buckingham Court
Kingsmead Business Park
London Road
High Wycombe
Buckinghamshire
HP11 1JU

Our Ref: 22/00393/SO

Date: 18 August 2022

Dear Neil

Request for SCOPING OPINION under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)

REFERENCE NUMBER: 22/00393/SO

SITE: LAND AT LICKERS LANE, WHISTON, HALSNEAD GARDEN VILLAGE NORTH

DESCRIPTION OF DEVELOPMENT: 120 NO. RESIDENTIAL DWELLINGS WITH VEHICULAR ACCESS OFF LICKERS LANE, PUBLIC OPEN SPACE, LANDSCAPING, BOUNDARY TREATMENTS AND OTHER ASSOCIATED WORKS

Thank you for your request for a scoping opinion dated 29th June 2022 and accompanying EIA Scoping Report dated June 2022 which sets out the proposal for the above site. From the information submitted, I can confirm that an Environmental Impact Assessment would be required in support of your planning application.

Please find attached the Council's formal scoping opinion.

Should you wish to discuss the matter further or require any additional information, please do not hesitate to contact me on 0151 443 2848.

Yours sincerely

C Appleyard

Clare Appleyard
Principal Planning Officer

Request for SCOPING OPINION under Regulation 15 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (as amended)
REFERENCE NUMBER: 22/00393/SO – 18/8/22

SITE: LAND AT LICKERS LANE, WHISTON, HALSNEAD GARDEN VILLAGE
DESCRIPTION OF DEVELOPMENT: 120 NO. RESIDENTIAL DWELLINGS WITH VEHICULAR ACCESS OFF LICKERS LANE, PUBLIC OPEN SPACE, LANDSCAPING, BOUNDARY TREATMENTS AND OTHER ASSOCIATED WORKS

- **The proposal does not fall within Schedule 1**
- **The proposal does fall within Schedule 2**

The submission relates to a proposed development for 120 residential dwellings with vehicular access off Lickers Lane, public open space, landscaping and associated works on land within the Halsnead Garden Village Sustainable Urban Extension (SUE), as allocated within the Knowsley Local Plan Core Strategy (2016). The site extends to approximately 2.6 hectares and comprises dense trees and shrubs to the north with some green open space and scattered trees to the south. The overall SUE site extends to 110.3 hectares comprising two land parcels to the North and South of the M62 with a notional capacity of 1503 dwellings.

SCREENING OPINION RELATING TO PROPOSED RESIDENTIAL DEVELOPMENT AT HALSNEAD GARDEN VILLAGE

The proposal is classed as an 'Urban Development Project' under Schedule 2 10 (b) of the Environmental Impact Assessment (EIA) Regulations. The proposal has previously been assessed against the selection criteria stated within Schedule 3 of the EIA Regulations and a view provided that the proposed development constitutes EIA development requiring the submission of an Environmental Statement. A short summary of the selection criteria against which the screening opinion was considered is set out below under the following headings: characteristics of the development; location of the development; and characteristics of potential impact.

Characteristics of the development

At 120 residential dwellings on a 2.6 hectare site, the proposal is considered to be a major development that does not exceed the thresholds stated within schedule 2. However, it is considered that the development is part of a larger Urban Development Project as identified within the Core Strategy, which allocates the Halsnead Garden Village site SUE for approximately 1503 new homes. The SUE2 policy within the Core Strategy requires development to demonstrate a comprehensive approach to the SUE site development and infrastructure provision. This is embodied in the Halsnead Garden Village Masterplan.
As such, the Local Planning Authority considers that the development proposal is demonstrably part of a larger Urban Development Project and must have regard to the accumulation of the specific development with others within the larger project area.

Location of the development

The land was released from the Green Belt in January 2016 on adoption of the Core Strategy and allocated as a SUE for residential development. The site consists of 2.6 hectares of land bound by woodland, Lickers Lane and Sandfield Natural Play Centre located to the north and northeast and land within the SUE allocation to the east, west and south. Directly to the west of the site is an area of land that forms the subject of planning application 20/00399/OUT which has a resolution from planning committee for planning permission to be granted subject to conditions and the signing of a s106 agreement.

Characteristics of Potential Impact

The scale, location and context of the development proposal give rise to the following potential impacts: transport and access; air quality; noise; biodiversity; land contamination; cultural heritage; landscape and visual effects; climate change and greenhouse gases; flood risk; and the interaction of the above factors.

Regard is also given to the magnitude, spatial extent, nature of the impact, its transboundary nature, intensity and complexity, probability, duration, frequency and reversibility, the cumulation of the impact with other existing and/or approved development and the possibility of effectively reducing impact.

The development proposal was considered in light of the information available and in the context of the EIA Regulations and Guidance and it was considered that the proposed works would give rise to significant environmental effects and it was advised that the proposals were considered to constitute EIA development. An ES is therefore required and it is expected that the ES will only need to respond proportionately to the predicated cumulative impacts of the wider Urban

Development Project (the Halsnead SUE site) although the detail shall relate largely to the application site area. Further details are set out in the Scoping Opinion below.

SCOPING OPINION

The following comments identify matters on which the applicant should incorporate into the EIA process and document within the ES. The characterisation of the Scope of the ES sets out the starting point for this process which may change as additional information becomes available.

Content of the ES

The ES that supports the planning application should include the following sections as a minimum. This is further detailed in Schedule 4 of the EIA Regulations:

1. Non-technical summary
2. Detailed scope of works
3. Reference to key plans and legislation
4. Detailed baseline review: description of the development; description of the reasonable alternatives; description of the reasonable aspects of the current state of the environment ()baseline scenario); description of the factors specified in regulation 4(2) likely to be significantly affected by the development (population, human health, biodiversity, land, soil, water, air, climate, material assets, cultural heritage and landscape); description of the likely significant effects of the development on the environment result from:

A) The construction and existence of the development;
B) The use of natural resources, considering the sustainable availability of these resources;
C) The emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;
D) The risks to human health, cultural heritage or the environment;
E) The cumulation of effects with other existing and/or approved project taking into account existing environmental problems;
F) The impact of the project on climate;
G) The technologies and the substances used.

5. The description of the likely significant effects on the factors specified in regulation 4(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short term, medium term and long term permanent and temporary, positive and negative effects on the development. The assessment should take into account the nature of impact (importance, magnitude and duration quantified as appropriate), reversibility of impact, mitigation, monitoring measures (including reference to long term management and maintenance measures) and residual impacts.
6. A description of forecasting methods or evidence used to identify and assess the significant effects on the environment.

7. A description of the measure envisaged to avoid, prevent, reduce or if possible offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements.
8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant;
9. A reference list detailing the sources used in the ES.

Conclusions of the EIA should be transparent and all information used to draw conclusions is clearly presented an objective to enable third party verification. Best practice guidance such as EA Best Practice Guidance, CIEEM Guidelines should be followed. The scoping phase of the EIA presents the best opportunity to ensure that all the environmental impacts of a development are considered at an early stage and any EIA should make a clear distinction between construction and operational impacts.

The EIA Scoping Report indicates that the applicant's intention is to include the following scope within the ES to be submitted with the application:

Population and Human Health
Landscape and Visual Effects
Biodiversity
Built Heritage
Air Quality
Summary and Residual Effects

The applicant has indicated their intention to scope the following topics out of the EIA:

Transport and Access
Noise and Vibration
Water Resources and Flood Risk
Land Contamination
Archaeology
Wind Microclimate
Daylight, Sunlight and Overshadowing
Agricultural Land
Waste
Lighting
Accidents and Disasters
Climate Change and Greenhouse Gases

The Local Planning Authority agrees with the general scope of the ES proposed within the Scoping Opinion Request with the except of Transport and Access. It is considered that Transport and Access should be **scoped in** the EIA. Cumulative impact of the whole SUE site must also be taken into account. Additional comments

are provided below and it is requested that the results of the assessments are used to inform development design.

Land included and Cumulative Effect

The applicant has stated that the ES will consider the potential for likely significant effects on the environment resulting from committed developments in the area and identifies four committed schemes: 20/00399/OUT; 20/00417/FUL; 18/00283/HYB and 20/00494/HYB. However, Halsnead Garden Village SPD sets out that planning applications within the HGV site are required to comply with the EIA Regulations and that each planning application will need to assess the cumulative environmental impacts of the whole HGV development. As such, the entire south of Whiston SUE and the Land South of the M62 SUE sites should be considered when undertaking the EIA. Each application should assess the cumulative and in-combination environmental effects of the whole SUE development site.

In addition to the cumulative schemes outlined in Table 8.1 of the applicant's EIA Scoping Opinion Report, the following sites should also be included and considered:

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.

20/00578/FUL – Country Park development on land adjacent to Cronton Road and Fox's Bank Lane

20/00767/REM - APPLICATION FOR APPROVAL OF RESERVED MATTERS PURSUANT TO OUTLINE PLANNNING PERMISSION 15/00022/OUT (OUTLINE APPLICATION FOR MIXED USE DEVELOPMENT COMPRISING UP TO 750 NO. DWELLINGS & UPTO 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)

It is noted that not all chapters refer to cumulative effects with other existing and approved schemes and a consistent approach is recommended across subject areas and included in all individual chapters of the ES. A separate chapter is proposed for cumulative effects (Summary and Residual Effects including interactive effects) but this will need to be drawn from the individual topic considerations.

Topics to be scoped into the EIA

Population and Human Health

The LPA agree that this should be scoped into the ES.

Landscape and Visual Effects

The LPA consider that landscape and visual effects should be scoped into the ES and the cumulative impacts of the development across Halsnead Park and the surrounding land designation will need to be considered. Please refer to the Landscape and visual impact section of the comments received from Natural England in relation to further advice and comments from the Conservation and Design Officer.

The SUE as a whole comprises Halsnead Park landscape character area as defined within Knowsley's Landscape Character Assessment. The proposed development has potential to result in a significant impact on it. This parkland landscape should additionally be regarded as a non-designated heritage asset. Given the nature of the development, it is considered that the development will have a potentially significant effect on the landscape and visual amenity.

When considering the impact of the development upon landscape and visual amenity, the following impacts need to be considered: method of construction, operational impacts including seasonal changes and establishment of mitigation.

Biodiversity

The LPA agrees that biodiversity should be scoped into the ES. Please refer to the following sections in the attached comments from Natural England which provide clear advice as to what should be assessed within the ES:
Biodiversity and Geodiversity
Designated nature conversation sites
International and European sites
Nationally designated sites
Regionally and local important sites
Protected Species
District level licensing for GCNs
Priority Habitats and Species
Ancient Woodland, ancient and veteran trees
Biodiversity net gain

I've also included information below from Merseyside Environmental Advisory Service (MEAS) in relation to the submission information and what should be contained within the Biodiversity chapter of the ES.

MEAS concur with the construction and operational phase temporary and permanent likely significant effects on biodiversity which are are scoped in (Table 1 of the Scoping Report). Section 6 of the Scoping Report considers biodiversity impacts and notes baseline conditions have been determined through a Preliminary Ecological Appraisal

(PEA) undertaken in August 2021. The PEA has not been provided at this stage and should be submitted with the Environmental Statement.

Paragraph 6.4 notes that a biodiversity metric v3.1 will be undertaken, and an Ecological Impact Assessment informed by the PEA will be produced. This approach and biodiversity scope set out in Table 5.1 are accepted noting comments below on designated sites and biodiversity net gain.

Ecological Impact Assessment

It is considered that Ecological Impact Assessment (EcIA) and the PEA follow best practice CIEEM guidelines (CIEEM, 2017) and meet BS 42020:2013. This ecological baseline is required prior to determination of any future planning application. Surveys should be carried out by a suitably qualified and experienced persons and follow relevant good practice.

It is advised that the metric v3.1 should be used to help demonstrate no net loss (NNL) and where possible, inform opportunities for biodiversity net gain on site. Retention and enhancement of higher distinctiveness habitats e.g. broadleaved woodland, dense scrub, scattered trees and semi-improved grassland will help to deliver NNL and are recommended.

MEAS agree with the species scoped in for EcIA (Table 5.1). Protected species survey should include breeding bird survey and bat Preliminary Roost Assessment of any trees affected by the proposals as well as survey of terrestrial land mammals e.g. brown hare, badger and hedgehog. A pond is located in the broadleaved woodland approximately 25 north of the site. Amphibian scoping survey including HSI of ponds off site and within the zone of influence is required. This should consider the suitability of terrestrial habitat on site and need for presence/absence survey. The EcIA should be informed by a Local Environmental Records Centre data search.

Preliminary Ecological Appraisal – Additional notes

The following information should be included in the Preliminary Ecological Appraisal report:

- A desk study, including data from the Local Environmental Records Centre following CIEEM (2017) guidelines. The desk study should identity records for designated sites, protected and priority species and habitats on site and within a suitable buffer. However, a data search with a 1km radius is expected as a minimum;
- An Extended Phase 1 Habitat survey identifying the habitats on and adjoining the site. This should include a Phase 1 Habitat map and target notes and should follow JNCC Guidelines[1];
- An assessment of the potential for protected species to be present;
- The requirement for further specialist surveys, for example, breeding birds, bats and brown hare;
- An assessment of the likely ecological effects of the proposals, because of construction works and site operation;

[1] JNCC (2010) Handbook for Phase 1 Habitat Survey

- A completed Biodiversity Metric 3.1 or small sites metric (depending upon the scale of the development site) which demonstrates whether or not there will be a net loss of Priority Habitat, should any be present upon the site and affected by the proposed development;
- Any avoidance or mitigation measures that will be implemented;
- The presence of any invasive and/or injurious weeds species (*Wildlife and Countryside Act 1981 as amended, Weeds Act*) on site or within 7m of the site boundary. The location and extent of any invasive or injurious weeds should be shown on a scaled plan; and
- Identify opportunities for biodiversity net gain in line with NPPF and Defra's 25 Year Plan for the Environment.

Designated Sites
The development site is within, adjacent and close to (within 1km) of the following designated sites and Local Plan Core Strategy policy (CS8) applies:

- Woodland, Sandfield Park LWS (within/adjacent);
- Lickers Lane Wood LWS (50m west);
- Parrens Covert LWS (325m east).

500m to 1km:
- Big Water and Big Water Wood, Halsnead LWS;
- Land, e of Fox's Bank Brook LWS;
- Blundell Hills Golf Course LWS;
- Stadt Moers Q4 LWS;
- The Old Wood, North LWS and Ancient Woodland.

The applicant should consider how effects on these sites will be avoided, minimized and mitigated. If adverse effects cannot be avoided, options for compensation should be identified (NPPF paragraph 180). Proposals should only be taken forward where the benefits of the development clearly outweigh the effects on habitats and species.

Woodland, Sandfield Park LWS
Broadleaved woodland on/adjacent the northern boundary of the site is Woodland, Sandfield Park LWS. Loss of this designated site and Priority Habitat woodland should be avoided. In accordance with best practice, MEAS has advised that a 15m ecological buffer should be maintained during the construction and operational phase. In retaining this buffer NNL and a potential biodiversity net gain is more likely to be achieved.

Recreational pressure
The following national and international designated sites are easily accessible (by car and public transport) from the development site and Local Plan Core Strategy policy CS8 applies:
- Mersey Estuary SPA (6.5km south);
- Mersey Estuary Ramsar (6.5km south);
- Sefton Coast SAC (17.5km northwest);
- Ribble and Alt Estuaries SPA (17.5km northwest);

- Ribble and Alt Estuaries Ramsar (17.5km northwest).

The proposal is for 120 net residential units and this will result in increased visits (recreational pressure) to the sites listed above. This may result in significant effects on habitats and species for which these sites have been designated. 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 as Medium-High risk to qualifying features of the national and international sites.

The applicant should demonstrate how increased recreational pressure will be avoided or mitigated to enable the LPA to undertake HRA prior to determination. Mitigation options are considered below. In considering recreational pressure impacts, the applicant should assess and mitigate for permanent operational phase recreational pressure impacts on the Local Site and Ancient Woodland network within Halsnead Park.

Recreational pressure – Mitigation Measures

Examples of mitigation measures which could form part of a bespoke mitigation package are listed below. Following the Sweetman ruling[2], a clear distinction must be made between essential features of the development and additional mitigation measures needed to protect the national and international sites:

- Provision of public open space within the development boundary;
- Improving access to and promoting use of Suitable Alternative Natural Greenspaces (SANG) (including contributions to management);
- Provision of information in sales packs and on information boards, informing residents of the importance of the national and international sites, and responsible user code and the location of SANGs; and
- Financial contributions to the management of national and international sites and SAMM (Strategic Access Management & Monitoring).

Incorporation of these measures may enable the LPA to conclude that there are no adverse effects on the integrity of the SACs, SPAs and Ramsar sites.

.**Built Heritage**

The LPA consider that built heritage should also be within the scope of the ES. Please refer to the Heritage Landscapes section of the comments from Natural England. The impacts on designated and non designated heritage assets, including cumulative impacts, should be considered.

There are seven designated heritage assets likely to be affected by the development of the site as a whole, either physically or by development within their settings. These are:

- North East Lodge to Halsnead Park, Fox's Bank Lane (Grade II Listed)
- Gate Piers beside North East Lodge to Halsnead Park, Fox's Bank Lane (Grade II Listed)
- Old Halsnead, Fox's Bank Lane (Grade II Listed)
- Barn at Snape Gate, Fox's Bank Lane (Grade II Listed)
- Sandfield Cottage, Lickers Lane (Grade II Listed)
- Carr House Farmhouse, Windy Arbour Road (Grade II Listed)
- The Paddocks and The Stables, Windy Arbour Road, (Grade II Listed)
- Church of St Nicholas Windy Arbour Road (Grade II Listed)

The EIA should explore potential impacts on designated assets with specific reference made to the duty within the Planning (Listed Buildings and Conservation Areas Act) 1990, to have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest.

The designated heritage assets potentially affected by this proposed development are limited to:

- Church of St Nicholas Windy Arbour Road (Grade II Listed)
- Sandfield Cottage, Lickers Lane (Grade II Listed),
- Gate piers beside North East Lodge (Grade II Listed)

The advice within Historic England's GPA2 Managing Significance in Decision Taking in the Historic Environment, GPA3 Setting of Heritage Assets and HEAN2: Making Changes to Heritage Assets should be taken account of in making an assessment as to the potential effects on the significance of the listed buildings. Many impacts will relate to setting whereby analysis should be in line with GPA3.

> Sandfield House, Licker's Lane (Grade II)
> Sandfield House is an 18th century dwelling which is now used as a children's day nursery and the woodland around the building is in the same ownership and used in conjunction with the nursery. Routes through the woodland and water features connect with the parkland (historically the cottage was closely associated with the estate). The adjacent farm buildings were also historically associated with Sandfield House (now converted and in separate private ownerships).

The impacts to consider in regard to Sandfield House, the closest listed building to the site, should include the effect of suburbanisation within its setting and change to the parkland backdrop and surroundings. Opportunities for enhancements need to be explored.

There are also non-designated heritage assets that are likely to be affected and these are largely related to the former Halsnead Park Estate. The designer of the parkland is unknown. However, the form of the park shown on the 1850s OS is fairly typical of an 18th Century picturesque layout, made fashionable by practitioners such

as Lancelot Capability Brown and his contemporaries. Due to the interrelationships between the assets that together form the park, they have a cumulative as well as individual significance which should be recognised.

The features which together form the parkland landscape include the park wall around the perimeter, the surviving routes, surviving elements of Prince's Farm, the site of the hall, walled garden and outbuilding, unlisted lodges and remnants of gates entrances, clumps and belts of trees, ponds, the open undulating landscape and designed and dynamic views across it. Consideration of the extent of survival and the significance of the built and landscape elements of the estate as a whole, their sensitivity to change and their ability to accommodate development should form part of the assessment.

These parcels encompass sections of the historic parkland and known features likely to be affected will include: views across open parkland landscape; site of ruin noted on 1850 OS; historic belts/clumps of trees; stone park wall; historic routes through the landscape.

Any potential physical impacts on the features and impacts on views to and from them, and views that include these assets should be assessed. This should include an understanding of their visual and historical contribution to the landscape and their cumulative significance with other assets outside the site. Opportunities to enhance these features or their setting should be explored where possible.

There are a number of other non-designated heritage assets within or near the wider Halsnead site and these are listed below. However, a search of the HER and walkover is likely to result in further non designated sites being identified:

- Remnants of Cronton Colliery/railway
- Carr Cottage and Outbuilding
- Fox's Bank Cottages
- Meadowbrook, Fox's Bank Lane

The Design and Conservation Officer's comments are attached which provide further advice in relation to the methodology and scope.

Air Quality

It is agreed that air quality should be included within the ES. I can advise that Environmental Health's latest annual status report shows there to be an exceedance in the nitrogen dioxide levels at Cronton Road/Whitefield Lane junction, which requires further investigation. It is considered that where the proportional application of the Prescot Cables housing development is input into the transport survey data (reference 15/00022/OUT), this should also be applied to the air quality chapter for consistency.

Please refer to the air quality section of Natural England for further advice regarding assessment. The whole of the Halsnead allocation should be taken into consideration.

Traffic and Access

The LPA disagrees with the EIA Scoping Report submitted by the applicant and considers that Traffic and Access should be scoped **in** the ES. The Highways Engineer has offered the following comments. The following information would be required for review in connection with the ES and planning application:

- Transport Assessment
- Travel Plan

Please review government guidance (or contact KMBC Highways) in relation to what specific information will be required as part of any Transport Assessment or Travel Plan submitted.

It is noted that no site layout is included as part of this SO application, it is understood however that the site itself will not provide a dedicated means of access and will instead utilise other site access locations which are to be included as part of the wider Halsnead Garden Village.

It should be noted that the scope of the assessment in relation to the surrounding highway network will need to include Lickers Lane / Windy Arbor Road and the new site accesses which are due to be constructed as part of the recently approved planning application 20/00399/OUT. These site accesses will consist of signalised junctions. Other site accesses are proposed onto both Foxes Bank Lane and further south on Windy Arbor. These accesses are being delivered / due to be delivered under different planning applications to 20/00399/OUT. However, given the location of the redline boundary included as part of this scoping opinion (and in consideration of the surrounding highway) only those accesses included as part of 20/00399/OUT will be required for assessment. The entirety of any trip generation derived for this development site will need to be applied 100% to each of the accesses in turn to form a robust assessment.

ATC (Automatic Traffic Counters) will be required to be placed in the approximate location of these site accesses so that up-to-date traffic data can be captured. This data will form a baseline assessment. For consistency, a 2030 future year will be required as this will match the assessment undertaken for 20/00399/OUT.

All approved Halsnead Garden Village developments will need to be considered as part of the modelling assessment, i.e. 18/00283/HYB, 20/00399/OUT, 20/00417/FUL. A proportional consideration of the Prescot Cables Development Site (15/00022/OUT) will need to be made. Most houses are now constructed and occupied. Parcel C

(20/00767/REM) was recently approved and is currently under construction and is not yet occupied. It will need to be considered.

An accessibility assessment, as included within Appendix B of the Ensuring a Choice of Sustainable Travel SPD, will need to be completed. The Halsnead Design Guide will need to be considered as part of any planning layout or development design.

The above considerations have been made in lieu of any traffic data being provided. Additional considerations can be made following receipt of such information.

National Highways has confirmed that transport should be scoped in the ES and has provided advice in relation to the scope of the transport chapter of this EIA as set out below:

National Highways' document "The strategic road network, Planning for the future - A guide to working with National Highways on planning matters" makes reference to the need for EIAs and states that "*Assessment undertaken by the promoter of the development should be sufficiently comprehensive to establish the likely transport related environmental impacts, including air quality, light pollution and noise, and to identify the measures to mitigate these impacts. To avoid potential delay or challenge, transport assessments/statements and environmental statements/impact assessments should be mutually consistent and pay due regard to each other*.

As such, we would expect a transport chapter of an Environmental Statement to reflect the information as set out within any Transport Assessment whereby the contents of a Transport section of any EIA to contains the same information as presented within a Transport Assessment and accompanying Travel Plan.

It is noted that the EIA Scoping Document does not suggest that the Strategic Road Network (SRN) (namely the M62 Junction "Tarbock Island") will be reflected within a Transport section of an Environmental Impact Assessment. However, the junction is known to have existing pressures and should be considered within any transport evidence for the site.

For National Highways to come to a view on the likely impacts of the proposals on the Strategic Road Network, any TA should follow a standard approach in line with the requirements set out in the 'DfT Circular 02/2013' and in 'The Strategic Road Network - Planning for the Future'.

Consideration should be made to National Highways' requirement for an opening year assessment (i.e. the year at which the development is first brought into use, assuming full build out) as set out in the Planning for the Future guidance document. This is typically the material test for determining whether physical mitigation at the SRN will be required.

In addition to undertaking an opening year assessment, the applicant should also note the requirement to undertake assessments at the development and construction phase in addition to a future year assessment. A future year assessment should be

undertaken either a date ten years after the date of registration of the associated planning application or the end of the Local Plan period (whichever is the greater).

National Highways would welcome the possibility of engaging with the applicant to scope out the detailed elements of any future Transport Submission to support the development proposals.

Topic to be scoped out of the EIA

Water Resources and Flood Risk

The Environment Agency has confirmed that the site is located within Flood Zone 1 and they agree with scoping out flood risk from the ES. Th EA has confirmed that they welcome the submission of the accompanying Flood Risk Assessment and Sustainable Drainage Strategy with the planning application to outline how the proposed development will include appropriate drainage. A comprehensive development approach to drainage should be followed. Engagement with the LLFA is advised and consideration of the wider SUE allocation should be taken into account.

Land Contamination

In relation to groundwater and contaminated Land, the EA also agrees that contaminated land can be scoped out of the ES. The EA has confirmed that the proposed site does not appear to have been a historic landfill and is situated on primary aquifer bedrock as well as primarily being located within Source Protection Zone 3. The EA agree with and welcome the submission of an accompanying Phase 1 Geo-Environmental Site Assessment with the application. Providing historical mapping does not indicate the presence of any building or structure having been erected on the site, the intention to scope out Contaminated Lane is considered to be acceptable to the EA. The LPA consider that soils and agricultural land quality can be scoped out of the ES. Please refer to the water quality section of Natural England's response for further advice regarding assessment.

The Coal Authority has confirmed that the western part of the site falls within the Development High Risk Area. Therefore, any future planning application will need to demonstrate to the LPA how they considered the risk of former coal mining activity through a Coal Mining Risk Assessment, prepared by a suitable qualified and experienced person.

The Coal Authority's records also indicate that surface coal resource is present through the western part of the site although this should not be taken to imply that mineral extraction would be acceptable. The application process will need to consider the presence of the surface coal resource.

The Coal Authority has provided further general information:

'General Information

Information on coal mining legacy affecting the site can be obtained from the Coal Authority. A variety of Coal Mining Report products which provide baseline information on coal mining legacy risks are available from www.groundstability.com (or a similar product from private land search suppliers).

An assessment of the risks associated with the presence of coal mining legacy should be prepared by a "competent body". Links to the relevant professional institutions of competent bodies can be found at:
www.gov.uk/planning-applications-coal-mining-risk-assessments

Disclaimer

The above consultation response is provided by The Coal Authority as a Statutory Consultee and is based upon the latest available data on the date of the response, and electronic consultation records held by The Coal Authority since 1 April 2013. The comments made are also based upon only the information provided to The Coal Authority by the Local Planning Authority and/or has been published on the Council's website for consultation purposes in relation to this specific planning application. The views and conclusions contained in this response may be subject to review and amendment by The Coal Authority if additional or new data/information (such as a revised Coal Mining Risk Assessment) is provided by the Local Planning Authority or the Applicant for consultation purposes.'

In summary, contaminated land can be scoped out of the ES.

Noise and Vibration

The LPA agrees with the approach that noise and vibration can be scoped out of the EIA.

Archaeology

The Environmental Impact Assessment Scoping Report states that the development does not lie within an Archaeological Priority Area (APA). However, Merseyside does not allocate APA's. It considers the potential for prehistoric and Roman archaeological remains is low. For early medieval and medieval it states the potential is considered to be medium and, incorrectly, that any such remains would be of low significance. For the Post-medieval Period it considers coal-mining and agricultural remains would also be of low significance.

Any early medieval to medieval (410 – 1540AD) archaeological remains within Merseyside would be of at least regional value and therefore medium significance.

MEAS have questioned the use of post-medieval (1540 to 1750) in relation to the coal mining concerns which are more likely to relate to the Industrial Period (1750 to 1914). Post-medieval coal mining remains would be of regional value.

The report concludes that significant effects on archaeology are not anticipated and proposes to scope archaeology out of the ES. It states that an Archaeological Desk-based Assessment will be prepared and submitted with the application.

MEAS has confirmed that there are two non-designated heritage assets recorded on the Merseyside Historic Environment Record within the proposed development site: MME15147 Halsnead Park, Whiston, a late 18th or early 19th century park and MME15681 Halsnead Park wall, Whiston, a late 18th or early 19th century boundary to the landscaped park of Halsnead. Furthermore, the application site has remained as agricultural or park land throughout the Post-Medieval to Modern periods. Undeveloped and historically undisturbed areas of green space are considered to have an as yet undefined archaeological potential.

The archaeological issues associated with the proposed development are not likely to be significant. Therefore, it is advised that the archaeological issues associated with this application should be scoped out of the EIA and could be addressed through a programme of pre-construction intrusive archaeological works (geophysical survey and evaluation trial trenching). The applicant will need to appoint a professional archaeological contractor to organise the archaeological investigation, which will need to be implemented in accordance with appropriate professional standards.

Wind Microclimate

The LPA agrees with the approach to scope this out of the EIA.

Daylight, Sunlight and Overshadowing

The LPA agrees with the approach to scope this out of the EIA.

Agricultural Land

The LPA consider that soils and agricultural land quality can be scoped out of the ES. Please refer to the soils and agricultural land quality section of Natural England's response for further advice regarding assessment.

Waste

The LPA consider that it is acceptable for waste to be scoped out of the EIA. However, consideration should be given to policies WM8 and WM9 of the Merseyside and Halton Joint Waste Local Plan.

Lighting

The LPA considers that lighting can be scoped out of the EIA.

Accidents and Disasters

The LPA considers that accidents and disasters can be scoped out of the EIA.

Climate Change and Greenhouse Gases

It is proposed that, whilst scoped out of the ES, climate change and greenhouse gases will be covered in a dedicated section in the introductory Chapters of the ES. This is welcomed.
It is proposed that the ES will focus on the climate change mitigation and adaptation measures incorporated into the proposed development and will draw upon technical chapters and reports including the Flood Risk Assessment, Energy and Sustainability Assessment and Air Quality Assessments and summarize the sustainability and energy provisions included within the proposed development. Climate Change should be considered for both operational and construction impacts, including resilience to the impacts of climate change on the proposal, in addition to additional mitigation that may be required to avoid impacts on climate change from the proposal.

The requirements of policy CS22 (Sustainable and Low Carbon Development) should also be taken into account in the full application including the consideration of low carbon and renewable energy technologies. Inclusion of sustainable energy is also in line with the requirements of the Halsnead Masterplan SPD policy MPG3 and tables 7.4 (Macro-scale opportunities part n)) and 7.5 (Micro-sustainability opportunities part a)) apply.

Please refer to the climate change section of Natural England's response for further advice regarding assessment.

Conclusion

The topics to be scoped in are those outlined within the EIA Scoping Opinion request with the addition of Transport and Access which should also be scoped into the EIA as an additional chapter. It is noted that the cumulative impacts of the whole SUE site should be taken into consideration.

Please note the information and decisions made within this SO are based on the information provided within the Scoping Request at this time and is provided at officer level. A number of consultation responses had not been received at the time of writing this scoping opinion and these include responses from Environmental Health, the LLFA, the Design and Conservation Officer and the Landscape Officer.

The Council looks forward to working with you collaboratively on the ES, and your development proposals. Please contact me if you have any queries.

KNOWSLEY METROPOLITAN BOROUGH COUNCIL

DIRECTORATE OF PLACE

CONSERVATION AND DESIGN

Response for Officer: Clare Appleyard

Application Ref: 20/00393/SO

Location: Land South of Lickers Lane, Halsnead

Description of Proposal: Housing Development

I would advise Historic England be consulted on this Scoping Opinion given they have previously commented/raised issues regarding the masterplan.

Comments:

In relation to the approach to EIA I have previously advised the following. This remains a concern:

The EIA should take account of the impacts of development of the Halsnead site as a whole. As an allocated SUE site benefitting from government funding, and also with an adopted masterplan, there is a clear expectation of development and cumulative effects can be reasonably assessed. In respect of the effects on cultural heritage - as the site is still quite a coherent historic parkland landscape, assessing the effects of development of each parcel individually would not equate to considering the cumulative effect on the whole.

If each parcel is treated separately for the purposes of EIA the cumulative impacts are unlikely to be properly assessed and there is the possibility that the assessments may reach differing conclusions, opening the possibility for legal challenges. Overall a more comprehensive approach to EIA is recommended.

Within the submission Built Heritage is correctly identified as a topic identified for further assessment, and heritage assets within the site and within a 1km buffer are to be considered which is appropriate.

However, the SO seeks to scope out four designated heritage assets for reasons that they are not intervisible, and/or have no historic association with the site. This is not an accurate assessment. The 'scoped out' designated assets (Old Halsnead, Carr House Farmhouse, The Paddocks and The Stables and Barn at Snape Gate) are all historically associated with Halsnead Park and therefore each other. These should be included within the assessment.

Two of the non-designated heritage assets are also scoped out these are "Walled Garden and Outbuilding" and "Ponds and Streams". Again, I am of the view these should be scoped in as they are (strongly) historically associated with the Halsnead Park landscaped park, which this site is part of.

In terms of methodology the Historic England Guidance "The setting of Heritage Assets" will be key. The methodology for assessing the potential heritage impacts is not made clear. I would advise:

- To identify heritage assets, the proposed area of search 1km beyond the site boundary is acceptable; the sources for the baseline assessment are acceptable, however please request that Halsnead Masterplan SPD be added, as this also contains information about known heritage assets on the site.

- The report should detail the significance of identified heritage assets where there is potential for impacts. The EIA should explore potential impacts on designated assets with specific reference made to the duty within the Planning (Listed Buildings and Conservation Areas Act) 1990 to 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.

- The nature of the potential impact on the significance of affected heritage assets should be explained. Any assumptions made about the nature of the development should be made explicit. Where the impact is on the setting of a heritage asset, this should not be judged solely with reference to visual factors, although this is an important factor it is not the only matter to consider. The contribution made by setting is not dependant on the public having rights to access it, and *"Although views of or from an asset will play an important part, the way in which we experience an asset in its setting is also influenced by other environmental factors such as noise, dust and vibration from other land uses in the vicinity, and by our understanding of the historic relationship between places*."- GPA3. GPA3 also provides a checklist of potential attributes of an assets' setting that may be appropriate to consider, and it is recommended that this be used by the assessors.

- In addition to suggestions about suitable mitigation, the report should detail any further assessments needed, and also identify where there are opportunities to enhance heritage assets. The Design Quality SPD looks broadly at local distinctiveness and offers guidance on enhancing this.

Information about the likely significant effects on cultural heritage is offered, albeit in each case the likely effect is described purely as 'setting'. This is accurate, but is a very limited assessment.

The most significant effects are likely to be in relation to the impact on the setting of Sandfield. The woodland which borders the site to the north is and was historically part of the land around Sandfield. Paths and naturalistic water features within the woodland connect to Sandfield, and the Halsnead Park Estate. Maps suggest these features may remain.

Landscape and Visual Effects

There is a crossover between the cultural heritage and Landscape and Visual chapters which should be acknowledged. This is because the non-designated heritage asset (Halsnead Park) is a landscape.

The SUE as a whole encompasses the entirety of the 'Halsnead Park' landscape character area as defined within Knowsley's Landscape Character Assessment. See http://www.knowsley.gov.uk/pdf/EB20_LandscapeCharacterAssessment.pdf. . The Halsnead Park historic landscape should be identified as a receptor. The development of the site, (and cumulative development of Halsnead Garden Village), will result in significant physical change as well as visual effects.

Historic England in their response to the draft SPD commented that many elements of the parkland landscape survive and that *"Our recommendation is that you look very carefully at the location and orientation of shelterbelts, clumps, copses and even individual trees marked on historical maps as they were likely to be located to derive the greatest benefits from the 'natural' form of the landscape – framing views and vistas, etc. Also the network of drives and paths would*

have been devised to 'show off' the landscape and principal features at their best." These matters should be considered within the 'Landscape' chapter

Consideration should be given to the value of the historic parkland landscape as a whole and the likely impacts on it.

Relevant Legislation Policy & Guidance

Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended)

Historic England Guidance

GPA 2 Managing significance in decision taking in the historic environment (2015)
GPA 3 The Setting of Heritage Assets (2017)
HEAN 2: Making Changes to Heritage Assets (2016)

Local Authority Guidance

Outline Heritage Assessment (July 2016 - unpublished)
Halsnead Masterplan SPD
Emerging Halsnead Design Guide

Dorothy Bradwell
Principal Conservation and Design Officer **Date 17th August 2022**

Date: 13 July 2022
Our ref: 399039
Your ref: 22/00393/SO

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Dear Clare Appleyard

Environmental Impact Assessment Scoping consultation (Regulation 15 (4) of the Town and Country Planning EIA Regulations 2017): ENVIRONMENTAL IMPACT ASSESSMENT (EIA) SCOPING OPINION FOR THE ERECTION OF 120 NO. RESIDENTIAL DWELLINGS WITH VEHICULAR ACCESS POINTS OFF LICKERS LANE, PUBLIC OPEN SPACE, LANDSCAPING, BOUNDARY TREATMENTS AND OTHER ASSOCIATED WORKS.
Location: Land To The South Of Lickers Lane, Whiston, Knowsley

Thank you for seeking our advice on the scope of the Environmental Statement (ES) in the consultation dated 30 June 2022 ,received on 30 June 2022.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

A robust assessment of environmental impacts and opportunities based on relevant and up to date environmental information should be undertaken prior to a decision on whether to grant planning permission. Annex A to this letter provides Natural England's advice on the scope of the Environmental Impact Assessment (EIA) for the proposed development.

Further guidance is set out in Planning Practice Guidance on environmental assessment, natural environment and climate change.

Should the proposal be amended in a way which significantly affects its impact on the natural environment then, in accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England should be consulted again.

Please note that Natural England must be consulted on Environmental Statements.

Please send any new consultations or further information on this consultation to consultations@naturalengland.org.uk.

Yours sincerely

Dominic Rogers
Consultations Team

Annex A – Natural England Advice on EIA Scoping

General Principles

Schedule 4 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2017, sets out the information that should be included in an Environmental Statement (ES) to assess impacts on the natural environment. This includes:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases
- Expected residues and emissions (water, air and soil pollution, noise, vibration, light, heat, radiation etc.) resulting from the operation of the proposed development
- An assessment of alternatives and clear reasoning as to why the preferred option has been chosen
- A description of the aspects of the environment likely to be significantly affected by the development including biodiversity (for example fauna and flora), land, including land take, soil, water, air, climate (for example greenhouse gas emissions, impacts relevant to adaptation, cultural heritage and landscape and the interrelationship between the above factors
- A description of the likely significant effects of the development on the environment – this should cover direct effects but also any indirect, secondary, cumulative, short, medium, and long term, permanent and temporary, positive, and negative effects. Effects should relate to the existence of the development, the use of natural resources (in particular land, soil, water and biodiversity) and the emissions from pollutants. This should also include a description of the forecasting methods to predict the likely effects on the environment
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment
- A non-technical summary of the information
- An indication of any difficulties (technical deficiencies or lack of know-how) encountered by the applicant in compiling the required information

Further guidance is set out in Planning Practice Guidance on environmental assessment and natural environment.

Cumulative and in-combination effects

The ES should fully consider the implications of the whole development proposal. This should include an assessment of all supporting infrastructure.

An impact assessment should identify, describe, and evaluate the effects that are likely to result from the project in combination with other projects and activities that are being, have been or will be carried out. The following types of projects should be included in such an assessment (subject to available information):

a. existing completed projects;
b. approved but uncompleted projects;
c. ongoing activities;
d. plans or projects for which an application has been made and which are under consideration by the consenting authorities; and
e. plans and projects which are reasonably foreseeable, i.e. projects for which an application has not yet been submitted, but which are likely to progress before completion of the development and for which sufficient information is available to assess the likelihood of cumulative and in-combination effects.

Environmental data

Natural England is required to make available information it holds where requested to do so. National datasets held by Natural England are available at http://www.naturalengland.org.uk/publications/data/default.aspx.

Detailed information on the natural environment is available at www.magic.gov.uk.

Natural England's SSSI Impact Risk Zones are a GIS dataset which can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.

Natural England does not hold local information on local sites, local landscape character, priority habitats and species or protected species. Local environmental data should be obtained from the appropriate local bodies. This may include the local environmental records centre, the local wildlife trust, local geo-conservation group or other recording society.

Biodiversity and Geodiversity

General principles

The National Planning Policy Framework (paragraphs174-175 and 179-182) sets out how to take account of biodiversity and geodiversity interests in planning decisions. Further guidance is set out in Planning Practice Guidance on the natural environment.

The potential impact of the proposal upon sites and features of nature conservation interest and opportunities for nature recovery and biodiversity net gain should be included in the assessment.

Ecological Impact Assessment (EcIA) is the process of identifying, quantifying, and evaluating the potential impacts of defined actions on ecosystems or their components. EcIA may be carried out as part of the EIA process or to support other forms of environmental assessment or appraisal. Guidelines have been developed by the Chartered Institute of Ecology and Environmental Management (CIEEM).

Local planning authorities have a duty to have regard to conserving biodiversity as part of their decision making. Conserving biodiversity can include habitat restoration or enhancement. Further information is available here.

Designated nature conservation sites

International and European sites

The development site is within or may impact on the following **European/internationally designated nature conservation site(s):**

- Mersey Estuary Ramsar
- Mersey Estuary SPA (Special Protection Area)

European site conservation objectives are available at http://publications.naturalengland.org.uk/category/6490068894089216

The ES should thoroughly assess the potential for the proposal to affect nationally and internationally designated sites of nature conservation importance, including marine sites where relevant. European sites (Special Areas of Conservation (SAC) and Special Protection Areas (SPA) fall within the scope of the Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations'). In addition paragraph 181 of the National Planning Policy Framework (NPPF)

requires that potential SPAs, possible SAC, listed or proposed Ramsar sites, and any site identified or required as compensatory measures for adverse effects on habitat (European) sites, potential SPAs, possible SACs and listed or proposed Ramsar sites have the same protection as classified sites (NB. sites falling within the scope of regulation 8 of the Conservation of Habitats and Species Regulations 2017 are defined as 'habitats sites' in the NPPF). Under Regulation 63 of the Habitats Regulations, an appropriate assessment must be undertaken in respect of any plan or project which is (a) likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and (b) not directly connected with or necessary to the management of the site. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are qualifying features of the site, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a designated site, for example by being linked hydrologically or geomorphologically.

Should a likely significant effect on a European/Internationally designated site be identified (either alone or in-combination) or be uncertain, the competent authority (in this case the Local Planning Authority) may need to prepare an appropriate assessment in addition to the consideration of impacts through the EIA process. Further guidance is set out in Planning Practice Guidance on appropriate assessment
https://www.gov.uk/guidance/appropriate-assessment

This should also take into account any agreed strategic mitigation solution that may be being developed or implemented in the area to address recreational disturbance, nutrients, or other impacts.

Nationally designated sites
The development site is within or may impact on the following **Site of Special Scientific Interest:**

- Mersey Estuary SSSI (Site of Special Scientific Interest)

Sites of Special Scientific Interest are protected under the Wildlife and Countryside Act 1981 and paragraph 180 of the NPPF. Further information on the SSSI and its special interest features can be found at www.magic.gov .

Natural England's SSSI Impact Risk Zones can be used to help identify the potential for the development to impact on a SSSI. The dataset and user guidance can be accessed from the Natural England Open Data Geoportal.

The Environmental Statement should include a full assessment of the direct and indirect effects of the development on the features of special interest within the SSSI and identify appropriate mitigation measures to avoid, minimise or reduce any adverse significant effects. The consideration of likely significant effects should include any functionally linked land outside the designated site. These areas may provide important habitat for mobile species populations that are interest features of the SSSI, for example birds and bats. This can also include areas which have a critical function to a habitat feature within a site, for example by being linked hydrologically or geomorphologically.

Regionally and Locally Important Sites

The ES should consider any impacts upon local wildlife and geological sites, including local nature reserves. Local Sites are identified by the local wildlife trust, geoconservation group or other local group and protected under the NPPF (paragraph 174 and 175). The ES should set out proposals for mitigation of any impacts and if appropriate, compensation measures and opportunities for enhancement and improving connectivity with wider ecological networks. Contact the relevant local body for further information.

Protected Species

The conservation of species protected under the Wildlife and Countryside Act 1981 and the Conservation of Habitats and Species Regulations 2017
is explained in Part IV and Annex A of Government Circular 06/2005 *Biodiversity and Geological Conservation: Statutory Obligations and their Impact within the Planning System*.

The ES should assess the impact of all phases of the proposal on protected species (including, for example, great crested newts, reptiles, birds, water voles, badgers and bats). Natural England does not hold comprehensive information regarding the locations of species protected by law. Records of protected species should be obtained from appropriate local biological record centres, nature conservation organisations and local groups. Consideration should be given to the wider context of the site, for example in terms of habitat linkages and protected species populations in the wider area.

The area likely to be affected by the development should be thoroughly surveyed by competent ecologists at appropriate times of year for relevant species and the survey results, impact assessments and appropriate accompanying mitigation strategies included as part of the ES. Surveys should always be carried out in optimal survey time periods and to current guidance by suitably qualified and, where necessary, licensed, consultants.

Natural England has adopted standing advice for protected species, which includes guidance on survey and mitigation measures . A separate protected species licence from Natural England or Defra may also be required.

District Level Licensing for Great Crested Newts

District level licensing (DLL) is a type of strategic mitigation licence for great crested newts (GCN) granted in certain areas at a local authority or wider scale. A DLL scheme for GCN may be in place at the location of the development site. If a DLL scheme is in place, developers can make a financial contribution to strategic, off-site habitat compensation instead of applying for a separate licence or carrying out individual detailed surveys. By demonstrating that DLL will be used, impacts on GCN can be scoped out of detailed assessment in the Environmental Statement.

Priority Habitats and Species

Priority Habitats and Species are of particular importance for nature conservation and included in the England Biodiversity List published under section 41 of the Natural Environment and Rural Communities Act 2006. Most priority habitats will be mapped either as Sites of Special Scientific Interest, on the Magic website or as Local Wildlife Sites. Lists of priority habitats and species can be found here. Natural England does not routinely hold species data. Such data should be collected when impacts on priority habitats or species are considered likely.

Consideration should also be given to the potential environmental value of brownfield sites, often found in urban areas and former industrial land. Sites can be checked against the (draft) national Open Mosaic Habitat (OMH) inventory published by Natural England and freely available to download. Further information is also available here.

An appropriate level habitat survey should be carried out on the site, to identify any important habitats present. In addition, ornithological, botanical, and invertebrate surveys should be carried out at appropriate times in the year, to establish whether any scarce or priority species are present.

The Environmental Statement should include details of:

- Any historical data for the site affected by the proposal (e.g. from previous surveys)
- Additional surveys carried out as part of this proposal
- The habitats and species present
- The status of these habitats and species (e.g. whether priority species or habitat)
- The direct and indirect effects of the development upon those habitats and species
- Full details of any mitigation or compensation measures
- Opportunities for biodiversity net gain or other environmental enhancement

Ancient Woodland, ancient and veteran trees

The ES should assess the impacts of the proposal on any ancient woodland, ancient and veteran trees, and the scope to avoid and mitigate for adverse impacts. It should also consider opportunities for enhancement.

Natural England maintains the Ancient Woodland Inventory which can help identify ancient woodland. The wood pasture and parkland inventory sets out information on wood pasture and parkland.

The ancient tree inventory provides information on the location of ancient and veteran trees.

Natural England and the Forestry Commission have prepared standing advice on ancient woodland, ancient and veteran trees.

Biodiversity net gain

Paragraph 174 of the NPPF states that decisions should contribute to and enhance the natural and local environment by minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

Biodiversity Net Gain is additional to statutory requirements relating to designated nature conservation sites and protected species.

The ES should use an appropriate biodiversity metric such as Biodiversity Metric 3.0 together with ecological advice to calculate the change in biodiversity resulting from proposed development and demonstrate how proposals can achieve a net gain.
The metric should be used to:
• assess or audit the biodiversity unit value of land within the application area
• calculate the losses and gains in biodiversity unit value resulting from proposed development
• demonstrate that the required percentage biodiversity net gain will be achieved

Biodiversity Net Gain outcomes can be achieved on site, off-site or through a combination of both. On-site provision should be considered first. Delivery should create or enhance habitats of equal or higher value. When delivering net gain, opportunities should be sought to link delivery to relevant plans or strategies e.g. Green Infrastructure Strategies or Local Nature Recovery Strategies.

Opportunities for wider environmental gains should also be considered.

Landscape

Landscape and visual impacts

The environmental assessment should refer to the relevant National Character Areas. Character area profiles set out descriptions of each landscape area and statements of environmental opportunity.

The ES should include a full assessment of the potential impacts of the development on local landscape character using landscape assessment methodologies. We encourage the use of Landscape Character Assessment (LCA), based on the good practice guidelines produced jointly by the Landscape Institute and Institute of Environmental Assessment in 2013. LCA provides a sound basis for guiding, informing, and understanding the ability of any location to accommodate change and to make positive proposals for conserving, enhancing or regenerating character.

A landscape and visual impact assessment should also be carried out for the proposed development and surrounding area. Natural England recommends use of the methodology set out in *Guidelines for Landscape and Visual Impact Assessment 2013 (*(3rd edition) produced by the Landscape Institute and the Institute of Environmental Assessment and Management. For National Parks and AONBs, we advise that the assessment also includes effects on the 'special qualities' of the designated landscape, as set out in the statutory management plan for the area. These identify the particular landscape and related characteristics which underpin the natural beauty of the area and its designation status.

The assessment should also include the cumulative effect of the development with other relevant existing or proposed developments in the area. This should include an assessment of the impacts of other proposals currently at scoping stage.

To ensure high quality development that responds to and enhances local landscape character and distinctiveness, the siting and design of the proposed development should reflect local characteristics and, wherever possible, use local materials. Account should be taken of local design policies, design codes and guides as well as guidance in the National Design Guide and National Model Design Code. The ES should set out the measures to be taken to ensure the development will deliver high standards of design and green infrastructure. It should also set out detail of layout alternatives, where appropriate, with a justification of the selected option in terms of landscape impact and benefit.

Heritage Landscapes

The ES should include an assessment of the impacts on any land in the area affected by the development which qualifies for conditional exemption from capital taxes on the grounds of outstanding scenic, scientific, or historic interest. An up-to-date list is available at www.hmrc.gov.uk/heritage/lbsearch.htm.

Connecting People with nature

The ES should consider potential impacts on access land, common land, public rights of way and, where appropriate, the England Coast Path and coastal access routes and coastal margin in the vicinity of the development, in line with NPPF paragraph 100. It should assess the scope to mitigate for any adverse impacts. Rights of Way Improvement Plans (ROWIP) can be used to identify public rights of way within or adjacent to the proposed site that should be maintained or enhanced.

Measures to help people to better access the countryside for quiet enjoyment and opportunities to connect with nature should be considered. Such measures could include reinstating existing footpaths or the creation of new footpaths, cycleways, and bridleways. Links to other green networks and, where appropriate, urban fringe areas should also be explored to help promote the creation of wider green infrastructure. Access to nature within the development site should also be considered, including the role that natural links have in connecting habitats and providing potential pathways for movements of species.

Relevant aspects of local authority green infrastructure strategies should be incorporated where appropriate.

Soils and Agricultural Land Quality

Soils are a valuable, finite natural resource and should also be considered for the ecosystem services they provide, including for food production, water storage and flood mitigation, as a carbon store, reservoir of biodiversity and buffer against pollution. It is therefore important that the soil resources are protected and sustainably managed. Impacts from the development on soils and best and most versatile (BMV) agricultural land should be considered in line with paragraphs 174 and 175 of the NPPF. Further guidance is set out in the Natural England Guide to assessing development proposals on agricultural land.

As set out in paragraph 211 of the NPPF, new sites or extensions to sites for peat extraction should not be granted planning permission.

The following issues should be considered and, where appropriate, included as part of the Environmental Statement (ES):

- The degree to which soils would be disturbed or damaged as part of the development
- The extent to which agricultural land would be disturbed or lost as part of this development, including whether any best and most versatile (BMV) agricultural land would be impacted.

This may require a detailed Agricultural Land Classification (ALC) survey if one is not already available. For information on the availability of existing ALC information see www.magic.gov.uk.

- Where an ALC and soil survey of the land is required, this should normally be at a detailed level, e.g. one auger boring per hectare, (or more detailed for a small site) supported by pits dug in each main soil type to confirm the physical characteristics of the full depth of the soil resource, i.e. 1.2 metres. The survey data can inform suitable soil handling methods and appropriate reuse of the soil resource where required (e.g. agricultural reinstatement, habitat creation, landscaping, allotments and public open space).
- The ES should set out details of how any adverse impacts on BMV agricultural land can be minimised through site design/masterplan.
- The ES should set out details of how any adverse impacts on soils can be avoided or minimised and demonstrate how soils will be sustainably used and managed, including consideration in site design and master planning, and areas for green infrastructure or biodiversity net gain. The aim will be to minimise soil handling and maximise the sustainable use and management of the available soil to achieve successful after-uses and minimise off-site impacts.

Further information is available in the Defra Construction Code of Practice for the Sustainable Use of Soil on Development Sites and
The British Society of Soil Science Guidance Note Benefitting from Soil Management in Development and Construction.

Air Quality

Air quality in the UK has improved over recent decades but air pollution remains a significant issue. For example, approximately 85% of protected nature conservation sites are currently in exceedance of nitrogen levels where harm is expected (critical load) and approximately 87% of sites exceed the level of ammonia where harm is expected for lower plants (critical level of 1µg) [1].A priority action in the England Biodiversity Strategy is to reduce air pollution impacts on biodiversity. The Government's Clean Air Strategy also has a number of targets to reduce emissions including to reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030, to reduce emissions of ammonia against the 2005 baseline by 16% by 2030 and to reduce emissions of NOx and SO_2 against a 2005 baseline of 73% and 88% respectively by 2030. Shared Nitrogen Action Plans (SNAPs) have also been identified as a tool to reduce environmental damage from air pollution.

The planning system plays a key role in determining the location of developments which may give rise to pollution, either directly, or from traffic generation, and hence planning decisions can have a significant impact on the quality of air, water and land. The ES should take account of the risks of air pollution and how these can be managed or reduced. This should include taking account of any strategic solutions or SNAPs, which may be being developed or implemented to mitigate the impacts on air quality. Further information on air pollution impacts and the sensitivity of different habitats/designated sites can be found on the Air Pollution Information System (www.apis.ac.uk).

Information on air pollution modelling, screening and assessment can be found on the following websites:

- SCAIL Combustion and SCAIL Agriculture - http://www.scail.ceh.ac.uk/
- Ammonia assessment for agricultural development https://www.gov.uk/guidance/intensive-farming-risk-assessment-for-your-environmental-permit
- Environment Agency Screening Tool for industrial emissions https://www.gov.uk/guidance/air-emissions-risk-assessment-for-your-environmental-permit
- Defra Local Air Quality Management Area Tool (Industrial Emission Screening Tool) – England http://www.airqualityengland.co.uk/laqm

Water Quality

The planning system plays a key role in determining the location of developments which may give rise to water pollution, and hence planning decisions can have a significant impact on water quality, and land. The assessment should take account of the risks of water pollution and how these can be managed or reduced. A number of water dependent protected nature conservation sites have been identified as failing condition due to elevated nutrient levels and nutrient neutrality is consequently required to enable development to proceed without causing further damage to these sites. The ES needs to take account of any strategic solutions for nutrient neutrality or Diffuse Water Pollution Plans, which may be being developed or implemented to mitigate and address the impacts of elevated nutrient levels. Further information can be obtained from the Local Planning Authority.

[1] Report: Trends Report 2020: Trends in critical load and critical level exceedances in the UK - Defra, UK

Climate Change

The ES should identify how the development affects the ability of the natural environment (including habitats, species, and natural processes) to adapt to climate change, including its ability to provide adaptation for people. This should include impacts on the vulnerability or resilience of a natural feature (i.e. what's already there and affected) as well as impacts on how the environment can accommodate change for both nature and people, for example whether the development affects species ability to move and adapt. Nature-based solutions, such as providing green infrastructure on-site and in the surrounding area (e.g. to adapt to flooding, drought and heatwave events), habitat creation and peatland restoration, should be considered. The ES should set out the measures that will be adopted to address impacts.

Further information is available from the Committee on Climate Change's (CCC) Independent Assessment of UK Climate Risk, the National Adaptation Programme (NAP), the Climate Change Impacts Report Cards (biodiversity, infrastructure, water etc.) and the UKCP18 climate projections.

The Natural England and RSPB Climate Change Adaptation Manual (2020) provides extensive information on climate change impacts and adaptation for the natural environment and adaptation focussed nature-based solutions for people. It includes the Landscape Scale Climate Change Assessment Method that can help assess impacts and vulnerabilities on natural environment features and identify adaptation actions. Natural England's Nature Networks Evidence Handbook (2020) also provides extensive information on planning and delivering nature networks for people and biodiversity.

The ES should also identify how the development impacts the natural environment's ability to store and sequester greenhouse gases, in relation to climate change mitigation and the natural environment's contribution to achieving net zero by 2050. Natural England's Carbon Storage and Sequestration by Habitat report (2021) and the British Ecological Society's nature-based solutions report (2021) provide further information.

Contribution to local environmental initiatives and priorities

The ES should consider the contribution the development could make to relevant local environmental initiatives and priorities to enhance the environmental quality of the development and deliver wider environmental gains. This should include considering proposals set out in relevant local strategies or supplementary planning documents including landscape strategies, green infrastructure strategies, tree and woodland strategies, biodiversity strategies or biodiversity opportunity areas.

APPENDIX 3.1
DETAILED DEVELOPMENT PLAN

Lickers Lane, Whiston.

ACCOMMODATION SCHEDULE

	HOUSE TYPE	DESCRIPTION	SQFT (NET)	SQFT (GROSS)	NO.	TOTAL SQFT	%
OPEN	GRAINGER	4 BED DETACHED	1328	1349	4	5396	3%
	MYLNE	4 BED DETACHED	1136	1152	18	20736	15%
	MOUNTFORD	3 BED DETACHED	971	985	6	5910	5%
	MOUNTFORD	3 BED SEMI DETACHED	971	985	5	4925	4%
	WYATT	3 BED TOWNHOUSE	872	883	8	7064	7%
	EVELEIGH	3 BED SEMI DETACHED	865	879	13	11427	11%
	TOTAL				54		45%
PRS	SHARMAN	3 BED SEMI / END	862	875	16	14000	13%
	STAFFORD	2 BED END MEWS	679	691	18	12438	15%
	EVELEIGH	3 BED SEMI DETACHED	865	879	20	17580	17%
	TOTAL				54		45%
AFF	Apts Bespoke	2 BED APARTMENTS	650	650	12	7800	10%
	TOTAL				12		10%
TOTAL					120 PLOTS	107276 SQFT	100%

Gross Site Area	8.40	Acres
		Acres
		Acres
		Acres
Nett Site Area	7.12	Acres
Net Density	17	Units / Acre
Gross Density	14	Units / Acre
SQFT PER NET DEVELOPABLE ACRE	15067	SqFt / A

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Community Centre

CROFTWOOD GROVE

Potential S278 works required to Lickers Lane in the form of pedestrian barriers, signage, pedestrian island and footpath to the Southern side of Lickers Lane.

Proposed route to adjacent site

Proposed footpath link to existing public footpath

Dot hatch denotes area of open space subject to detailed landscape design.

Proposed future access to adjacent development

Proposed future access to adjacent development

YHG Development to be amended to suit Main Street location and access to Vistry land.

Shelter

Pond

Pond

Sub Sta.

Bins / Cycle

N

BOUNDARY TREATMENTS

- Denotes 1.8m high brick wall & piers.
- Denotes 1.8m high close-boarded timber screen fence.
- Denotes 1.8m high plot-divisional fence.
- Denotes lockable gate.

AFFORDABLE HOUSING

- Denotes Additional Partner Units.
- Denotes S106 Affordable Units.

Rev	Date	Revision	Initial

+ Client

Vistry Partnerships

+ Drawing Title

PARCEL 2C

+ Project

Lickers Lane, Whiston.

Job No	Drg No	Drawn	Rev
21062	01	ac	
Scale	Date	Stage	
1:500 @ A1	14.10.2021	FOR APPROVAL	

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1:500

10m 0 10m 20m 30m 40m 50m

APPENDIX 3.2
FINAL LANDSCAPE PLANS

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Contractors must check all dimensions from site

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Graphical representations of equipment on this drawing have been co-ordinated, but are approximations only. Please refer to the specifications and / or details for actual sizes and / or specific contractor construction information.

Notes:-



KEY

Hard Works

Vehicular Asphalt Surface
Black colour.

Pedestrian Asphalt Surface
Black colour.

Precast Concrete Flag Paving
to private paths and patios
Buff colour.

Precast Concrete Sett Paving
to rumble strips
Bracken colour.

Resin bound gravel
Light grey colour.

Natural Play Equipment / Outdoor Gym Equipment
TBC

Play element
Sandpit, TBC

Timber Closeboard Fence
With matching gates.

Brick Wall
1800mm high, *Brick to match architecture.*

Timber Bench
Timber bench, 500 x 2000 x 500mm

Timber Cube Seating
Timber cube seating , 600 x 600 x 500mm

Stepping logs
Stepping timber logs, 300mm diameter

Bird boxes
No.10, locations TBC

Bat boxes
No.10, locations TBC

Soft Works

Existing Tree

Proposed Tree
No.70

Proposed Specimen shrub
No.14

Proposed Ornamental Hedge Planting
Approx. 589m²

Proposed Native Hedge Planting
Approx. 123m²

Proposed Shrub Planting
Approx. 858m²

Proposed Planting to Pocket Park
Approx. 162m²

Proposed Native Shrub Planting
Approx. 1387m²

Proposed Seeded Grass
Approx. 393m²

Proposed Wildflower Meadow
Approx. 2267m²

Proposed Turf Grass

Proposed Groundcover Planting
Approx. 55m²

REV.	DATE	DESCRIPTION	DRAWN	CHK'D
P05	08/09/22	Information updated	KT	SA
P04	08/09/22	Information updated	KT	SA
P03	07/09/22	UPDATED	KT	SA
P02	18/07/22	UPDATED	TH	SA
P01	15/07/22	FIRST ISSUE	TH	SA

Client: Vistry Parnerships	**Project:** LICKER LANE, KNOWSELY	**Drawn:** TH	**Checked:** SA	**Approved:** MT	**Date:** 15/07/22
Issue: PLANNING	**Title:** GENERAL ARRANGEMENT PLAN	**Dwg No:** UG_1599_LAN_GA_DRW_01		**Scale @ A1:** 1:500	**Revision:** P05

URBAN GREEN

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APPENDIX 5.1
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN

Lickers Lane
Halsnead

Construction and Environmental Management Plan

20th September 2022 V1

Contents

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3.18 Ecologically Sensitive Areas

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Appendices

A Site Location Plan

B Construction Management Plan

C Indicative Foundation Zoning Plan

Revision History

Revision	Date	Details	Originator	Approved by
0	14/09/2022	First Issue	Paul Jackson	
1				
2				
3				
4				

1 INTRODUCTION

1.1 Background

This Construction and Environmental Management Plan (CEMP) has been produced for the above development and sets out Vistry Partnership's ability to carry out the works in the optimum time and in the most viable and safe manner to achieve a completed project to the satisfaction of all parties involved.

The CEMP will form the basis for the management of the main environmental aspects associated with the proposed development of the site and sets out how the commitments will be translated into actions in the field and the means by which they will be monitored and verified.

1.2 Proposed Development

Vistry Partnerships has submitted a detailed Planning Application for 120 new build dwellings consisting of 12 apartments and 108 houses, comprising a mix of 2, 3 and 4 bedroomed dwellings on land to the South of Lickers Lane, Halsnead, herein referred to as "the Site".

The validation requirements of Knowsley Metropolitan Borough Council ("the Council") for a development of this size and scale require for the submission of a CEMP to accompany the application.

1.3 The Site

The Development will comprise of the construction of 120 dwellings comprising of a mix of 2, 3 & 4 bedroom houses and apartments, together with associated works.

The site layout has changed little from at least 1850, when historical Ordnance Survey mapping indicated the site as part of a larger parcel of greenfield land. Various changes to field boundaries occurred from 1907 with the current site boundary first appearing on the 1959 mapping.

1.4 Objectives

The CEMP defines responsibilities and methods during the construction phase of this development to manage potential impacts on the environment and nearby dwellings. The objectives of the CEMP are to establish Vistry Partnership's approach to the construction of the development with particular attention to the following matters:

- Roles and Responsibilities
- Training
- Site Establishment and Hoarding;
- Public Rights of Way
- Sales Area
- Site Access and Parking
- Loading and Unloading of Plant and Materials
- Storage of Plant and Materials
- Construction Traffic Management
- Wheel Washing Facilities
- Control of Dust and Dirt
- Waste Management and Recycling
- Asbestos
- Contaminated Land
- Noise and vibration

- External Lighting used during construction
- Prevention of pollution to watercourses.
- Ecologically Sensitive Areas
- Community Responsibility
- Complaints Procedure

2 MANAGEMENT STRUCTURE

2.1 Procedures

The construction of the Site will be implemented and managed in accordance with Vistry Partnerships' management structures, processes and procedures throughout the duration of the delivery of the Site.

All works procured in relation to the Site will be in accordance with ISO 14001:2004 Environmental Management System.

2.2 Site Management (Subject to confirmation)

Vistry Partnership's development sites comprise a core team of site-based management and staff along with a team of selected sub-contractors and suppliers. The following core members of staff will deliver this Site:

- 1 no Site Manager - Contact details to be included once known
- 1 no Assistant Site Manager - Contact details to be included once known
- 1 no Forklift Driver
- 2 no Labourers / Material Controller

A Contracts Manager will be responsible for the overview and management of the site based team and will visit the site on a regular basis to manage the delivery of the build programme and deal with any compliance issues. Contact details to be included once known.

2.3 Times of construction activities on site (Subject to confirmation)

Construction activities will take place at the following times, unless alternative hours are specified by the planning authority:

- Monday - Friday: 08:00 – 18:00
- Saturdays: 08:00 – 14:00
- Sundays: No works permitted
- Bank Holidays: No works permitted

Delivery hours are to be the same as construction activities.

3 MANAGEMENT PLAN

3.1 Roles and Responsibilities

With regards to the CEMP, the Principal Contractor (as defined under the Construction Design and Management (CDM) Regulations 2015) is responsible for:

- implementing the CEMP
- Monitoring sub-contractor's performance to the CEMP
- Developing and implementing mechanisms for dealing with problems and
- Acting as a point of contact for consultation and feedback with adjacent landowners, statutory consultees, the general public and other interested parties.

The principal Contractor would be responsible for establishing management procedures for compliance with:

- All relevant legislation
- The environmental controls and mitigation measures contained in the CEMP and
- Any environmental or other codes of conduct required by the Client.

The site manager, competent in environmental management, will be responsible for the co-ordination and implementation of the CEMP and will assist in ensuring that the Principal Contractors CEMP responsibilities are met. Duties would also include:

- Identifying the competence of all contractors to be employed for the works.
- Review construction method statements with regards to environmental aspects and advise of suggested improvements prior to works commencing.
- Provide main contact between contractor and developer project team on environmental and construction issues.
- Identify competence requirements for staff and ensure delivery of relevant training to the team.
- Implementation and operation of environmental controls on site
- Monitor construction activities to ensure that identified and appropriate control measures are effective and ensure compliance with the CEMP.
- Respond to any environmental incidents such as spills.
- In the event of an environmental incident, ensure correct procedures are followed.
- Provide information on waste management/reduction procedures to relevant staff.
- Assist in responding to any complaints.

3.2 Training

All Site personnel, including contractors and sub-contractors will be made aware of their responsibilities with regards to the CEMP and it's appropriate implementation. As part of the implementation of the CEMP, the site induction programme will ensure that all site personnel are conversant with:

- The CEMP and it's on-site implementation;
- The environmental sensitivities of the site, particularly in respect of nearby receptors.

3.3 Site Establishment and Hoarding

The establishment of the Site, compound, welfare facilities and general site set-up arrangements are implemented in accordance with Vistry Partnerships standard processes and procedures, and the company QA procedures, accredited to ISO 9001:2008.

All site hoardings and fencing will be regularly inspected, repaired and repainted as necessary.

Access to the Sites will be taken from the following points of access off Lickers Lane located directly to the north west of the site.

Our gated entrances will be set back from the road to allow wagons etc. to park on the site and not to cause congestion to Lickers Lane.

Vistry Partnerships processes and procedures ensures the establishment of a build route and location of site compound area to ensure that on site works are safely and securely (segregated as far as is physically possible) from residents and potential purchasers visiting the sales arena.

The Site will be secured, and all visitors will be directed to the site compound to report to the Site Manager. The compound and welfare facilities will be located on the site. Pedestrian walking areas and dedicated crossing points will be provided on the site as indicated on the Construction Management Plan **("the Plan**") within Appendix B.

The Site will be secured with heras fencing and / or timber hoarding to suit the scheme and fitted with the appropriate warning and information signage. This fencing will be provided to the perimeter of the Site at the commencement of the development and until the scheme is complete.

3.4 Public Rights of Way

All rights of way crossing the site will be maintained in a safe manner. Rights of way will be kept open at all times wherever possible with fencing installed to segregate the public from the site. Where this is not possible, then a diversion of the rights of way will be applied for with the Local Authority and the right of way diverted in a safe location. In rare cases, a safe diversion route may not be possible in which case, a temporary closure will be applied for. The duration of the closure will be kept to an absolute minimum so as to minimise the disruption to the public.

3.5 Construction Site Layout and Good Housekeeping

All working areas will be kept in a clean and tidy condition;

- Adequate toilet facilities will be provided for all site staff;
- Rubbish will be removed at frequent intervals and the site kept clean and tidy;
- Food waste will be removed at frequent intervals;

- Any waste susceptible to spreading by wind or liable to cause litter will be stored in enclosed containers;
- Open fires will be prohibited at all times;
- All necessary measures will be taken to minimise the risk of fire and the contractor will comply with the requirements of the local fire authority;
- Storage sites, fixed plant and machinery, equipment and temporary buildings will be located to limit adverse environmental effects;
- All external lighting and illumination associated with the construction process will be in accordance with the guidance issued by the Institution of Lighting Engineers: "Guidance Noted for the Reduction of Light Pollution" and the CIE (International Commission on Illumination) Report: "Guide on the Limitation of the Effects of Obtrusive light from Outdoor Lighting Installations";
- To ensure that construction lighting does not affect the amenity of residents or create a statutory nuisance under the Environmental Protection Act 1990 (as amended), external lighting will be designed and positioned to:
- Provide the minimum levels necessary for safe working;
- Avoid disturbance to adjoining residents and occupiers;
- Avoid creating dazzle or distraction for drivers using adjacent highways or the railway;
- Seek to minimise light spillage or pollution;
- Ensure that excess light does not fall on sensitive ecological habitats;
- Energy efficient options for site facilities will be incorporated wherever possible. They may include energy efficient light bulbs and automatic controls, which will supplement good housekeeping such as switching off equipment when not in use;
- Adequate security will be exercised by the principal contractor to protect the public and prevent unauthorised entry to or exit from the site. Site gates will be closed and locked when there is no site activity and site security measures will be implemented; and
- Any site security cameras will be located and directed so that they do not intrude into occupied residential property.

3.6 Sales Area

The sales area for the site will be established at a point close to the site entrance. The sales area will comprise of a sales office, show home and temporary car park. The temporary car park will be utilised by all prospective purchasers visiting the site and will remain in situ throughout the development until the sale of the dwellings have been completed, upon which time the final units will be constructed in this location.

The sales area is identified on the plan.

3.7 Site Access and Parking

The access on to the sites will via Lickers Lane, an adopted road which provides for a suitable surface for all plant and deliveries, wheel washing will be done on site by use of a jet wash and road sweepers will

be used on a regular basis and as required to keep the surrounding highways clean and safe throughout the construction phase of the development.

All subcontractors and suppliers will be provided with information showing the access, egress and parking arrangements for the site as part of their works order. Confirmation of such matters will be presented through the site induction process to confirm these arrangements. No other existing roads (other than Lickers Lane) will be used for accessing the site.

The parking of all site operatives and site visitors will be provided on site where possible.

3.8 Loading and Unloading of Plant and Materials

Construction plant and materials will be delivered to the Site via the site access points with space being made available on the site for unloading of materials.

All site delivery times are to be as followed:

- Monday - Friday: 09:00 – 18:00
- No site deliveries to be carried out at school drop off and pick up times
- Saturdays: 09:00 – 13:00
- Sundays: No deliveries permitted
- Bank Holidays: No deliveries permitted

Sufficient provision will be made where possible for the safe turning of HGV's within the Site, adjacent to the site compound. If vehicles should be reversed out of the site, then qualified banks men will be used. All activity relating to loading and unloading of plant and materials will take place within the perimeter of the Site only whenever possible, and no existing roads will be affected.

3.9 Storage of Plant and Materials

All plant and materials delivered to the Site will be stored in dedicated areas within the perimeter of the Site, which will be protected by fencing.

3.10 Construction Traffic Management

Site entrances will be signposted to alert pedestrians and other road users to vehicle movements. A competent banksman will be stationed at the site entrance whenever a vehicle enters of leaves the site to ensure safe vehicular access and egress to and from the site and to ensure that pedestrian safety is not compromised by vehicle movements.

The construction Phase Health and Safety Plan will include a full traffic management plan, denoting vehicle movements, delivery locations, compound locations, car parking and pedestrian walkways.

The construction traffic into the site during peak hours will be minimised to reduce the impact of congestion on local roads.

During the construction phase, appropriate signage will be deployed to direct construction traffic to the prescribed off-site routes. The agreed routes would also be communicated to all contractors, sub-contractors and suppliers of materials and services to the site.

Site construction vehicles will only be operated/driven by those who hold the relevant certificate or licence.

All mobile plant on site will have audible reverse warning fitted.

A maximum speed limit of 10mph will be implemented on the site with warning signs displayed.

Provision would be made within the site for contractor and staff parking, within the compound area.

3.11 Wheel Washing Facilities (Subject to agreement)

Wheel cleaning facilities may be provided on Site to deal with general vehicles leaving the Site, ensuring, as much as practically possible, that soil is not transferred from the site onto the adjacent adoptable highway.

In addition, road sweepers will be employed if necessary, to ensure the existing roads leading to and from the site are kept in a clean and safe condition. During the period of build when earthworks operations are ongoing, the frequency and duration of the use of road sweepers will be increased if required.

With the existing highway being used for access and egress to site and with the measures outlined above, dirt being carried on to the nearby adopted highways will be kept to a minimum.

3.12 Control of Dust and Dirt

All site health and safety matters are managed in line with our OHSAS 18001 accreditation, including proactively managing the impact of demolition and construction works on the local community and minimising hazards wherever possible. As a considerate constructor, we are aware that dust can cause nuisance and as such, dust management forms part of our Nuisance Management Policy (VG-SOP-SHE-24) and will be managed in accordance with company policy.

Site roads will be swept and sprayed with water as necessary to prevent dust causing nuisance on and off-site. While a road sweeper will not be in permanent presence, it will visit site on a regular basis as and when required and when activities require additional visits such as muck shifting operations.

Roads around the site will be inspected on a regular basis for accumulations of dust and mud. All such accumulations will be removed as soon as possible after they have been identified.

Contractors must ensure that dust created by their work activities does not affect the health of other workers, residents and members of the public. Within toolbox talks, site-based operatives are regularly reminded of the following key points:

- Keep surfaces swept and damp down with water at regular intervals in dry weather
- Minimise drop heights into haulage vehicles and into conveyors
- Ensure cutting and grinding operations are adequately shielded or wetted
- Sheet lorries carrying dry materials off site
- Keep to site speed limits to minimise dust
- Use of wheel wash, for appropriate vehicles, if one is provided on site
- Store fine, dry materials within buildings or provide adequate protection from the wind
- Store bulk cement and bentonite in silos

- Position silos and stockpiles away from residential areas or watercourses; and
- Clean up or damp down any spillage of dry dusty materials.
- No bonfires will be permitted on site.

Site Operatives

All contractors carrying out activities such as mechanical cutting and grinding of stone, concrete and site transport that create substantial amounts of dust must ensure the following hierarchy of prevention is implemented:

- Adequate ventilation provided, or
- Water suppression system used, or
- Local ventilation system (vacuum) system used.
- Vacuums used wherever possible.

In addition, a dust mask to p3 standard must be worn by the operators of machinery creating the dust and by persons carrying out sweeping up activities.

Where the above hierarchy cannot be employed those exposed to the dust must wear Respiratory Protection Equipment (RPE) – to grade APF 40 full face respirator with filter to p3 standard.

3.13 Waste Management and Recycling

Across all our developments the Vistry Group implements a Waste Management Policy (VG-SOP-SHE-40) which is managed in accordance with company policy.

A detailed Site Waste Management Plan (SWMP) will be produced and implemented on site prior to commencement of construction works, ensuring the recycling and efficient disposal of waste. Facilities for managing waste and recycling will be provided within the perimeter of the Site.

The Site Management Team will adopt the following waste hierarchy in the development of appropriate mitigation control measures (as contained within the SWMP) to reduce the amount of waste sent to landfill and promote recycling:

- Reduce: Adopting site practices that reduce the potential to generate waste e.g., secure storage of raw materials and avoidance of over ordering practices
- Reuse: Using a product or material more than once in its original form, for its original purpose or for an alternative, with or without reconditioning e.g., reusing wood pallets or returning empty toner cartridges
- Recycle: Recovering value from a product or material that would otherwise be discarded e.g., use of secondary aggregates or chipping plant matter for landscaping purposes
- Disposal: Discarding wastes either by incineration or landfilling.

The Site Management Team will ensure that any waste is kept safely, and appropriate actions are taken to prevent it from being discharged to the external environment. The Site Management Team adopt appropriate control measures to assure the environmentally responsible storage of waste, which may include:

- Storage in designated areas
- Provision of good quality waste containers
- Protection of waste containers from damage
- Location of waste containers away from surface / foul drains and watercourses
- Provision of adequate bunding (if / where required)
- Use of covered skips, were necessary, to prevent the escape of site wastes
- Provision of adequate containers to allow for the mandatory segregation of dry recyclables i.e., glass, metal, paper, cardboard and plastic
- Labelled waste containers i.e., labels that specify their contents.

The Site Management Team will ensure all waste is appropriately segregated per its reactive characteristics and, as a minimum, non-hazardous and hazardous wastes should be segregated. All containers used to store waste will be regularly inspected, as part of HS&E site inspections conducted by site personnel and HS&E Advisors, to ensure compliance with the above requirements.

3.14 Asbestos

Asbestos and other hazardous waste should not normally be on site during the construction phase and will be dealt with during the remediation phase. Should any hazardous materials be identified or suspected, then work in this area should cease and the matter reported to the site manager. Specialist disposal teams should then be contacted and arrangements made to deal with the hazard.

3.15 Contaminated Land

Made ground was encountered in one area of the site which was found to contain elevated concentrations of several hydrocarbons. As they have been discovered in one location only, they can be considered a hotspot and should be delineated and removed from site..

3.16 Noise and Vibration

The closest noise receptors have been identified as Lickers Lane:

It is not envisaged that issues associated with noise and vibration will be encountered but industry recognised controls will be initiated.

We require that contractors must ensure that plant and machinery brought onto the Group's sites are in good working order and are suitably fitted with noise reduction measures. The assessed level of noise of the plant / machinery will be provided by the supplier / owner, and this will be made known to those who may be affected.

Where it is not practicable to reduce noise to an acceptable level, the Principal Contractor will arrange for 'Noise Protection Zones' to be established, with noise warning notices displayed. All persons entering these areas must wear suitable hearing protection. Contractors will be responsible for ensuring their workers are provided with the suitable hearing protection, and have received information, instruction and training on noise hazards.

All site operatives must cooperate with the Principal Contractor in compliance with any noise levels and periods of permitted noise activities laid down by local authorities, which are necessary to prevent noise nuisance pollution.

The following general mitigation measures would apply to potentially noisy operations:

- All plant and equipment to be used for the works would be properly maintained, silenced where appropriate and operated to prevent excessive noise. Plant will be certified to meet any relevant EC Directives/UK/BS5228 standards;
- Vehicles and mechanical plant working at the site will be fitted with effective exhaust silencers;
- All equipment on the site will be maintained in good working order to reduce extraneous noises such as breaking and squeaking;
- Equipment which is used intermittently will be shut down or throttled down during the periods not in use. This also included stationary vehicles;
- All contractors are to be made familiar with the guidance in BS 5228 (Parts 1 and 2) which would form a pre-requisite of their appointment;
- Noisy plant will be situated as far as possible from noise sensitive receptors including adjoining residential properties and ecological receptors within and surrounding the site;
- Static construction plant (e.g. compressors or crushers) would be installed such that they are wholly or partially enclosed, or located where they would not require an enclosure as they would not impose any impact;
- On-site cutting ang hammering etc. will be kept to a minimum wherever practical;
- All construction activities will be undertaken using 'best practical means' as defined in Section 79(9) of the Environmental Protection Act, in a way to reduce noise and vibration emissions and;
- Care will be taken when loading and unloading vehicles, moving materials or dismantling scaffolding etc. to reduce noise.

The proposals of the CEMP include the setting of an absolute Peak Particle Velocity (PPV) vibration level derived from BS5228-2:2009 'Code of Practice for Noise and Vibration on Construction and Open Sites – Part 2: Vibration'.

BS5228-2:2009 provides the following table which suggests the corresponding effect to a level of vibration:

Table 1: Guidance on Effect of Vibration Levels

Vibration Level	Effect
0.14mm/s^{-1}	Vibration might just be perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
0.3mm/s^{-1}	Vibration might just be perceptible in residential environments.
1.0mm/s^{-1}	It is likely that vibration of this level in residential environments will cause complaint, but can be tolerated if prior warning and explanation has been given to residents.
10.0mm/s^{-1}	Vibration is likely to be intolerable for any more than a very brief exposure to this level.

Accordingly, the following vibration criteria should not be exceeded, when measured on the floor slab of the closest occupied vibration sensitive receptors as detailed above, during construction operations:

Maximum permissible vibration level (PPV): 1.0mm/s^{-1}

It is possible to employ a number of physical and operational measures in order to reduce the potential effects resulting from the construction generated vibration, such measures can include:

- Where processes could potentially give rise to significant levels of vibration, or as a result of nearby complaints, on-site vibration levels should be monitored by a suitably qualified person; and
- The provision of cut-off trenches in order to interrupt the direct transmission path of vibrations.

During any piling operations (driven or vibro improvement):

Adherence to noise and vibration limits and operating hours will be included in contractual agreements with contractors

- Contractors will be required to ensure that all plant is operated with all specified acoustic covers in place. Regular inspections of plant will be undertaken to ensure this measure is being followed.
- Equipment will be switched off when not in use.
- Where possible, piling operations will not be undertaken in close proximity to or at the same time as other loud or vibration generating equipment.
- Equipment and work sites shall be orientated wherever possible to reduce noise emissions to sensitive receptors

3.17 External Lighting used during construction

External lighting will be utilised where required throughout the build period, however, when used:

- Site lighting will be appropriate to the work required
- Lighting will be positioned properly and directing it downwards
- Lighting will be switched off during periods of site inactivity
- Where possible, the site fencing or hoarding may be used to screen site activities.

3.18 Prevention of Pollution to Watercourses

Precautions will be taken prior to and during construction to ensure the protection of water courses and groundwater against pollution. These measures will be indicted by site investigation works and also the CIRIA report 532 ‘Control of Water Pollution from Construction Sites’ and Environment Agency pollution prevention guidelines, principally PPG6 ‘Working at Construction and Demolition Sites’.

All fuel storage will be stored within suitable and sufficient containers to ensure that spills are prevented. These containers will be situated within adequately bunded area.

All re-fuelling activities will be carried out in designated areas, by suitably qualified persons. Toolbox talks will be given to all site staff to ensure they are fully informed of re-fuelling procedures.

All site vehicles will be regularly inspected and correctly maintained to ensure that the risk of fuel leaking is minimised.

Stockpiled materials will be located away from any links to watercourses.

All liquids and solids of a potentially hazardous nature (e.g. diesel fuel oils, solvents, paints etc.) will be stored on surface areas with appropriate bunding, in accordance with the Environment Agencies Pollution Prevention and Guidance Note 2 (PPG Note 2) and with COSHH Regulations such that no contaminants are permitted to reach a water course or underlying ground and ground water.

A spill response kit will be available on site and accessible to all to control pollution incidents. The spill kits will contain absorbent pads, absorbent granules and methods of disposal of the materials used from the kits. The kits will be locatedat appropriate points around the site which are considered to be at higher risk of pollution. Any cleaning arisings from the use of kits shall be disposed of in accordance with the manufacturers instructions and any relevant regulations.

3.19 Ecologically sensitive Areas

Surveys were undertaken by E3P as part of the wider Halsnead Garden Village Scheme in which badger and Great Crested Newt surveys were also included. Vistry Partnerships commissioned a Phase 1 Ecological Appraisal. The ecological assessment was undertaken and took into consideration the offsite woodland to the north to assess its potential impact. The recommendations of the report included the following:

Birds: Trees and vegetation located around the site have the potential to support nesting birds; any vegetation clearance must be conducted outside the bird breeding season if possible, September to February. If work is to be conducted during this period, then a nesting bird survey will be required prior to the removal of vegetation. This survey must be carried out by a qualified Ecologist.

Bats: The site has been considered to have a moderate potential for supporting commuting and foraging bats, 7 activity surveys will be required. One survey per month from April to October will be required, with 2 surveyors to cover the site with at least one survey comprising of a dusk to dawn within a 24-hour period. Automatic detectors will be put in two locations to collect data on five consecutive nights per month in appropriate weather conditions for bats

The site is not within or close to any sensitive land use (e.g. Local Nauture reserve, Areas of Outstanding Beauty Ramsar Site, Area of Adopted Greenbelt, SSSI, SPA, SAC etc.).

Attention will be paid towards the defined mitigation elements detailed in the Phase 1 Ecological Habitat Assessment which has been produced for the development.

3.20 Community Responsibility

Vistry Partnerships will liaise with local residents groups and the local authority so any concerns they may have can be aired and resolved. Vistry will also make available to the general public, details of the following:

- Details of the site manager, including contact name and telephone number
- Out of hours contact telephone numbers in the event of an emergency.

3.21 Complaints Procedure

A complaints procedure will be established whereby any complaints would be made directly to the Site Manager. Contact details will be displayed on the site access gates. The details of the complaint, it's source, it's location, date and time will be recorded in line with the complaints procedures.

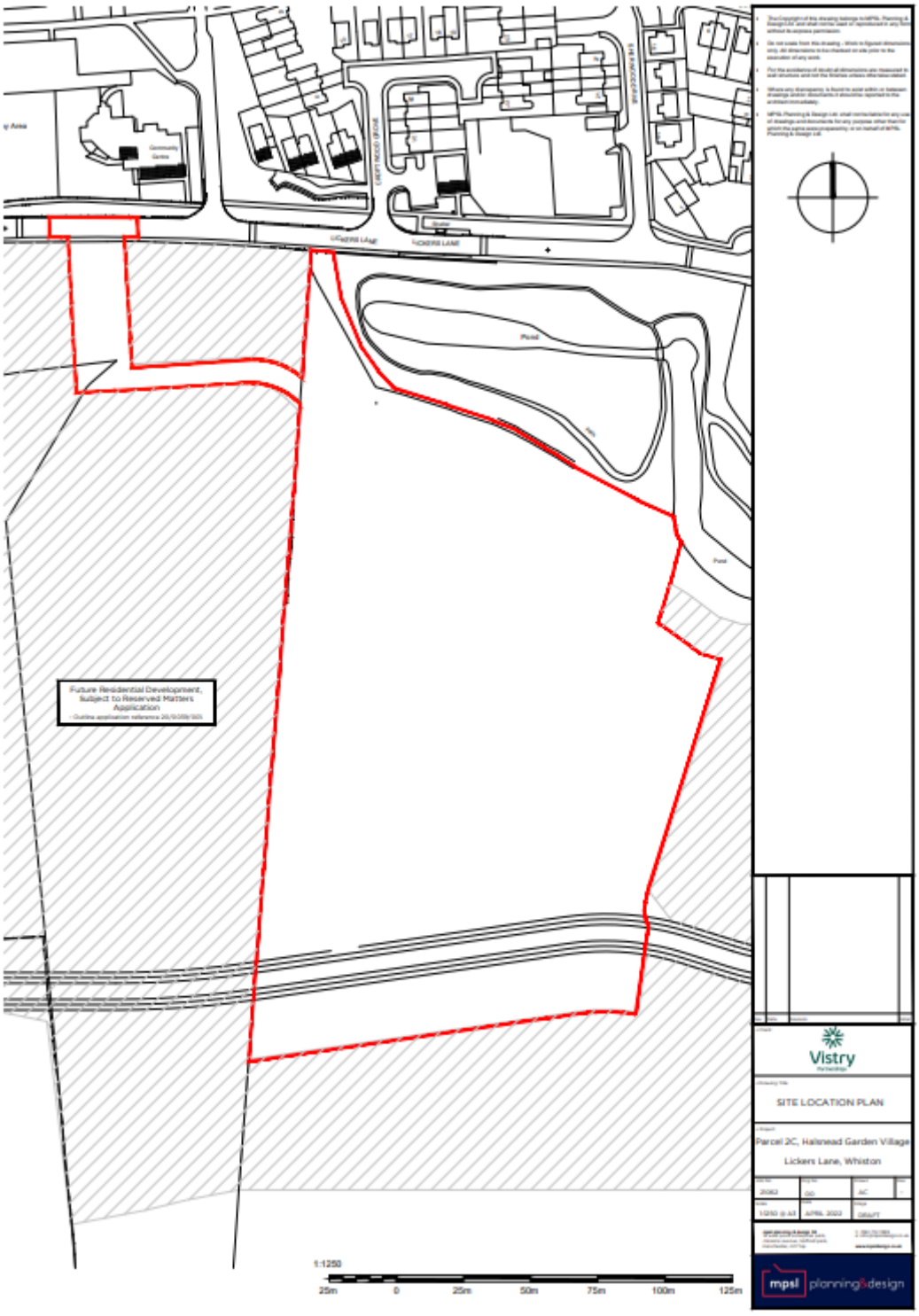
Complaints will be investigated by the site manager or Principal Contractor as appropriate. Appropriate action will be taken where necessary and records of all such complaints and actions will be maintained on-site.

Alternatively, complaints can be reported to the Vistry Partnerships customer services department of the North West office. Those wishing to make a complaint should do so by emailing customercarenw@lindenhomes.co.uk

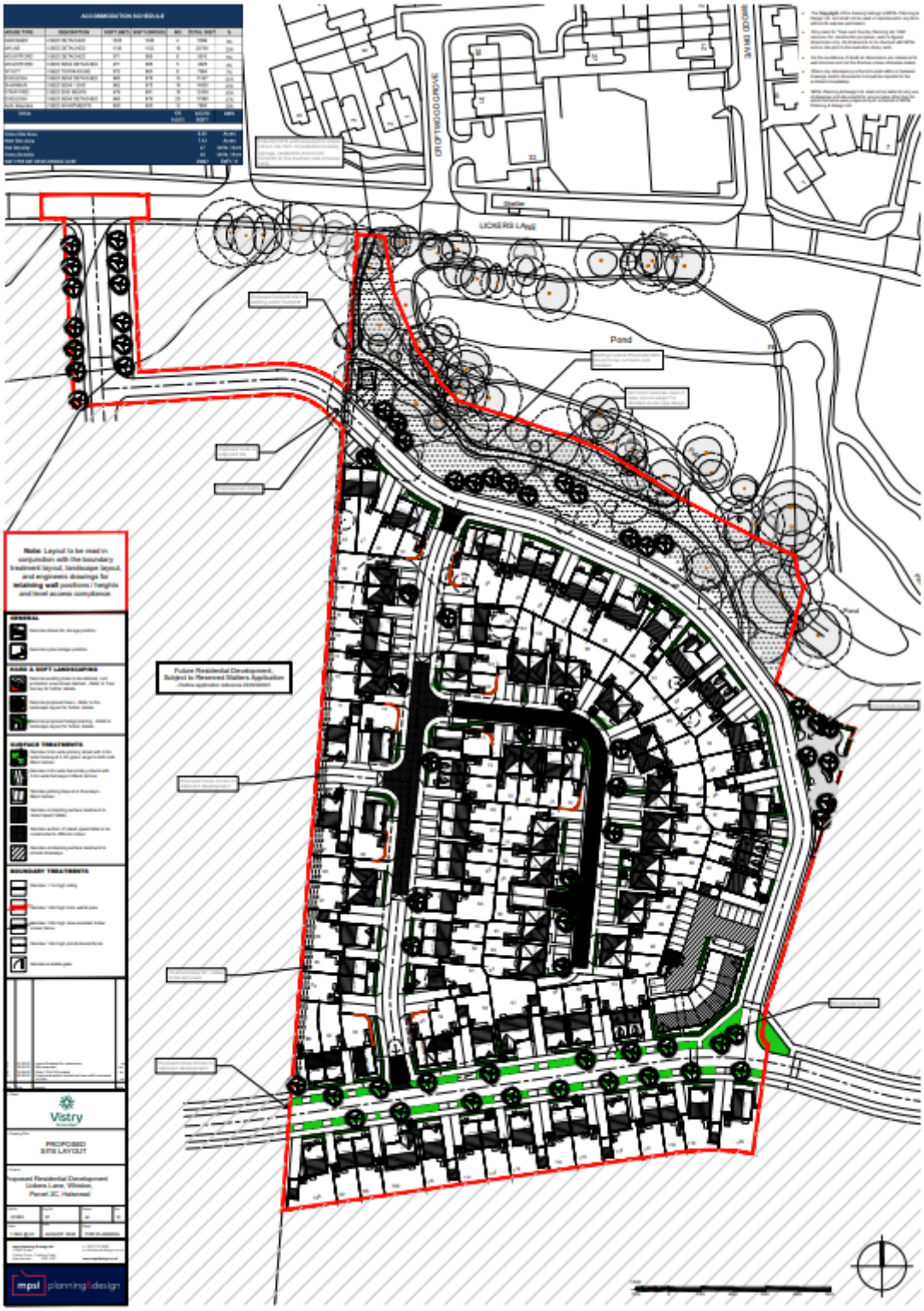
On receipt of a complaint, Vistry will:

- Acknowledge all complaints within 2 working days
- Either reply fully within 7 working days of receipt or reply within 7 working days of receipt to advise of the steps that are being taken and to give a date by which a full reply will be given.

Appendix A – Site Location Plan



Appendix B – Construction Management Plan



Appendix C – Indicative Foundation Plan (Subject to confirmation to follow)

APPENDIX 6.1
HUMAN HEALTH IMPACT STATEMENT

6.1 HUMAN HEALTH IMPACT STATEMENT

Introduction

6.1.1 This Appendix of the ES outlines how the Development effects the health and wellbeing of the community by:

- Supporting active healthy lifestyles that are made easy through:
  - the pattern of development, good urban design, good access to local services and facilities;
  - green open space and safe places for active play; and
  - is accessible by walking and cycling and public transport.
- Supporting the creation of healthy living environments for people of all ages which supports social interaction. It meets the needs of children and young people to grow and develop, as well as being adaptable to the needs of an increasingly elderly population and those with dementia and other sensory or mobility impairments.

6.1.2 The Site is located on land south of Lickers Lane, in the administrative area of Knowsley Metropolitan Borough Council (KMBC).

6.1.3 The Development being brought forward is the full planning permission for 120 new residential homes with vehicular access points off Lickers Lane, public open space, landscaping, boundary treatments and other associated works.

Scope of the Human Health Impact Statement

6.1.4 This Human Health Impact Statement will signpost where in the ES and supporting planning documents evidence is shown that the Development supports health and well-being.

6.1.5 Health parameters considered in the 'Assessment of Health Impacts' assess the performance of the Development against the 11 key health themes identified within the HUDU Health Urban Planning Checklist[i].

Identification of Health Impacts

6.1.6 The identification of health impacts during the construction and operational phases of the Development are considered in Chapter 6 (Population and Human Health) of the ES, as well as in other technical chapters throughout the ES (Chapter 10: Air Quality and Chapter 11:

Transport and Access). Furthermore, Chapter 6 includes baseline information on the current health profile of the local community.

Assessment of Health Impacts

Housing Quality and Design

6.1.7 The Development is to be built using high quality materials and has been designed with health and well-being in mind. The Development's density is sympathetic to the local area. Further information is available from the Design and Access Statement (DAS).

6.1.8 The Development will also ensure that 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.

6.1.9 These design considerations ensure that the Development is accessible and inclusive for all future residents

Access to Healthcare and Other Social Infrastructure

6.1.10 As outlined in Chapter 6 of the ES, the assessment found that the Development will lead to a demand for 284 new places for GP provision, which will require the need for an additional 0.2 full-time equivalent (FTE) GP's in the local area, due to there being no surplus places available in local GP's within the study area. Although this is not a significant effect, mitigation may include a financial contribution to increase GP provision in the study area.

6.1.11 Furthermore, the existing and future provision of primary and secondary education supports the additional residents expected from the Development. The Development will have negligible effects on primary and secondary school provision due to there being surplus available places forecasted for 2024/25 (when the Development is expected to be completed), meaning additional school demand created by the Development will be accommodated. No mitigation is therefore considered necessary.

Access to Open Space and Nature

6.1.12 As outlined in the DAS and the Landscape Plan (Appendix 3.2), the Development will include areas of open space and play space, as well as approximately 6,000m^2 of landscaping (including wildflower meadows, scrub planting, native hedge panting, and ornamental hedge planting) for the future residents. Provision of attractive open space and nature within or in close proximity to a development can promote mental and physical health and reduce morbidity and

mortality by providing psychological relaxation and stress alleviation, stimulating social cohesion, supporting physical activity and reducing exposure to poor air quality.

Air Quality, Noise and Neighbourhood Amenity

6.1.13 Poor air quality where there are high concentrations of Nitrogen Dioxide (NO_2) and Particulate Matter (PM) can have temporary effects on human health during construction on receptors that are in close proximity to the construction site.

6.1.14 Impacts on air quality and noise during construction will be appropriately mitigated through a Construction Environmental Management Plan (CEMP). Mitigation measures will include planning a Site layout so that machinery and dust causing activities are located away from sensitive receptors, ensuring an adequate water supply on the Site for effective prevention against dust and particulate matter emissions, and ensuring all vehicles entering and leaving the Site are covered to prevent the escape of materials. Chapter 10 of the ES (Air Quality) concluded that following implementation of the CEMP, all air quality effects in relation to human health are considered negligible.

6.1.15 A Noise and Vibration Monitoring Report has been submitted separately with the planning application in order to understand and mitigate the effects that the Development may have on the local noise environment. Chapter 10 (Air Quality) of the ES has also assessed operational impacts on air quality due to the Development and concluded that there would be a minor adverse (not significant) effect on human exposure to NO_2 through traffic emissions, which is not considered to be significant. All remaining air quality effects in relation to human health were considered to be negligible. The implementation of the Travel Plan will also encourage new residents to adopt more active and public modes of transport, contributing to reduced use of the private motor vehicle which will mitigate impacts of air quality from the Development.

Accessibility and Active Travel

6.1.16 Physical activity through active travel measures, such as walking and cycling can encourage healthy growth and development, maintain a healthy weight and reduce anxiety and stress.

6.1.17 As stated above, the implementation of the Travel Plan for the operational Development will set out measures to encourage more active and public modes of transport for the new residents.

6.1.18 The DAS (submitted separately with the planning application) also sets out how the Development has been designed with walking and cycling routes in mind.

Crime Reduction and Safety

6.1.19 Community safety is a concept that is concerned with achieving a positive state of well-being among people within social and physical environments. Not only is it about reducing and preventing injury and crime, but it is also about building a strong, cohesive, vibrant and participatory community.

6.1.20 The DAS outlines how the Development incorporates elements to design out crime such as sufficient lighting, highway design, and the layout of footpaths, to ensure that the risk to injury to road users is reduced to a minimum. The Statement of Community Involvement (SCI) also outlines how the Applicant has undertaken public consultation and the design of the Development has been developed with public consultation feedback in mind.

Access to Healthy Food

6.1.21 Access to healthy food corresponds with a good diet, lower risk of obesity and other diet-related chronic diseases. In addition, without access to healthy food such as local grocery stores and other food retailers, communities are missing the commercial viability that makes neighbourhoods liveable and helps local economies thrive.

6.1.22 The Development does not include the supply of commercial food places. A recommended mitigation measure could include providing new residents with a welcome pack that includes details of local farmers markets and/or on allotment details to encourage healthy food options.

Access to Work and Training

6.1.23 Both physical and mental health are generally improved through work, where there are opportunities to be challenged, socialise, build contacts and find support in the local community.

6.1.24 As outlined in Chapter 6 of the ES, the construction of the Development will produce direct employment of an average of 40 FTE workers, which will be taken up by the local community over the 35-month construction period. A further 39 FTE indirect jobs will also be supported through supply chain linkages during the construction phase.

6.1.25 Although the operational Development does not include land uses that will generate employment on-site, Chapter 6 of the ES outlines that the additional population who are economically active will have a minor beneficial effect on resident labour supply at the borough level.

Social Cohesion and Lifetime Neighbourhoods

6.1.26 Relationships are important for physical health and psychological well-being. High levels of social support can positively influence health outcomes through behavioural and psychological pathways and prevent social isolation.

6.1.27 As outlined in the DAS, the Development will connect with the existing community of Knowsley, encouraging social interaction. The Development is well located within Knowsley to provide access via pedestrian, cycling and vehicular routes into Knowsley, so will therefore integrate easily into the wider residential area.

Minimising the Use of Resources

6.1.28 The extraction and consumption of natural resources disrupts the environment and creates pollution. Reducing the use of natural resources such as fossil fuels and wood products, will protect human and environmental health.

6.1.29 The Energy and Sustainability Assessment outlines that the Development will be constructed with local resources in mind, reducing the embodied carbon impact of the Development. The CEMP (Appendix 5.1) and Chapter 5 of the ES also outline that construction waste will be managed in accordance with the waste hierarchy in the development of appropriate mitigation control measure to reduce the amount of waste sent to landfill and promote recycling.

6.1.30 In terms of waste, recycling facilities will also be provided as part of the Development in line with KMBC requirements.

Climate Change

6.1.31 Climate change can affect human health directly through death/injury in floods/hurricanes and indirectly through changes in the ranges of disease vectors, water-borne diseases, water quality, air quality and food availability.

6.1.32 The Energy and Sustainability Assessment submitted as part of the planning application outlines how the Development has been designed using Be Lean, Be Clean and BE Green measures in order to reduce GHG emissions below the Part L 2013 Baseline[ii]. This reduces the effect the Development has on GHG emissions.

6.1.33 The Development will protect biodiversity by retaining trees on-site and providing on-site mitigation, such as wildflower meadow planting, bat boxes being erected on mature trees, bird nest boxes, hedgehog houses, and a Habitat Management Plan as highlighted in Chapter 8 (Biodiversity) of the ES. The Development will result in a net loss of 17.33 habitat units,

however it is anticipated that the wider Halsnead Garden Village Masterplan will offset habitat loss and include a long-term Habitat Management Plan.

6.1.34 As shown in the Flood Risk Assessment and Drainage Strategy Report submitted as part of the planning application, the Development incorporates sustainable drainage techniques, such as rainwater harvesting on some new homes, bio-retention areas such as tree pits and rain gardens throughout the Development, and below ground cellular attenuation tanks to attenuate the majority of surcharged runoff across the Site. All these measures will reduce the likelihood of flooding on-site.

Recommendations

Construction Phase

6.1.35 An outline CEMP has been included within this ES (Appendix 5.1) and outlines how to ensure effective control of noise and air quality emissions, as well as waste management, vibration, contaminated land, lighting, watercourses and ecologically sensitive areas during the construction phase.

Operational Phase

6.1.36 Planning conditions to be attached to future planning consent to ensure plant such as heating and cooling units operate to acceptable standards, on completion of the Development.

6.1.37 The Travel Plan will include a section on safe walking routes to local parks and green spaces to encourage physical and mental wellbeing.

6.1.38 In relation to access to healthy foods, the Residents' Welcome Pack could include details of local Farmers Markets. The welcome pack could also include details on applying for an allotment.

Conclusions

Construction Phase

6.1.39 The ES shows there to be no significant adverse effects that will impact human health during construction. The CEMP will mitigate impacts that may adversely affect human health during construction to an appropriate level.

Operational Phase

6.1.40 The Development has been designed with health in mind, a range of supporting documents show how the Development addresses key health parameters such as the DAS, Landscape

Plans, Travel Plan, Noise and Vibration Monitoring Report and Energy and Sustainability Statement.

6.1.41 Overall, it is considered that the operational development would have a positive impact on health and wellbeing.

REFERENCES

[i] HUDU Planning for Health Healthy Urban Planning Checklist

[ii] Conservation of fuel and power: Approved Document L. Link: https://www.gov.uk/government/publications/conservation-of-fuel-and-power-approved-document-l

APPENDIX 7.1
LVIA SUPPORTING FIGURES AND VIEWPOINTS

APPENDIX 7.1
LVIA SUPPORTING FIGURES

JULY 2022

Land at Lickers Lane
Whiston, Knowsley

URBAN GREEN

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

0 200 400 600 800 1,000 m

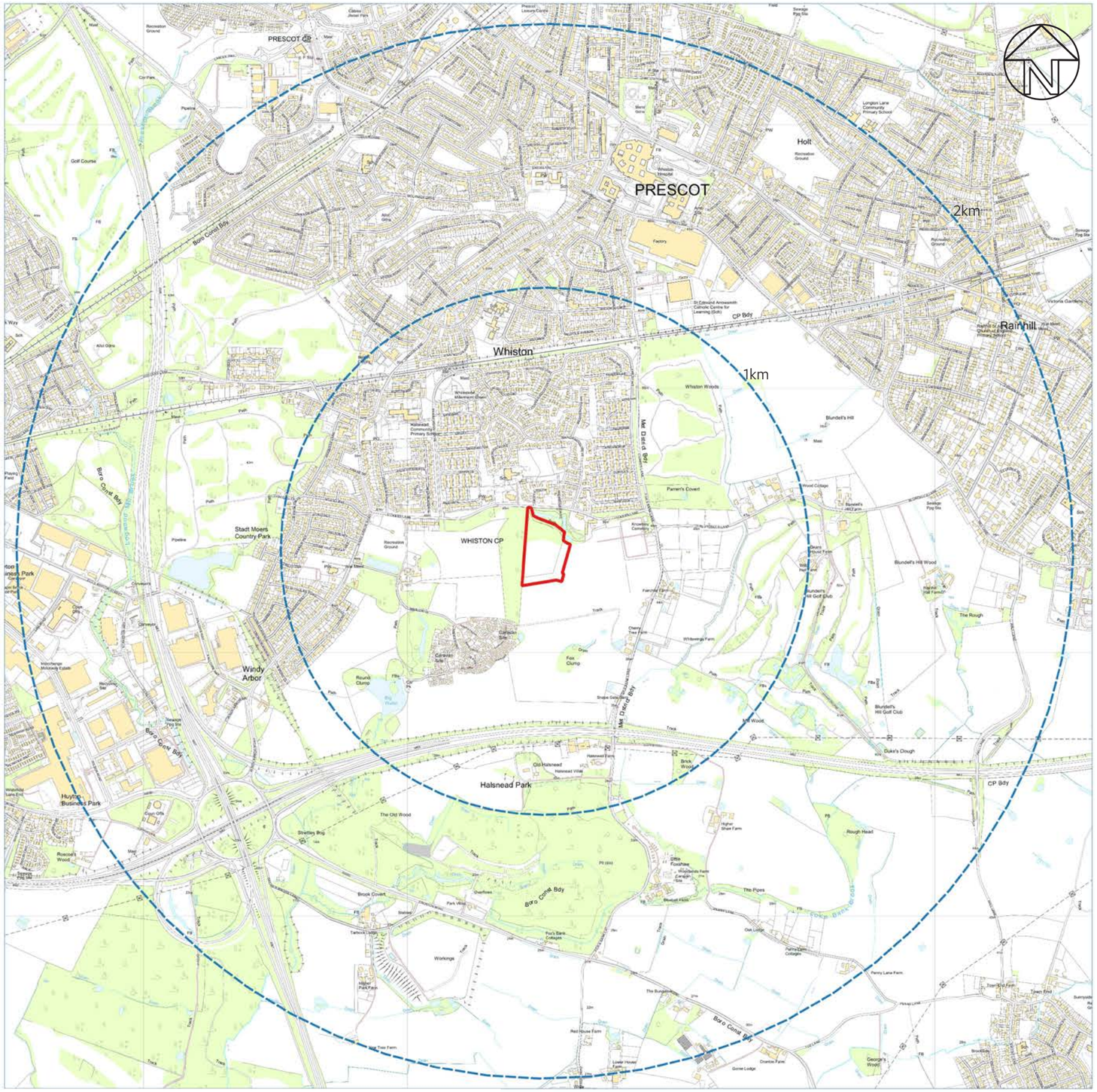


Figure 7.1 - Site Location and Study Area

Land at Lickers Lane, Whiston, Knowsley
EIA Supporting Figures - LVIA
Revision 01

URBAN GREEN

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

Heritage

- Listed Buildings
- Conservation Areas
- Scheduled Monuments
- Ancient Woodlands

0 200 400 600 800 1,000 m

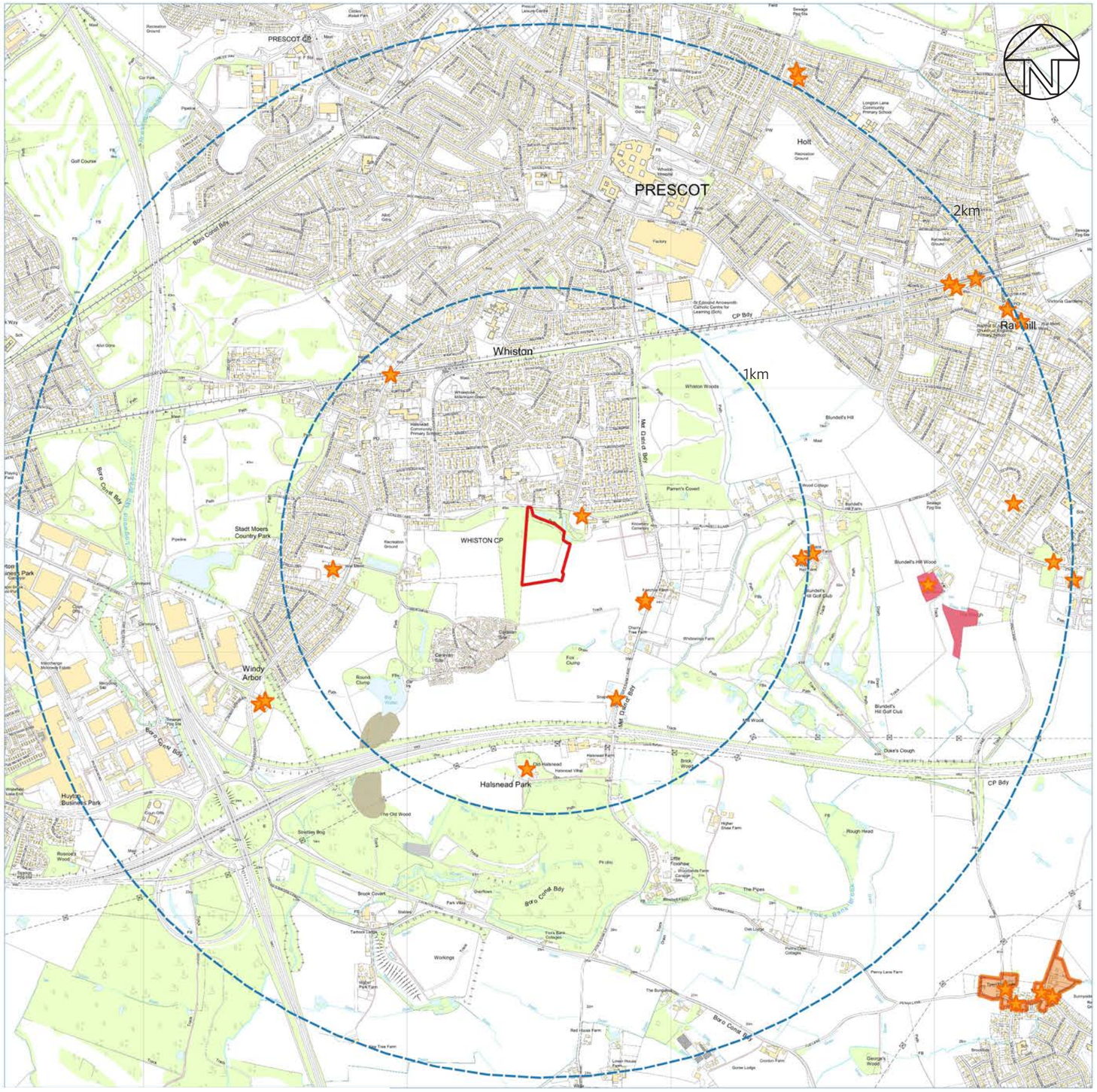


Figure 7.2 - Heritage Assets

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

PRoWs

- Footpaths

0 200 400 600 800 1,000 m

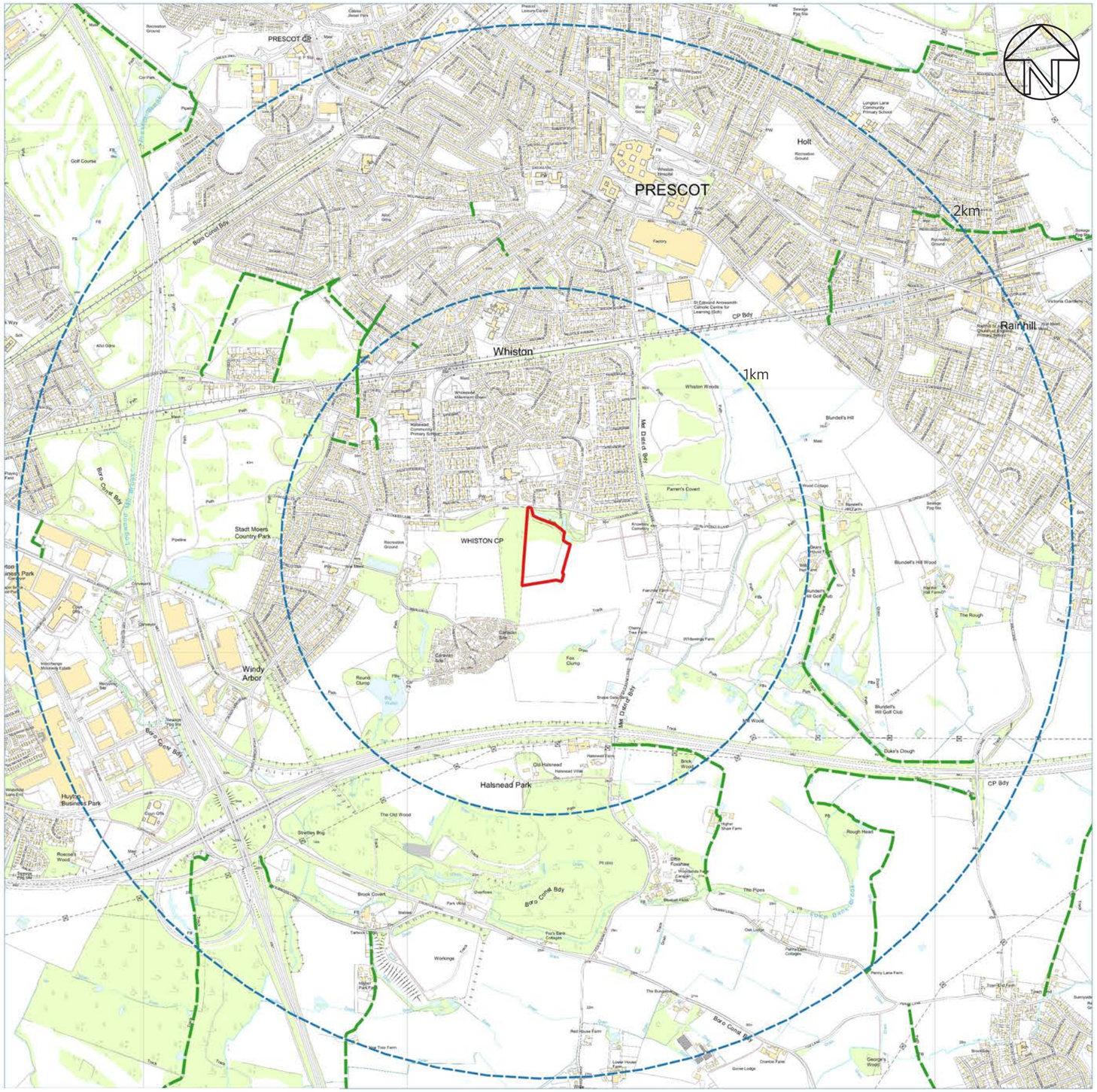


Figure 7.3 - Public Rights of Way (PRoWs)

Land at Lickers Lane, Whiston, Knowsley
EIA Supporting Figures - LVIA
Revision 01

URBAN GREEN

APPENDIX 7.1

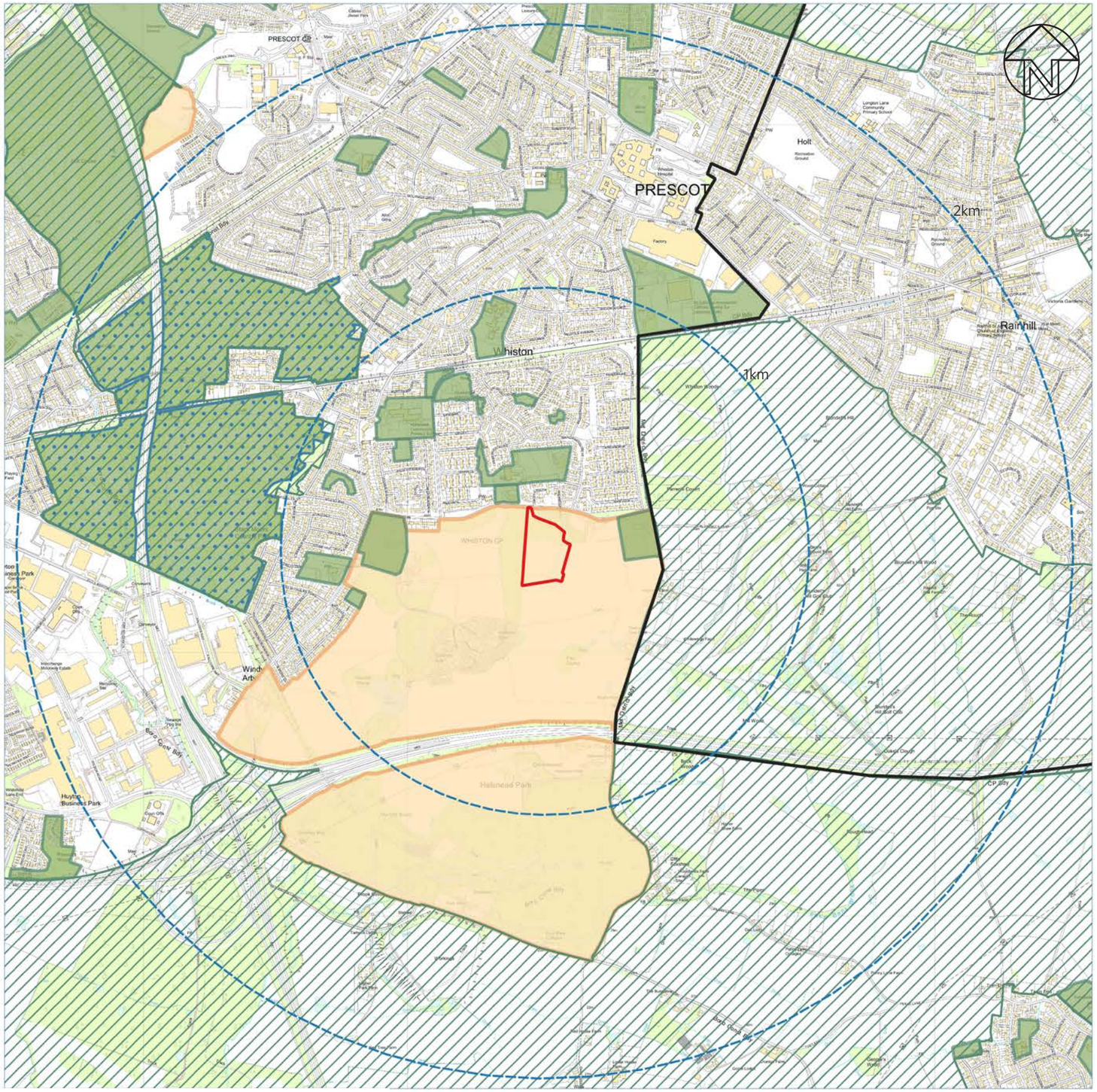
Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

Policy

- Local Authority Boundaries
- Green Belt
- Country Parks
- Urban Greenspace
- Sustainable Urban Extension



0 200 400 600 800 1,000 m

Figure 7.4 - Planning Policy

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

NCA

- NCA56 Lancashire Coal Measures
- NCA58 Merseyside Conurbation
- NCA60 Mersey Valley

0 200 400 600 800 1,000 m

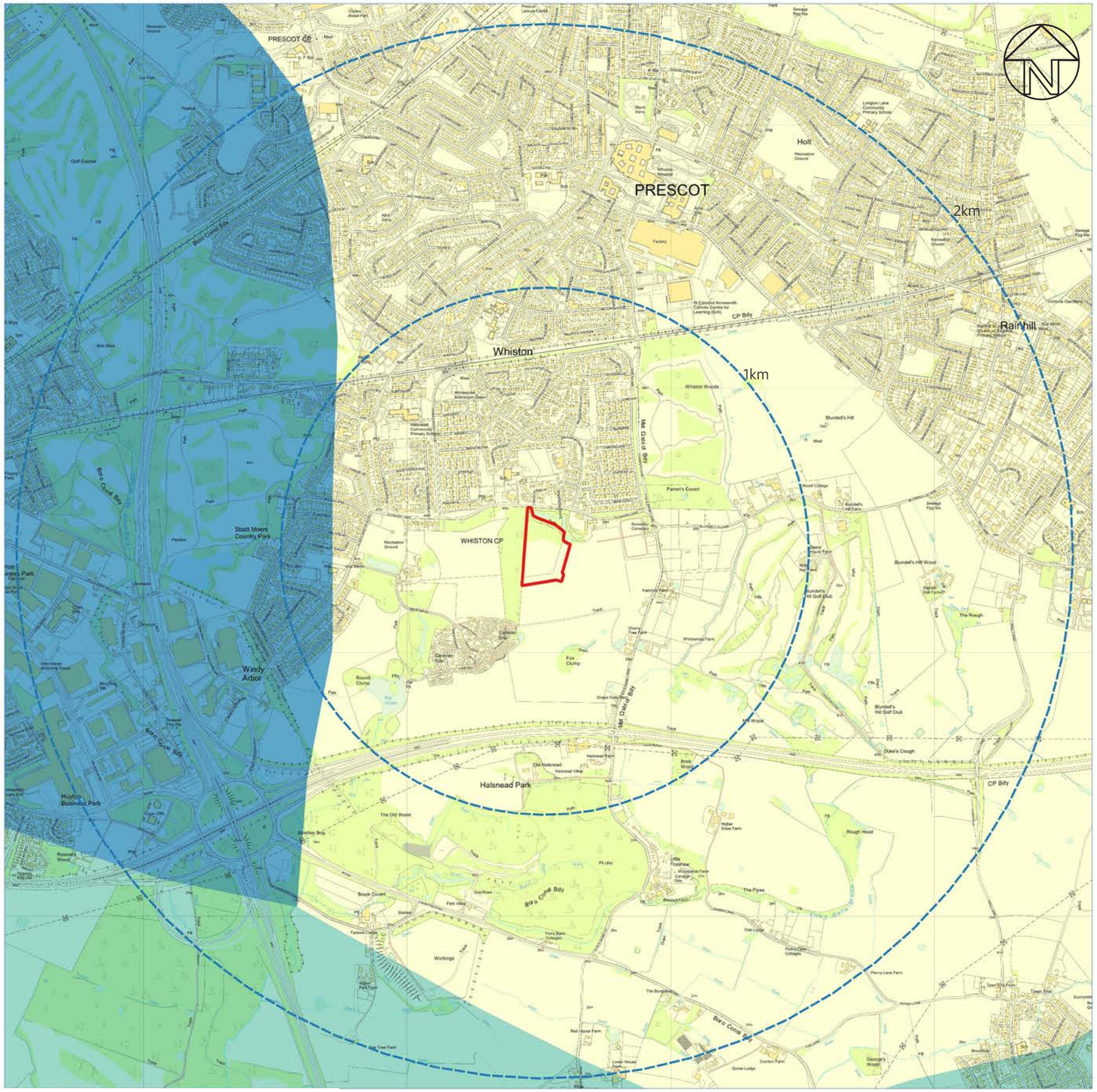


Figure 7.5 - National Character Areas

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

Approximate Site Location

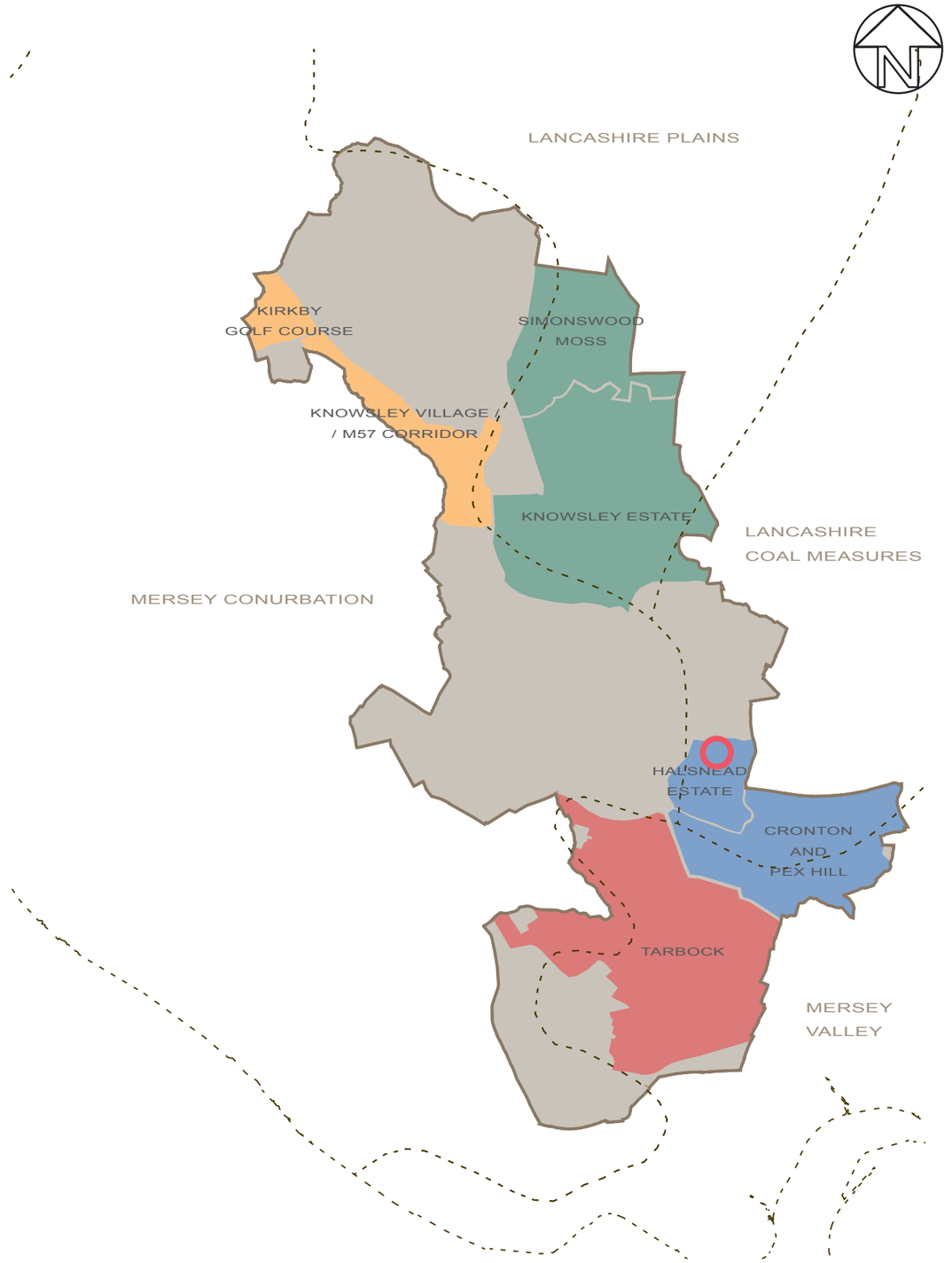


Figure 7.6 - Knowsley Landscape Character Areas - 2020 Knowsley Ltd.

Land at Lickers Lane, Whiston, Knowsley
EIA Supporting Figures - LVIA
Revision 01

URBAN GREEN

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

10m Contours

- 0
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80

0 200 400 600 800 1,000 m

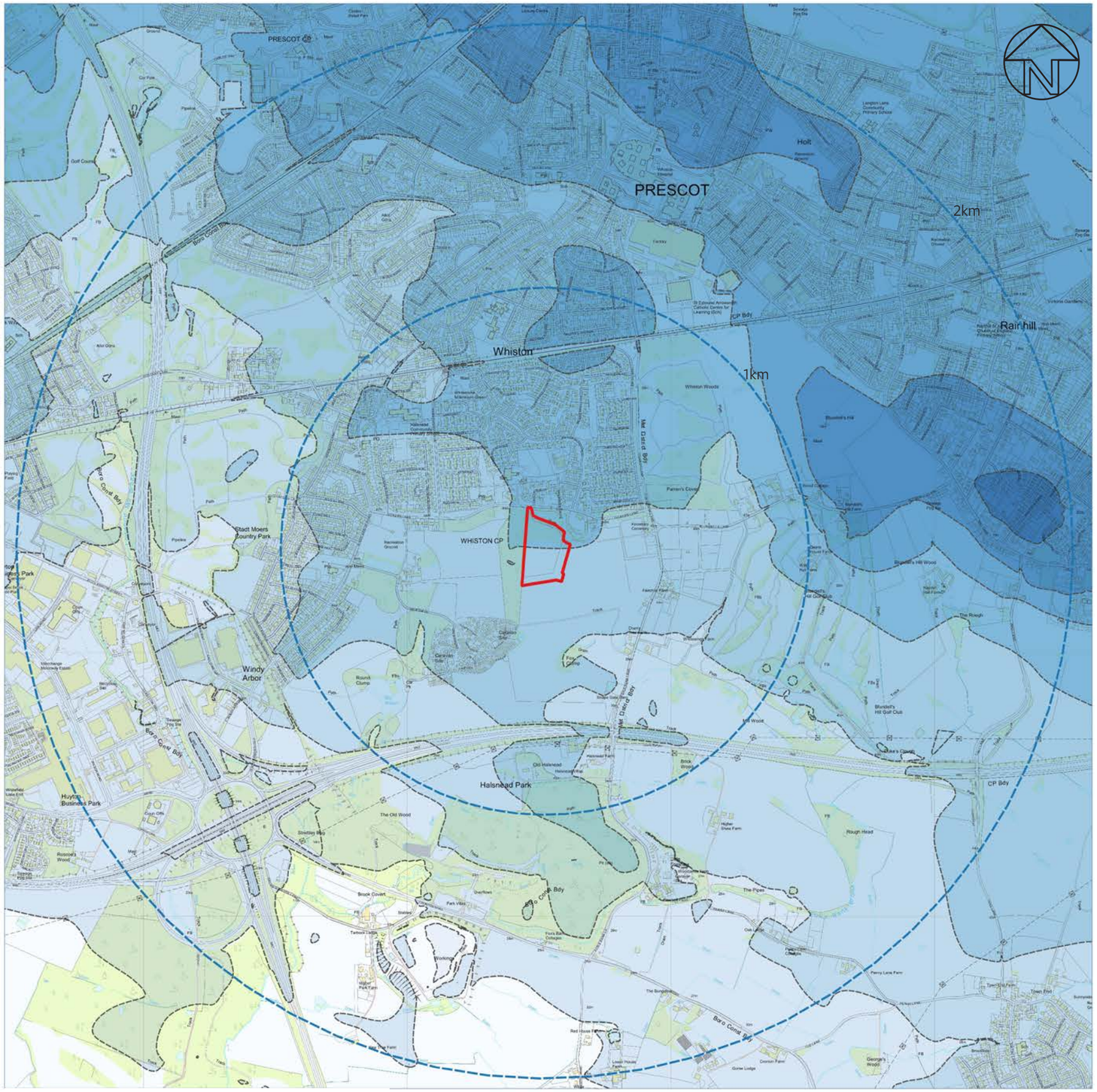


Figure 7.7 - Landform

APPENDIX 7.1

Appendix 7.1 Baseline Conditions

KEY

- Site Boundary
- 1km
- 2km

Building Heights

- 0 - 10
- 10 - 20
- 20 - 30

0 200 400 600 800 1,000 m

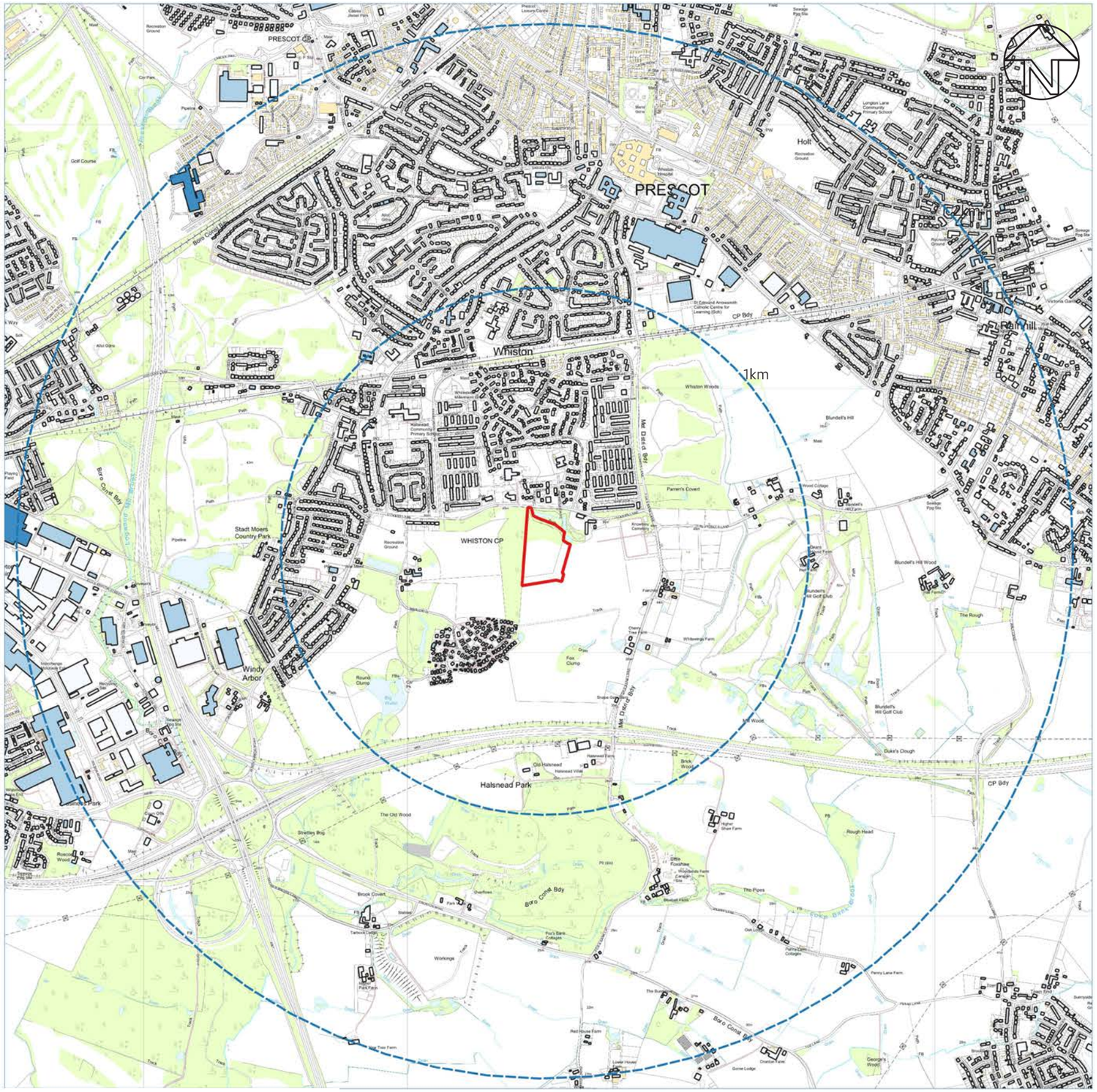


Figure 7.8 - Building Heights

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

KEY

- Site Boundary
- 1km
- Viewpoints

0 100 200 300 400 500 m

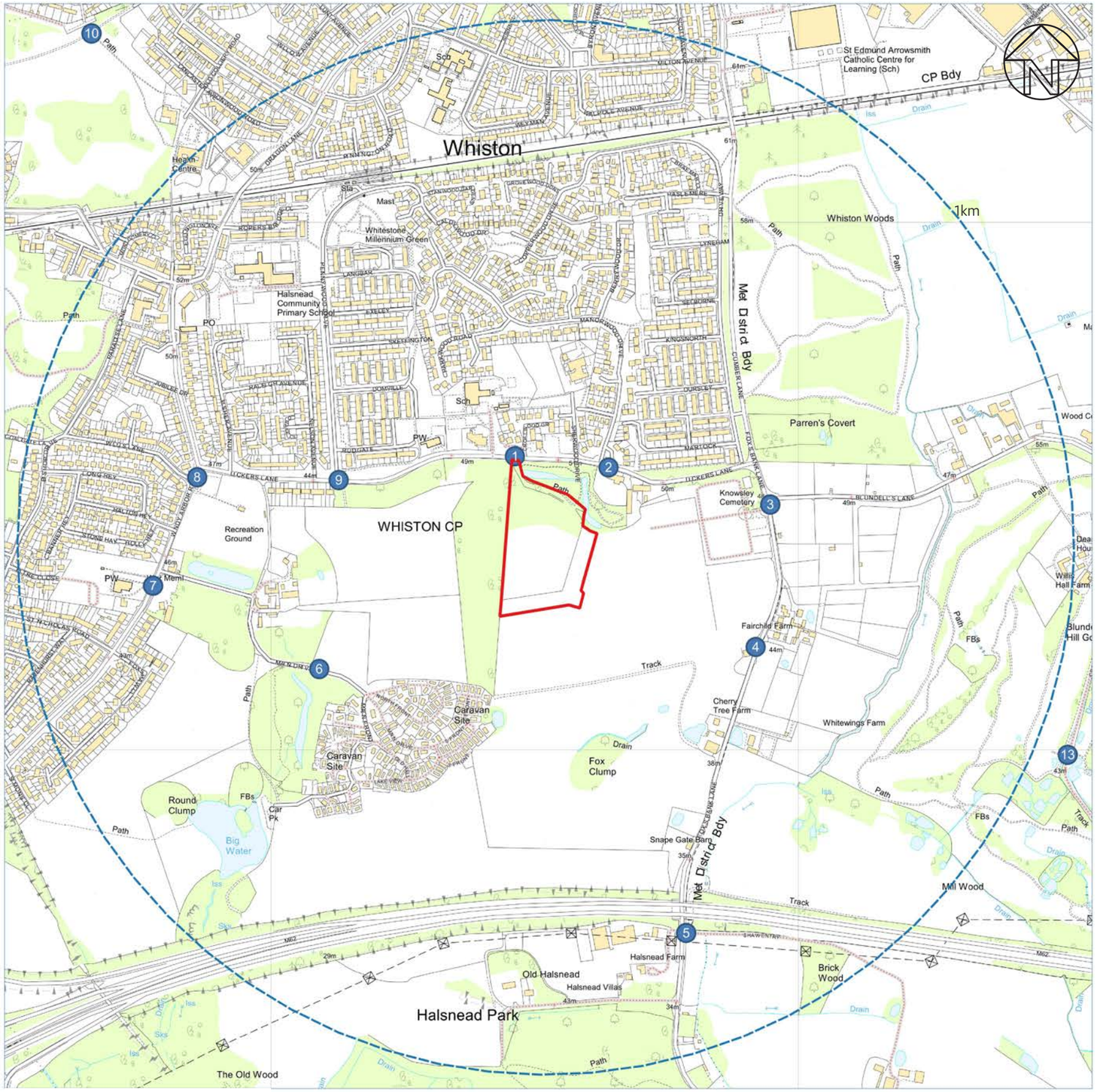


Figure 7.9 - Viewpoints, Close Range

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

KEY

- Site Boundary
- 1km
- 2km
- Viewpoints

0 200 400 600 800 1,000 m



Figure 7.10 - Viewpoints

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

Table 7.1 - Visual Receptors

Viewpoint No.	Location	Viewing Direction	Distance to Site	Visual Receptor(s)	Visibility of Site
1	Lickers Lane	South	~5m	Road users, residents of dwellings	Open views
2	Junction of Lickers Lane and Manorwood Drive	South west	~100m	Road users, residents of dwellings	Partial glimpsed views
3	Junction of Fox's Bank Lane and Blundell's Lane	West	~335m	Road users, visitors to cemetery	Views are truncated
4	Fox's Bank Lane near the North East Lodge to Halsnead Park	North west	~345m	Road users, residents of dwellings, setting of heritage asset	Partial glimpsed views
5	Junction of Fox's Bank Lane and Footpath Knowsley CR1/1	North west	~660m	Road and footpath users	Views are truncated
6	Main Drive	North east	~355m	Road users	Partial views
7	Windy Arbor Road near St Nicholas Church	East	~665m	Road users, residents of dwellings, setting of heritage asset	Views are truncated
8	Junction of Windy Arbor Road and Willis Lane	East	~590m	Road users, residents of dwellings, users of recreation ground	Views are truncated
9	Junction of Lickers Lane and Penny Wood Lane	South east	~325m	Road users, residents of dwellings	Views are truncated
10	Footpath Kowsley WH 7/1 within Stadt Moers Country Park	South east	~1135m	Visitors to park, footpath users	Views are truncated
11	Junction of Footpath St Helens 203 and Dee Road	South west	~1280m	Road and footpath users, residents of dwellings	Views are truncated
12	Footpath St Helens 201 within Blundell's Hill Golf Club	South west	~965m	Visitors to golf course, footpath users	Views are truncated
13	Footpath St Helens 201 within Blundell's Hill Golf Club	West	~965m	Visitors to golf course, footpath users	Views are truncated
14	Blundells Lane	West	~1340m	Road users, residents of dwellings	Views are truncated
15	Penny Lane	North west	~2205m	Road users, residents of dwellings	Views are truncated
16	Footpath Knowsley TA 9/1 and Dacre's Bridge Lane	North east	~1440m	Road and footpath users, residents of dwellings	Views are truncated
17	Junction of Windy Arbor Lane and Fallows Way	North east	~1115m	Road users, setting of heritage asset	Views are truncated

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

Approximate extent of Site



Viewpoint 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.

Approximate extent of Site

Dwelling on Manorwood Drive



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment



Viewpoint 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.



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment



Viewpoint 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.



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

Approximate location of Site



Viewpoint 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.

Approximate location of Site



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment



Viewpoint 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.



Viewpoint 10 - View looking south east towards the Site from Footpath Kowsley WH 7/1 within Stadt Moers Country Park. Views of the Site are truncated due to the intervening mature vegetation.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

Approximate location of Site



Viewpoint 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.

Approximate location of Site



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment

Approximate location of Site



Viewpoint 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.

Approximate location of Site



Viewpoint 14 - View looking west towards the Site from Blundells Lane. Views of the Site are truncated due to the intervening mature vegetation.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment



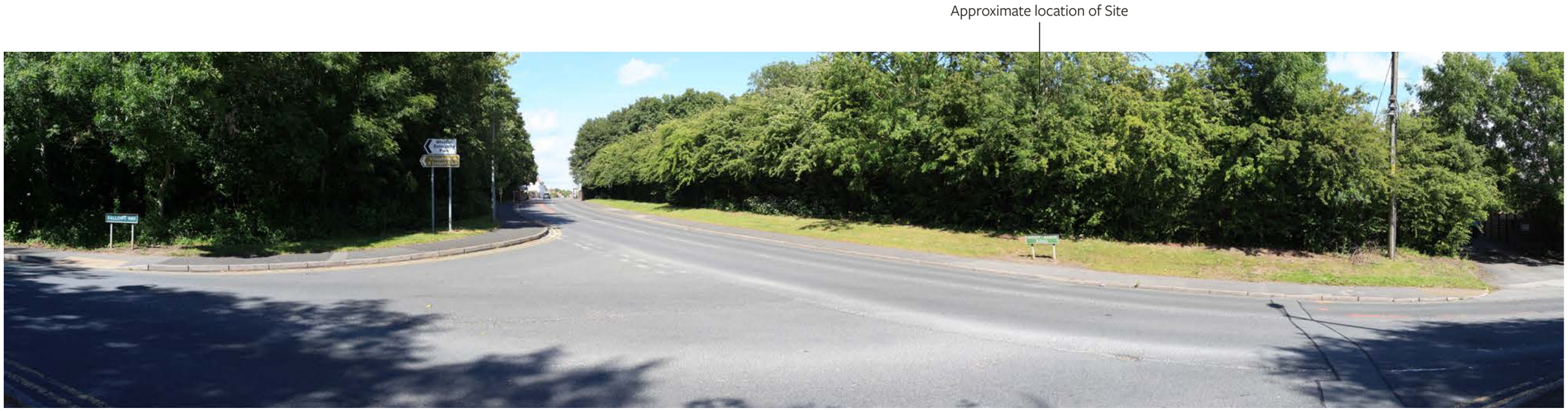
Viewpoint 15 - View looking north west towards the Site from Penny Lane. Views of the Site are truncated due to the intervening mature vegetation and landform.



Viewpoint 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.

APPENDIX 7.1

Appendix 7.1 Baseline Conditions - Visual Assessment



Viewpoint 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.

APPENDIX 8.1
PRELIMINARY ECOLOGICAL APPRAISAL

Preliminary Ecological Appraisal Report

Lickers Lane, Halsnead

Reference: 80-571-R2-4

Date: April 2022

PRELIMINARY ECOLOGICAL APPRAISAL REPORT

Lickers Lane
Halsnead

Prepared for:
Vistry Partnerships

Report Ref: 80-571-R2-4
Date Issued: 22/04/2022

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Registered in England
CRN: 807255262

QUALITY ASSURANCE

PROJECT NUMBER	80-571		
VERSION	Version 2	Version 3	Version 4
REMARKS	Final	Updated Red Line	Updated Red Line
DATE	September 2021	April 2022	April 2022
PREPARED BY	H. Morgan	H. Morgan	H. Morgan
QUALIFICATIONS	BSc (Hons) ACIEEM MIEnvSc, Senior Ecologist	BSc (Hons) ACIEEM MIEnvSc, Senior Ecologist	BSc (Hons) ACIEEM MIEnvSc, Senior Ecologist
CHECKED BY	C. Barlow	C. Barlow	C. Barlow
QUALIFICATIONS	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Principal Ecologist	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director
AUTHORISED BY	L. Faulkner	C. Barlow	C. Barlow
QUALIFICATIONS	BSc (Hons), MIOA, AIEMA, Associate Director	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director

EXECUTIVE SUMMARY

Site Address	Lickers Lane, Halsnead, Whiston, Knowsley, Merseyside, L35 3SR
Coordinates	E 347506, N 390503
Site Area	Approximately 2.6 ha
Current Site Use and Adjacent Site Use	The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south where the adjacent housing development is proposed. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further east. An active treelined railway is located approximately 550 m north of the site.
Designated Sites	The site is located within the Impact Risk Zone of Mersey Estuary Site of Special Scientific Interest, Special Protection Area and Ramsar. No impacts on the designated site is anticipated as a result of development, based on its distance from the site and the small scale of the development. However, during consultation with Knowsley Council, recreational pressure from residential development has been identified as a Likely Significant Effect alone and in-combination within the Liverpool City Region. Therefore, it is recommended that information is 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). Woodland, Sandfield Park Local Wildlife Site (LWS) lies adjacent to the site boundary. Precautionary Working Methods have been recommended to ensure there will be no impact on LWSs within the wider area as a result of the development.
Survey Results	The site was found to comprise broadleaved woodland, dense scrub, semi-improved grassland, tall ruderal, arable and scattered trees. The site was found to have the following potential ecological constraints: • T38 and T62 had High bat roosting potential. • T25 and T61 had Low bat roosting potential. • Potential foraging opportunities for bats within the dense scrub and broadleaved woodland. • Opportunities for nesting birds within the broadleaved woodland and dense scrub. • Opportunities for ground nesting birds within the semi-improved grassland and arable field. • Evidence of badger using the site for foraging. • Potential presence of hedgehog within the dense scrub and broadleaved woodland.

Conclusions	The following further surveys are recommended: - Three Nocturnal Bat Surveys on T38 and T62 if they are to be removed (May to September). The following mitigation is recommended: - Soft felling of T25 and T61 under supervision of an ecologist if they are to be removed. - Updated badger walkover prior to start of works. - Precautionary Working Methods for badger - Common amphibians are to be removed by hand from the working area during the clearance phase. - Lighting strategy produced and areas identified as being suitable for foraging bats maintained as dark areas. - If any vegetation requires removal, it should be removed outside of the breeding bird season (March to September inclusive). If this is not possible, a nesting bird check should be undertaken by a suitably qualified ecologist up to 24 hours before works commence. If a nest, or nest in construction, is located, then a stand-off distance should be maintained until the young have fledged. A check prior to clearance works within the semi-improved grassland or arable field should also be undertaken for ground nesting birds should the works take place in the nesting bird season. - During site clearance, any woodland, scrub or associated debris piles that require removal, should be demolished under ecological supervision to ensure no sheltering hedgehogs are impacted by the works. It is recommended that vegetation clearance takes place outside of December-March to avoid impacting hibernating hedgehogs. - Pre-commencement check for young brown hare prior to start of works. - Eradication of rhododendron and Japanese knotweed prior to start of works. A gain in biodiversity will likely be required on-site. If this cannot be achieved on-site, a conservation offset payment, or off-site compensation may be required.

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1. INTRODUCTION

1.1. BACKGROUND

E3P were commissioned by Vistry Partnerships to undertake a Preliminary Ecological Appraisal at Lickers Lane, Halsnead, hereafter referred to as "the site".

This report has been prepared by Huw Morgan BSc (Hons) ACIEEM, Senior Ecologist at E3P, who has seven years of professional experience as an ecological consultant. Huw has undertaken multiple Preliminary Ecological Appraisals and condition assessments for various projects across the UK. Huw also holds a class 2 great crested newt Natural England licence, a Natural England barn owl survey class licence, class 1 bat licence and has key experience with birds and plants.

1.2. PREVIOUS SURVEYS

Surveys were undertaken by Cheshire Ecological Services Ltd in 2017 and 2020 as part of the wider Halsnead Garden Village scheme in which the badger (*Meles meles*) surveys and great crested newt (*Triturus cristatus*) surveys included the same survey area as the site. The results of the surveys are detailed within the Halsnead Garden Village Biodiversity Statement (report reference: 31631/A5/ES2020) and detailed great crested newt surveys results are within Appendix 10.13, Great Crested Newt Survey (report reference: 1349/06/20/LO).

Two waterbodies within 250 m of the site returned negative results for great crested newts and no evidence of badger was recorded within the survey area or within 30 m of the site during the 2020 surveys.

1.3. PROPOSED DEVELOPMENT

Detailed development proposals include the construction of an access road to a proposed housing development to the south of the site.

1.4. SITE LOCATION

The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south where the new housing development is proposed. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further east. An active treelined railway is located approximately 550 m north of the site. Please refer to Figure 1.1 for the approximate site location.

FIGURE 1.1 APPROXIMATE SITE LOCATION



1.5. OBJECTIVES

The objectives of the Preliminary Ecological Appraisal are as follows:

- Identify the major habitats present.
- Ascertain the presence or potential presence of any legally protected species and habitats.
- Recommend any further surveys or mitigation that may be required.

The Preliminary Ecological Appraisal comprises a desk study and site walkover. This survey has been completed as a baseline assessment of the site, and as such please see the end of the report for further surveys and mitigation proposed.

2. METHODOLOGY

2.1. DESKTOP STUDY

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.
- Local data records, including The Merseyside BioBank (MBB), the biodiversity information service for North Merseyside, which covers Liverpool, Knowsley, Sefton and St Helens.

The desk study data was taken from the Biodiversity Statement produced by Cheshire Ecological Services in 2020, as the data covers the same search area as the site 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.

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.

2.2. VEGETATION AND HABITATS

A Preliminary Ecological Appraisal of the proposed development site was undertaken by Huw Morgan BSc (Hons) and Rhian Keating on 26th August 2021. The weather was warm and sunny with light winds.

An updated Preliminary Ecological Appraisal was undertaken on 14th April by Huw Morgan to survey the updated boundary of the proposed development site. The weather was overcast with light winds.

The walkover survey was undertaken to the standard methodology as detailed by the JNCC Handbook for Phase 1 Habitat Survey, 2010. The assessment follows the methodology as per “Guidelines for Preliminary Ecological Appraisal” (CIEEM, 2017).

A vegetation and habitat plan has been produced for the proposed development site and the immediate surrounding area (please refer to Appendix I). The mapping is based on the Joint Nature Conservation Committee Phase I Habitat Survey Methodology (JNCC, 2010).

Searches were made for uncommon, rare, and statutorily protected plant species, those species listed as protected in the Wildlife and Countryside Act 1981 (as amended) and species which are indicators of important and uncommon plant communities. All plant nomenclature follows Stace (2019).

Searches were carried out for the presence of invasive species, including those listed on the revised (April 2010) Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) including but not limited to, Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*) and giant hogweed (*Heracleum mantegazzianum*).

2.3. FAUNA

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.

2.4. PRELIMINARY ROOST ASSESSMENT

The Preliminary Roost Assessment (PRA) was undertaken by Huw Morgan on 26th August 2021. Huw holds a valid Natural England Class 1 Survey Licence (2021-53691-CLS-CLS).

The survey involved undertaking a systematic search of the trees, searching for signs of bats, or spaces where bats would be able to access. The methodology followed that described in Bat Surveys for Professional Ecologists, 3rd Edition (Collins, 2016).

The trees were categorised for their bat roosting potential as described in Table 2.1 in accordance with Collins (2016).

TABLE 2.1 BAT ROOSTING POTENTIAL CLASSIFICATION OF TREES AND STRUCTURES

CATEGORY	DESCRIPTION
NEGLIGIBLE	A tree with no roosting features present or of an age/species that would not support roosting bats.
LOW	A tree with one or more potential roost site. However, the potential roost sites do not provide suitability for large numbers of bats (i.e., for maternity or hibernation) and would only be used on an occasional basis.
MODERATE	A tree with one or more potential roosting feature which could support bats but is of a suitability meaning that it would be unlikely to support a roost of high conservation status.
HIGH	A tree with several potential roosting features which could support large number of bats on a regular basis and for longer periods of time. The tree or structure would have suitability to support maternity or hibernation roosts.

The survey was undertaken utilising suitable binoculars and ladders to access all areas where safe to do so.

2.5. SURVEY LIMITATIONS

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, 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.

3. SURVEY RESULTS

3.1. SITE CONTEXT

The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further to the east. An active treelined railway is located approximately 550 m north of the site. The site is expected to provide some value to local wildlife, with the broadleaved woodland and dense scrub expected to offer nesting or roosting opportunities for passerine birds and bats. Residential housing extend to the north of the site which are anticipated to be of limited value for local wildlife.

Adjacent to the north-east of the site is Sandfield Natural Play Centre, providing some ecological value. Beyond this to the south is an area of grassland, scrub, and woodland, used for agriculture, which connects to the M62 approximately 700 m south of the site boundary. This habitat is expected to act as a resource for a range of local fauna and has the potential to provide roosting and nesting opportunities for bats and birds.

An active treelined railway is located approximately 550 m north of the site, running east to west. A treelined footpath crosses the railway line and continues northwest, with residential housing and roads running adjacent to the railway line. These may act as an important commuting feature for local wildlife including birds and terrestrial mammals.

Two waterbodies were identified within 250 m of the site boundary located approximately 20 m north and 25 m east of the site respectively.

3.2. DESIGNATED SITES

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.

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.

3.3. HABITATS

The main habitats encountered during the survey are described in the following subsections. Please refer to Appendix I for the Phase 1 Habitat Plan.

3.3.1. 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*).

PLATE 1	SHOWING BROADLEAVED WOODLAND



3.3.2. 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.

PLATE 2	SHOWING DENSE SCRUB



3.3.3. 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 obstusifolius*), 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*).

PLATE 3 SHOWING SEMI-IMPROVED GRASSLAND



3.3.4. 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.

PLATE 4	SHOWING TALL RUDERAL



3.3.5. 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.*).

PLATE 5	SHOWING SCATTERED TREES



3.3.6. ARABLE

A section of arable field was present along the southern and eastern site boundary. The field was planted with a rye cover crop.

PLATE 6	SHOWING ARABLE FIELD



3.3.7. HARDSTANDING

Lickers Lane, a hardstanding road with associated pavements formed the northern boundary of the site.

PLATE 7	SHOWING HARDSTANDING



3.4. PROTECTED AND NOTABLE SPECIES

3.4.1. SPECIES DISCOUNTED FROM ASSESSMENT

White-clawed crayfish (*Austropotamobius pallipes*) has been discounted from assessment as no suitable aquatic habitats were located on-site or within proximity to the site.

Hazel Dormouse (*Muscardinus avellanarius*) mainly occur in southern counties, especially in Devon, Somerset, Sussex, and Kent. There are few recorded localities north of the Midlands, though they are present in parts of the Lake District and in scattered Welsh localities (Matthews et al, 2018). The species are not generally known to be present within the Merseyside area and as such, the species are reasonably discounted from assessment.

3.4.2. AMPHIBIANS

Consultation with MBB identified a single record of great crested newt 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.

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 great crested newts are absent within the site. Therefore, great crested newts have been scoped out of further assessment.

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.

3.4.3. BATS

Numerous records of bats were located within the search area. Records included common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), Daubenton's bat (*Myotis daubentoniid*), 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.

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 (report reference: 80-571-R1-3) on the trees within and adjacent to the site and the tree numbering from this report is in line with the current 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. A detailed description of the trees and associated Preliminary Roost Assessment can be found in Appendix II.

The broadleaved woodland and dense scrub are likely to act as a foraging resource due to the attraction of invertebrate prey. It is anticipated that only a small number of trees located on the edge of the woodland will be removed to facilitate the development, with the majority of the woodland being retained. Therefore, it is not considered that the proposed works will have a significant impact on foraging habitat for bats within the site.

It is anticipated that there will be some light disturbance from the proposed residential to the south of the site and any lighting proposed within the site which may influence the local bat population (Downs et al, 2003) as foraging and commuting behaviour may be affected (BCT, 2018). Specifically, on slow-flying species (i.e., brown long-eared bats and myotis species) which are less tolerant to light. It should be acknowledged however that artificial lighting has benefits for more light tolerant species (i.e., pipistrelles) as many species of night flying insects are attracted to light, which bats will predate on.

3.4.4. BADGERS

Numerous records of badger 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.

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.

3.4.5. OTTER AND WATER VOLE

Records of water vole (*Arvicola amphibious*) were identified within the search area, however, no records of otter (*Lutra lutra*) were returned. No aquatic habitats were identified on-site or within proximity to the site, therefore, otters and water voles can be reasonably discounted from further assessment.

3.4.6. OTHER TERRESTRIAL MAMMALS

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.

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.

3.4.7. NESTING BIRDS

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*), dunnock (*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*).

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 dunnock were recorded.

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.

The site is 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.

3.4.8. REPTILES

No recent records of reptiles were identified within the search area. A single historic record of grass snake (*Natrix natrix*) was returned from Stadt Moors Country Park located approximately 1 km west of the site. The site was found to provide limited value for reptiles, given the site lacked a mosaic of habitats with limited structure and habitat quality to support the species group. As such, the presence of reptiles within the site is reasonably discounted.

3.4.9. INVERTEBRATES

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*).

Due to the site comprising lacking floristic diversity, notable invertebrates are not anticipated to be present on-site.

3.5. INVASIVE PLANT SPECIES

Multiple records of invasive species were recorded within the search area including Canadian waterweed (*Elodea canadensis*), duck-potato (*Sagittatis latifolia*), floating pennywort (*Hydrocotyle ranunculoides*), Japanese knotweed, Japanese rose (*Rosa rugosa*), monbretia (*Crocosmia x crocosmiiflora*), rhododendron and yellow archangel (*Lamium galeobdolon*).

During the survey, large areas of rhododendron were present within the broadleaved woodland. Japanese knotweed was also located outside the site boundary, adjacent to the western boundary and approximately 35 m east of the site.

4. ECOLOGICAL CONSTRAINTS AND MITIGATION

4.1. DEVELOPMENT PROPOSALS

Detailed development proposals include the construction of an access road to a proposed housing development to the south of the site.

4.2. DESIGNATED SITES

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. 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.

Considering the reasons for its designation, it is deemed highly unlikely that the development will have an impact on the Mersey Estuary due to the small scale of the site, distance present between the site and the SSSI and the anthropogenic barriers, such as the bult up areas of Liverpool and Widnes, that lay between them. Furthermore, consultation with MAGIC identified that the proposed development does not meet the requirements that would justify further consultation with Natural England for the development to proceed.

During consultation with Knowsley Council, 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 Plans5&6 as Medium-High risk to qualifying features of the European sites. Therefore, it is recommended that information is 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 sites.

Woodland, Sandfield Park LWS was 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.

Due to the presence of the LWSs and ancient woodland, there is the potential for the LWSs to be adversely affected by the proposed 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.

The following Precautionary Working Methods should be adhered to for all works on site:

- A Toolbox Talk will be given to all contractors on-site by the 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 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.

4.3. HABITATS

The site comprised habitats that were found to be widespread within the local area; however, they did contain value for wildlife such as bats, birds, badgers and hedgehogs. The tall ruderal is of lowest value for wildlife, with the broadleaved woodland and scattered trees comprising the areas of highest value.

4.3.1. BROADLEAVED WOODLAND

Broadleaved woodland is listed as a Biodiversity Action Plan (BAP) habitat, therefore, it is recommended that, where possible, trees are retained and protected through development. It is anticipated that some trees may require removal to facilitate development, and where this is needed, new landscape planting will be introduced to mitigate the loss.

It is recommended that the landscape planting comprises native species and species known to be of value for the attraction of wildlife. This will include fruiting and flowering species. Species deemed suitable for this development could include berry-bearing native species such as:

- Hawthorn.
- Rowan.
- Holly.
- Whitebeam (*Sorbus aria*).
- Spindle (*Euonymus europaea*).
- Dog rose (*Rosa canina*).
- Guelder rose (*Viburnum opulus*).
- Elder.

All planting should be from a trusted pest-free source and, where possible, be of local provenance.

Any trees within the site or boundary, to be retained, are to be appropriately protected during the construction phase. Temporary protective demarcation fencing will be used to protect the trees. The fencing must extend outside the canopy of the retained trees and must remain in position until the end of development to ensure protection is provided throughout the construction phase.

The fencing will be in accordance with BS 5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations*.

4.4. PROTECTED AND NOTABLE SPECIES

4.4.1. AMPHIBIANS

The site may support small numbers of common amphibians within the broadleaved woodland, tall ruderal and dense scrub habitats on-site. It is recommended that during the clearance phase of works, any common amphibians encountered be moved by hand, away from construction activities.

4.4.2. BREEDING BIRDS

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.

If any vegetation requires removal, it should be removed outside of the breeding bird season (March to September inclusive). If this is not possible, a nesting bird check will be undertaken by a suitably qualified ecologist up to 24 hours before works commence. If a nest, or nest in construction, is located then a stand-off distance will 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. A check prior to clearance works within the semi-improved grassland or arable field should also be undertaken for ground nesting birds should the works take place in the nesting bird season.

Post-development, landscape planting, as detailed in Section 4.3.1, should be introduced to mitigate the loss of any trees removed to facilitate the development.

4.4.3. BATS

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.

Therefore, it is recommended that the proposed lighting plan considers the habitats of highest importance and maintains the habitats adjacent to the site as dark areas. It is recommended that any security lighting during construction is appropriately placed to avoid being directed at retained habitats.

Two trees identified as having Low bat roosting potential (T25 & T61) will require soft felling under the supervision of an ecologist if they are to be removed.

It is recommended that any planting within the site be of native fruiting/flowering species in order to enhance the site for foraging bats post-completion. Bat boxes could be installed throughout the site post-construction to enhance the site for the species.

4.4.4. BADGERS

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. It is recommended that an updated site walkover prior to 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.

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 proposed 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.

It is not anticipated that the development will have a negative impact on badgers within the local area.

4.4.5. HEDGEHOGS

During site clearance, the scrub and debris associated with the broadleaved woodland and dense scrub, should be demolished by hand (if 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.

4.4.6. BROWN HARE

Brown hare are a UK Biodiversity Action Plan (UKBAP) species. The habitats on site are common within the wider landscape, therefore, impacts on the local population are anticipated to be low. It is recommended that 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), is undertaken

4.4.7. INVASIVE PLANT SPECIES

Rhododendron was identified within the site during the site walkover. Japanese knotweed was also identified adjacent to the western site boundary and approximately 35 m east of the site. As such, it is recommended, prior to the development, that these species should be eradicated following the most current guidance set out by the Environment Agency by a qualified contractor.

5. FURTHER SURVEYS

5.1. BATS

A total of four trees were found to have bat roosting potential. Two of the trees were assessed as having High potential for roosting bats (T38 & T62), therefore, three nocturnal surveys are required on the trees between May and September, with two surveys between May and August if they are to be removed. The surveys would be valid for two years to inform a planning application. If bats are identified roosting within the trees, three surveys would be required to characterise the roost and a European Protected Species Licence will be required with up-to-date surveys from the survey season prior to the application submission.

5.2. TABLE OF FURTHER SURVEYS

Please refer to Table 5.1 for a summary of further surveys required to inform a planning application.

TABLE 5.1 FURTHER SURVEYS RECOMMENDED

SURVEY TYPE	TIMESCALES
Bat Tree Surveys on T38 and T62 (if they require removal)	Three surveys between May and September (inclusive), with two between May and August.

6. BIODIVERSITY NET GAIN

The scheme should strive to achieve biodiversity net gain, as per "Biodiversity Net Gain; Good Practice Principles for Development" CIEEM, CIRIA, IEMA (2016). Full details of this and a calculation of net gain could be completed after detailed landscape plans have been prepared. An initial draft calculation could be completed to ensure loss of high distinctiveness habitats is minimised. The following habitat measures will increase the on-site biodiversity:

- Retaining the Broadleaved Woodland.
- Native Hedgerow Planting.
- Native Scrub Planting.
- Wildlife Ponds.
- Broadleaved Trees.
- Wildflower Meadows.

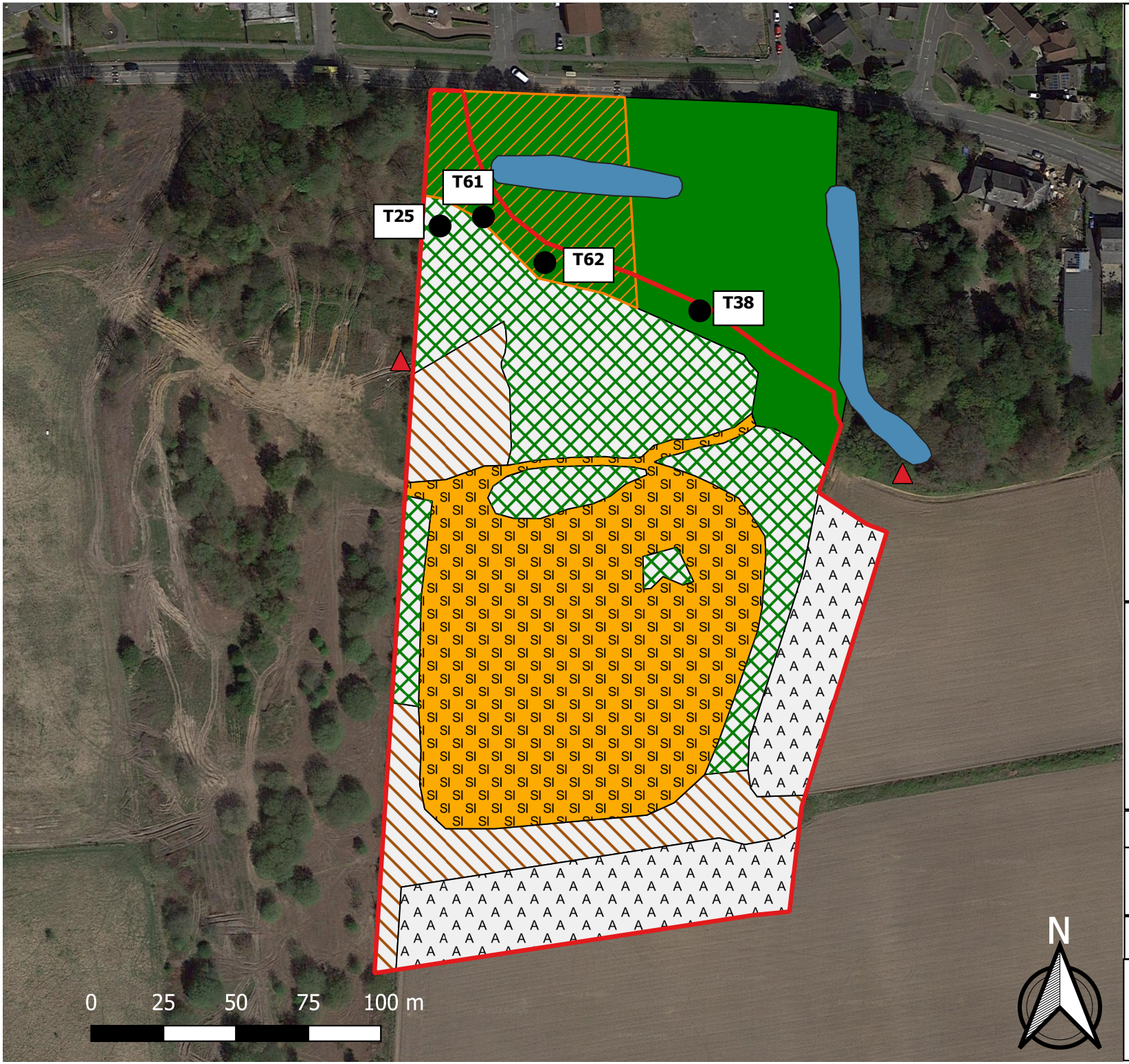
Habitat measures should be provided within areas of open space or designated wildlife zones. A 30-year management plan should be produced to ensure biodiversity is secured on-site.

7. REFERENCES

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END OF REPORT

APPENDIX I
PHASE 1 HABITAT PLAN



Key:

- Site Boundary
- Arable
- Dense Scrub
- Broadleaved Woodland
- Semi-Improved Grassland
- Tall Ruderal
- Waterbodies
- Japanese Knotweed
- Rhododendron
- Trees With Bat Potential

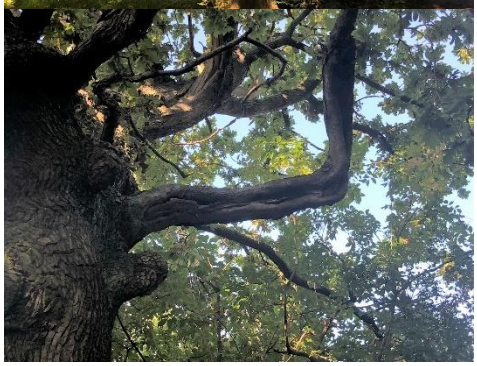
Notes

Issue	Revisio	Date	Drawn	Authorised
1		22/04/2022	RK	CB
Client: Vistry Partnerships			Job No. 80-571	Date 22/04/2022
			Drawing No. 004	Scale 1:2500
Job title: Lickers Lane, Halsnead			Drawing title: Phase 1 Habitat Plan	

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APPENDIX II
BAT TREE DESCRIPTIONS

TREE REF.	DESCRIPTION	ASSESSMENT	PHOTOGRAPH
T38	Semi mature sycamore with multiple rot holes in the main trunk and limbs from 2.5 m upwards. Peeling bark was also present throughout the tree. Sections of the main trunk appeared to be hollow. The hollow trunk has the potential to support maternity roosts for bat species favouring roosts in trees.	High	
T25	Mature oak tree with a rotten north east facing limb, approximately 6 m high. The features has the potential to support crevice dwelling bat species on an occasional basis.	Low	 

T62	Mature ash with two south facing woodpecker holes approximately 8 m high. The features have the potential to support maternity roosts if the holes extend inwards into a cavity.	High	
T61	Ivy covered sycamore with potential to conceal a potential summer roost feature for bats.	Low	

APPENDIX 8.2
BIODIVERSITY NET GAIN ASSESSMENT

Biodiversity Metric Report

Lickers Lane, Halsnead

Reference: 80-571-R5-2

Date: September 2022

BIODIVERSITY METRIC REPORT

Lickers Lane
Halsnead

Prepared for:

Vistry Partnerships

Report Ref: 80-571-R5-2
Date Issued: 08/09/2022

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QUALITY ASSURANCE

project number	80-571		
VERSION	Version 1	Version 2	
REMARKS	Final	Final	
DATE	July 2022	September 2022	
PREPARED BY	R. Keating	R. Keating	
QUALIFICATIONS	BSc (Hons), MSc, QCIEEM Graduate Ecologist	BSc (Hons), MSc, QCIEEM Graduate Ecologist	
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QUALIFICATIONS	BSc (Hons), QCIEEM, Consultant Ecologist	BSc (Hons), QCIEEM, Consultant Ecologist	
AUTHORISED BY	C. Barlow	C. Barlow	
QUALIFICATIONS	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director	BSc (Hons), MSc, MIEnvSc, CEnv, MCIEEM, Associate Director	

EXECUTIVE SUMMARY

Site Address	Lickers Lane, Halsnead, Whiston, Knowsley, Merseyside, L35 3SR
Co-ordinates	E 347506, N 390503
Site Area	Approximately 2.6 ha
Current Site Use	The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south where the adjacent housing development is proposed. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further east. An active treelined railway is located approximately 550 m north of the site.
Proposed Development	Development proposals include the construction of a residential development with an associated access road.
Results	The biodiversity metric results show a loss of 17.33 habitat units. A 69.40% loss in habitat units will be incurred on-site as a result of development.
Conclusions and Recommendations	The retention of the current on-site habitats such as the dense scrub or semi-improved grassland would reduce the overall loss in habitats. Additional habitats could also be created onsite to increase the habitat units. If a gain in biodiversity is not achieved on-site it is likely that off-site compensation or conservation offset payment will be required for the development to proceed. Consultation with the Local Planning Authority (LPA) will be required to determine if an offset payment is suitable for the scheme. Additional species enhancements could be provided on-site, which could include bat and bird boxes, hedgehog houses and hibernacula.

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1. INTRODUCTION

1.1. BACKGROUND

E3P has been instructed by Vistry Partnerships to undertake a Biodiversity Metric Calculation at Lickers Lane, Halsnead hereafter referred to as "the site".

This report has been prepared by Graduate Ecologist Rhian Keating, BSc (Hons) MSc QCIEEM. Rhian has experience conducting a range of protected species surveys across the UK and has completed internal training on how to undertake Biodiversity Net Gain projects.

This report should be read in conjunction with 'Biodiversity Metric 3.1 Auditing and Accounting for Biodiversity Calculation Tool – Lickers Lane, Halsnead.xl'.

1.2. PREVIOUS SURVEYS

1.2.1. CHESHIRE ECOLOGICAL SERVICES LTD, 2017 AND 2020

Surveys were undertaken by Cheshire Ecological Services Ltd in 2017 and 2020 as part of the wider Halsnead Garden Village scheme in which the badger (*Meles meles*) surveys and great crested newt (*Triturus cristatus*) surveys included the same survey area as the site. The results of the surveys are detailed within the Halsnead Garden Village Biodiversity Statement (report reference: 31631/A5/ES2020) and detailed great crested newt surveys results are within Appendix 10.13, Great Crested Newt Survey (report reference: 1349/06/20/LO).

Two waterbodies within 250 m of the site returned negative results for great crested newts and no evidence of badger was recorded within the survey area or within 30 m of the site during the 2020 surveys.

1.2.2. E3P, 2021

E3P undertook a Preliminary Ecological Appraisal on-site in September 2021 (report reference: 80-571-R2). The survey included a Condition Assessment of the on-site habitats. During the updated survey, the site was found to comprise broadleaved woodland, dense scrub, semi-improved grassland, tall ruderal, arable land and scattered trees.

1.3. SITE LOCATION

The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further east. An active treelined railway is located approximately 550 m north of the site. Please refer to Figure 1.1 for the approximate site location.

FIGURE 1.1 APPROXIMATE SITE LOCATION



1.4. OBJECTIVES

The objectives of the Biodiversity Metric are to:

- 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.

The findings of the calculation are detailed within this report, along with recommendations.

2. METHODOLOGY

2.1. BIODIVERSITY METRIC

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).

This metric was calculated by Graduate Ecologist Rhian Keating, BSc (Hons) MSc QCIEEM. Rhian has undertaken training on Biodiversity Net Gain and using the Biodiversity Metric Calculation Tool.

The report has been reviewed by Associate Director, Celia Barlow, BSc (Hons) MSc MIEnvSc CEnv MCIEEM. Celia has undertaken a number of online training courses with CIEEM including 'Calculating and Using Biodiversity Units with Metric 2.0' and 'Biodiversity Net Gain Through Development'. Celia has also completed Condition Assessments on a number of sites across the UK and holds a Level 3 Field Identification Skills Certificate (FISC).

2.2. ON-SITE HABITAT BASELINE DATA

The baseline data used to inform the condition assessment was collected on 26th August 2021 during the Preliminary Ecological Appraisal. The Biodiversity Metric 3.1 Habitat Condition Assessment Sheets with Instructions (Natural England 2022) was used to undertake the condition assessment.

On-site baseline habitats were measured off the Phase 1 Habitat Plan using QGIS. Scattered tree areas were calculated using the root protection areas (RPA) from the Arboricultural Impact Assessment (AIA) Report (report reference: 80-571-R1). Retained trees along the northern site boundary were measured as retained broadleaved woodland. This was calculated by measuring the RPA of trees being removed, as detailed in the AIA, and subtracting it from the area of broadleaved woodland. Please see Appendix I for the Phase 1 Habitat Plan.

Phase 1 habitat types were translated into UKHab habitat types using the metrics Technical Data Translation Tool.

2.3. POST DEVELOPMENT HABITAT CREATION

The Landscape Masterplan was used to measure habitat creation on-site (July 2022, drawing reference UG_1599_LAN_POS_DRW_01 P04). The areas of proposed habitat were measured using AutoCAD from the DWG drawing. Tree measurements reflect the RPA of the trees to be retained. Areas of proposed trees were measured using the biodiversity metric Urban Tree Helper. Please see Appendix II for the Landscape Plans.

2.4. LIMITATIONS

Some areas on the site are double counted, including root protection zones and areas of habitat, where overlap is shown. This means areas of habitat pre- and post-development do not total to the same area.

3. RESULTS

3.1. ON-SITE BASELINE CONDITION ASSESSMENT RESULTS

Table 3.1 shows the details of the habitat condition assessment used for input into the metric calculation tool.

TABLE 3.1 HABITAT BASELINE CONDITION ASSESSMENT RESULTS

HABITAT TYPE (PH1)	HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION ASSESSMENT	DESCRIPTION
ARABLE	Cropland – Cereal crops	0.6215	N/A	N/A – automatically assigned by metric
BROADLEAVED WOODLAND	Woodland and Forest – Other woodland; broadleaved	0.1888	Moderate	Scores 30 out of 39 Score between 26 and 32 required for Moderate Condition Assessment
DENSE SCRUB	Heathland and shrub – Mixed scrub	0.8827	Poor	Passes 2 of 5 Condition Assessment criteria • There is an absence of invasive non-native species and species indicative of sub-optimal condition make up less than 5% ground cover. • The scrub has a well-developed edge.
SCATTERED TREE	Urban – Urban tree	0.0636 x23 trees (T1-16, T20, T22, G1-3, partially G6-9)	Moderate	Passes 4 of 6 Condition Assessment criteria • The tree is a native species. • There is little or no evidence of an adverse impact on tree health. • Micro-habitats for birds, mammals and insects are present. • More than 20% of the tree canopy area is oversailing vegetation beneath.
SEMI-IMPROVED GRASSLAND	Grassland – Other Neutral grassland	1.2595	Good	Passes 5 of 5 Condition Assessment criteria • The appearance and composition closely matches the characteristics of the specific grassland habitat.

HABITAT TYPE (PH1)	HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION ASSESSMENT	DESCRIPTION
				• Sward height is varied. • Cover of bare ground between 1% and 5%. • Cover of bracken less than 20% and cover of scrub less than 5%. • There is an absence of invasive non-native species. Damage and undesirable species make up less than 5% of cover.
TALL RUDERAL	Sparsely Vegetated Land – Ruderal/Ephemeral	0.3978	Poor	Passes 1 of 4 criteria. • Cover of bracken, scrub and trees less than 25%.

3.2. HABITAT RETENTION

All areas of habitat will be removed within the site to facilitate development. Some broadleaved woodland will be retained and enhanced by eradicating the invasive species, Rhododendron (*Rhododendron ponticum*), increasing its condition. Table 3.2 outlines the area of habitat to be enhanced.

TABLE 3.2 HABITAT ENHANCEMENT

HABITAT TYPE (LANDSCAPE PLAN)	HABITAT TYPE (UKHAB)	AREA (HA)	CONDITION
BROADLEAVED WOODLAND	Woodland and Forest – Other woodland; broadleaved	0.1850	Good

3.3. HABITAT CREATION CONDITION ASSESSMENT

A number of habitats are proposed within the site which are located outside of residential gardens and in areas of Public Open Space (POS). Table 3.3 shows the details of the target condition assessment and total areas of habitat creation. It has been assumed that there will be no significant delay in the creation of the proposed habitat features, as such the delay in starting habitat creation has been set to zero.

TABLE 3.3 HABITAT CREATION CONDITION ASSESSMENT RESULTS

HABITAT TYPE (LANDSCAPE PLAN)	HABITAT TYPE (UKHAB)	AREA (HA)	TARGET CONDITION	DESCRIPTION/ TARGET TIME TO CONDITION
RESIDENTIAL GARDENS	Urban – Vegetated garden	0.817	N/A – automatically assigned by metric	Target time to condition will be one year.
BUILDINGS AND HARDSTANDING/ HARDWORKS	Urban – Developed land; sealed surface	2.1361	N/A – automatically assigned by metric	N/A
PROPOSED TREES	Urban – Urban tree	0.2849 x70 small trees	Passes 3 of 6 Condition Assessment criteria • The tree is a native species • There is little or no evidence of an adverse impact on tree health • More than 20% of the tree canopy area is oversailing vegetation beneath	Target time to condition will be 27 years.
PROPOSED NATIVE SHRUB PLANTING	Heathland and shrub – Mixed scrub	0.1387	Good Passes 5 of 5 Condition Assessment criteria • Habitat is representative of UKHAB description • There is a good age range. • There is an absence of invasive non-native species and species indicative of sub-optimal condition make up less than 5% ground cover. • The scrub has a well-developed edge. • There are a clearings, glades or rides present within the scrub	Target time to condition will be 10 year.
PROPOSED SEEDED GRASS	Grassland – Modified grassland	0.0393	Poor Fails criteria 1 which is essential for achieving moderate condition as there will be less than 6 to 8 species per m^2.	Target time to condition will be one year.
PROPOSED WILDFLOWER MEADOW	Grassland – Lowland meadows	0.2267	Good Passes 5 of 5 Condition Assessment criteria	Target time to condition will be 15 years.

HABITAT TYPE (LANDSCAPE PLAN)	HABITAT TYPE (UKHAB)	AREA (HA)	TARGET CONDITION	DESCRIPTION/ TARGET TIME TO CONDITION
			• The appearance and composition closely matches the characteristics of the specific grassland habitat. • Sward height is varied. • Cover of bare ground between 1% and 5%. • Cover of bracken less than 20% and cover of scrub less than 5%. • There is an absence of invasive non-native species. Damage and undesirable species make up less than 5% of cover.	
PROPOSED SHRUB PLANTING	Urban – Introduced shrub	0.0858	N/A – automatically assigned by metric	Target time to condition will be one year.
PROPOSED GROUNDCOVER PLANTING	Cropland – Horticulture	0.0055	N/A – automatically assigned by metric	Target time to condition will be one year.
PROPOSED PLANTING TO POCKET PARK	Grassland – Modified grassland	0.0165	Poor Fails criteria 1 which is essential for achieving moderate condition as there will be less than 6 to 8 species per m^2.	Target time to condition will be one year.

3.4. STRATEGIC SIGNIFICANCE

The strategic significance was defined as 'Location ecologically desirable, but not in local strategy'. The site is located within a residential and agricultural area of Whiston Cross, south of Whiston. Lickers Lane defines the northern site boundary, with arable fields featuring to the east, west and south. Sandfield Natural Play Centre runs along the eastern boundary with Fox's Bank Cemetery located further to the east. An active treelined railway is located approximately 550 m north of the site. The site is expected to provide some value to local wildlife, with the broadleaved woodland and dense scrub expected to offer nesting or roosting opportunities for birds and bats. Residential housing extends to the north of the site which are anticipated to be of limited value for local wildlife. Sandfield Park Local Wildlife Site (LWS) is located adjacent to the site boundary.

Adjacent to the north-east of the site is Sandfield Natural Play Centre, providing some ecological value. Beyond this to the south is an area of grassland, scrub, and woodland, used for agriculture, which connects to the M62 approximately 700 m south of the site boundary. This habitat is expected to act as a resource for a range of local fauna and has the potential to provide roosting and nesting opportunities for bats and birds.

3.5. BIODIVERSITY UNIT RESULT

The headline results of the metric show an overall loss of 17.33 habitat units as a result of development. Table 3.4 shows the headline results detailed within the Biodiversity Metric.

TABLE 3.4 HEADLINE RESULTS

HEADLINE	CATEGORY	RESULT
TOTAL NET UNIT CHANGE	Habitat Units	--17.33
	Hedgerow Units	N/A
	River Units	N/A
TOTAL NET % CHANGE	Habitat Units	-69.40%
	Hedgerow Units	N/A
	River Units	N/A

The trading rules of the metric have not been satisfied within the metric as habitats lost have been 'traded down'.

4. CONCLUSIONS AND RECOMMENDATIONS

The proposed scheme and associated landscape plans show a total loss of 17.33 habitat units. A net loss of habitats will be incurred on-site as a result of development.

The metric assumes that the proposed wildflower meadow will use seed containing species indicative of lowland meadow habitat in order to achieve a moderate condition. Please note, if the seed mix does contain optimal species for lowland meadow, the target condition would decrease therefore generating further loss of habitat units in the metric. A list of indicator species can be found in Appendix III.

If a gain in biodiversity is not achieved on-site it is likely that an off-site compensation or conservation offset payment will be required for the development to proceed. Consultation with the Local Planning Authority (LPA) will be required to determine if an offset payment is suitable for the scheme.

The Biodiversity Metric does not take account for additional species enhancements within the site, and to further increase the site's value for wildlife the following could be provided:

- Creation of hibernacula (following guidance set out within Froglife, 2001) for common amphibians.
- Hedgehog houses may be installed to enhance the site for hedgehogs.
- Bat and bird boxes could be integrated into the proposed residential units.

5. REFERENCES

- Cheshire Ecological Services Ltd (2020) Halsnead Garden Village North, Knowsley, Biodiversity Statement. 31631/A5/ES2020.
- Cheshire Ecological Services Ltd (2020) Halsnead Garden Village North, Knowsley, Great Crested Newt Survey. 1349/06/20/LO .
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- National Planning Policy Framework (2021). Ministry of Housing, Communities and Local Government.
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- Natural England Joint Publication JP039. (2022). The Biodiversity Metric 3.1. Auditing and Accounting for Biodiversity, User Guide.
- Natural England. (2022). The Biodiversity Metric 3.1. Auditing and Accounting for Biodiversity, Condition Assessment Sheets.
- Urban Green. Lickers Lane Knowsley- North Area Planning. Drawing No. UG_1599_LAN_POS-DRW_01 P04.

END OF REPORT

APPENDIX I
PHASE 1 HABITAT PLAN



Key:

- Site boundary
- Arable
- Broadleaved woodland
- Dense scrub
- Semi-improved grassland
- Tall ruderal

Notes

Issue: 1	Revision: 1	Date: 13/07/2022	Drawn: RK	Authorised: CB
Client: Vistry Partnerships			Job No. 80-571	Date: 13//07/2022
			Drawing No. 80-571-005	Scale: 1:2750 @ A4
Job title: Halsnead, Lickers Lane			Drawing title: Phase 1 Habitat Plan (BNG)	

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APPENDIX II
LANDSCAPE PLANS

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Notes:-



KEY

Hard Works

- **Vehicular Asphalt Surface** — *Black colour.*
- **Pedestrian Asphalt Surface** — *Black colour.*
- **Precast Concrete Flag Paving** to private paths and patios — *Buff colour.*
- **Precast Concrete Sett Paving** to rumble strips — Bracken colour.
- **Resin bound gravel** — Light grey colour.
- **Natural Play Equipment / Outdoor Gym Equipment** — TBC
- **Play element** — Sandpit, TBC
- **Timber Closeboard Fence** — With matching gates.
- **Brick Wall** — 1800mm high, *Brick to match architecture.*
- **Timber Bench** — Timber bench, 500 x 2000 x 500mm
- **Timber Cube Seating** — Timber cube seating , 600 x 600 x 500mm
- **Stepping logs** — Stepping timber logs, 300mm diameter
- **Bird boxes** — No.10, locations TBC
- **Bat boxes** — No.10, locations TBC

Soft Works

- **Existing Tree**
- **Proposed Tree** — No.70
- **Proposed Specimen shrub** — No.14
- **Proposed Ornamental Hedge Planting** — Approx. 589m²
- **Proposed Native Hedge Planting** — Approx. 123m²
- **Proposed Shrub Planting** — Approx. 858m²
- **Proposed Planting to Pocket Park** — Approx. 162m²
- **Proposed Native Shrub Planting** — Approx. 1387m²
- **Proposed Seeded Grass** — Approx. 393m²
- **Proposed Wildflower Meadow** — Approx. 2267m²
- **Proposed Turf Grass**
- **Proposed Groundcover Planting** — Approx. 55m²

REV.	DATE	DESCRIPTION	DRAWN	CHK'D
P04	08/09/22	Information updated	KT	SA
P03	07/09/22	UPDATED	KT	SA
P02	18/07/22	UPDATED	TH	SA
P01	15/07/22	FIRST ISSUE	TH	SA

Client:	Project:	Drawn:	Checked:	Approved:	Date:
Vistry Parnerships	LICKER LANE, KNOWSELY	TH	SA	MT	15/07/22
Issue:	**Title:**	**Dwg No:**		**Scale @ A1:**	**Revision:**
PLANNING	GENERAL ARRANGEMENT PLAN	UG_1599_LAN_GA_DRW_01		1:500	P04

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APPENDIX III
LOWLAND MEADOW INDACATOR SPECIES

LOWLAND MEADOW OPTIMAL SPECIES

Common bent (*Agrostis capillaris*), Lady's mantle species (*Alchemilla sp.*), wood anemone (*Anemone nemorosa*), sweet vernal-grass (*Anthoxanthum odoratum*), quaking-grass (*Briza media*), spring-sedge (*Carex caryophyllea*), glaucous sedge (*Carex flacca*), common knapweed (*Centaurea nigra*), marsh hawk's-beard (*Crepis paludosa*), crested dog's-tail (*Cynosurus cristatus*), orchid (*Dactylorhiza sp.*), heath-grass (*Danthonia decumbens*), eyebright (*Euphrasia officinalis agg.*), red fescue (*Festuca rubra*), meadowsweet (*Filipendula ulmaria*), Lady's bedstraw (*Galium verum*), meadow crane's-bill (*Geranium pratense*), wood crane's-bill (*Geranium sylvaticum*), bitter vetch (*Lathyrus linifolius*), meadow vetchling (*Lathyrus pratensis*), hawkbit (*Leontodon sp.*), oxeye daisy (*Leucanthemum vulgare*), fairy flax (*Linum catharticum*), common bird's-foot trefoil (*Lotus corniculatus*), Adder's-tongue (*Ophioglossum vulgatum*), burnet saxifrage (*Pimpinella saxafraga*), greater butterfly-orchid (*Platanthera chloratha*), tormentil (*Potentilla erecta*), cowslip (*Primula veris*), primrose (*Primula vulgaris*), meadow buttercup (*Ranunculus acris*), bulbous buttercup (*Ranunculus bulbosus*), yellow-rattle (*Rhinanthus minor*), Devil's-bit scabious (*Succisa pratensis*), red clover (*Trifolium pratense*), tufted vetch (*Vicia cracca*).

SUB-OPTIMAL SPECIES

Creeping thistle (Cirsium arvense), spear thistle (Cirsium vulgare), curled dock (*Rumex crispus*), broad-leaved dock (*Rumex obtusifolius*), common nettle (*Urtica dioica*), creeping buttercup (*Ranunculus repens*), greater plantain (*Plantago major*), white clover (*Trifolium repens),* cow parsley (*Anthriscus sylvestris*).

APPENDIX 8.3
EDNA SURVEY RESULTS

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Ref: 80-571-L1-1
Date: 25th July 2022

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BY Email

GREAT CRESTED NEWT SURVEYS LICKERS LANE, HALSNEAD

BACKGROUND

E3P were instructed to undertake great crested newt (*Triturus cristatus*) eDNA surveys at Lickers Lane, Halsnead, hereafter referred to as "the site".

A Preliminary Ecological Appraisal (PEA) was undertaken on 26th August 2021 (report reference: 80-571-R2-1) by Huw Morgan, BSc (Hons), ACIEEM, MEnvSc, Senior Ecologist at E3P, and Rhian Keating, BSc (Hons), MSc, QCIEEM, Graduate Ecologist at E3P. A total of two waterbodies (Waterbody 1 and Waterbody 2) were identified within 250 m of the site.

GREAT CRESTED NEWT EDNA SURVEYS

The eDNA survey was undertaken on 7th July 2022 by Olivia Mckechnie BSc (Hons), QCIEEM, Project Manager of Ecology 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. The water sample was analysed by SureScreen Scientifics.

Water samples were collected from Waterbody 1 and Waterbody 2 during the survey. Three other waterbodies (Waterbody 3, Waterbody 4, and Waterbody 5) were identified during the survey, however these were dry and as such no eDNA samples could be taken from these locations. Because they were dry, Waterbodies 3, 4, and 5 were considered unsuitable to support great crested newts and no further action is deemed to be necessary. Please see Figure I for Approximate Waterbody Locations.

FIGURE 1 APPROXIMATE WATERBODY LOCATIONS



RESULTS

The results of the survey were received on 22nd July 2022. Waterbody 1 and Waterbody 2 tested **NEGATIVE** for the presence of great crested newts. Please see Figure 2 detailing the results.

FIGURE 1 EDNA RESULTS

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
7276	Lickers Lane, WB1	SJ4758890438	Pass	Pass	Pass	Negative	0
7284	Lickers Lane, WB2	SJ4744590060	Pass	Pass	Pass	Negative	0

LIMITATIONS

The survey was undertaken on 7th July 2022 which is 7 days outside of the survey season as outlined within Appendix 5 of the DEFRA WC1067 Technical Advice Note. The results of the surveys are still anticipated to be valid as 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 (Rees, H. C., Baker, C. A., Gardner, D. S., Maddison, B. C., & Gough, K. C. (2017). The detection of great crested newts year-round via environmental DNA analysis. BMC Research Notes, 10(1), 1-4.).

CONCLUSIONS AND RECOMMENDATIONS

Great crested newts have been confirmed as absent from WB1 and WB2. Therefore, no further surveys or precautionary working methods in relation to great crested newts are required for development to proceed. The survey results will be valid for two years to inform a planning application.

Yours sincerely,
For and on behalf of E3P Ltd

Ciara Bass
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APPENDIX 8.4
EXTENDED PHASE 1 HABITAT SURVEY - CHESHIRE ECOLOGICAL SERVICES IN 2020

HALSNEAD GARDEN VILLAGE NORTH, KNOWSLEY, MERSEYSIDE -

EXTENDED PHASE 1 HABITAT SURVEY

MAY 2020

ces ecology
consultant ecologists

HALSNEAD GARDEN VILLAGE NORTH, KNOWSLEY, MERSEYSIDE -

EXTENDED PHASE 1 HABITAT SURVEY

MAY 2020

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MAY 2020
CES: 1349/05-20/LO
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EXECUTIVE SUMMARY

- Cheshire Ecological Services Ltd. (CES Ecology), was commissioned to conduct an updated Extended Phase 1 Habitat Survey of land near Halsnead Park, Whiston, where residential development is proposed.

- The purpose of the survey was to gain updated baseline ecological information of the Site in order to assess its current status, and to identify any ecological constraints to development that may currently be associated with the development areas and/or the surrounding land.

- The Site comprised two separate site areas; site area A (located immediately south of Lickers Lane) which totalled approximately 9.7ha, and site area B (located to the immediate east of Windy Arbor Road) which totalled approximately 2.2ha. Both were located to the south of Whiston, Knowsley, Merseyside.

- At the time of survey site area A comprised an arable field which was out of farming use at the time of the survey, areas of woodland, semi-improved and marshy grassland, tall ruderal herbs, scrub and areas of bare ground. Site area B comprised three buildings, areas of woodland, scrub, tall ruderal herbs, introduced shrub and hard-standing. Scattered trees were also present throughout the site. The Site was not considered to have significantly changed since a previous 2017 survey.

- As part of the desk-based study, the Local Biodiversity Recording Centre provided records of protected and/or BAP Priority Species occurring within a 2.5km radius of the centre of the Site, within the past twenty years.

- Features of ecological interest identified during the survey included semi-natural broadleaved woodland, mature trees, diverse field margins, marshy grassland and herb-rich grassland. Although not necessarily afforded legal protection, it was recommended that where practicable, these features be retained and sufficiently protected during development works.

- It was considered appropriate and proportionate to recommend updated survey/assessment in respect of badger, bats, great crested newts, invertebrates, and local wildlife sites before any potentially disturbing works take place. The results of these surveys should enable the Local Planning Authority to make an informed decision as to whether or not it is possible to discharge their responsibilities under current planning when determining the planning application submitted in respect of the proposed development.

- A number of recommendations were made in respect of the protection of native bluebell (present on site), as well as brown hare and hedgehog which may inadvertently stray on to the Site.

- It is recommended that once detailed proposals are known, a habitat management plan for the site be formulated, to ensure that mitigation features/planting are suitably managed for the benefit of wildlife during and post development.

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1.0 INTRODUCTION

1.1 Cheshire Ecological Services Ltd. (CES Ecology), undertook an Extended Phase 1 Habitat Survey of land near Halsnead Park, Whiston, in July 2017 where residential development is proposed.

1.2 No development has been brought forward to date and a new planning application for residential development at the Site is proposed. Given the time period since the previous survey, an updated survey was carried out in order to determine if there has been any material change to the habitats at the Site.

1.3 The purpose of the survey was to gain up to date baseline ecological information of the Site in order to assess its current status, and to identify any ecological constraints to development that may currently be associated with the development area and/or the surrounding land.

1.4 The survey was conducted by Lindsay Overstall BSc (Hons) MSc ACIEEM on 6th May 2020.

1.5 Weather conditions at the time of survey were dry and breezy, with sunny spells and a temperature of 18°C.

2.0 SITE DESCRIPTION

2.1 The survey areas were located around the following central OS grid reference: SJ 47143 90310

2.2 The Site comprised two separate site areas; site area A (located immediately south of Lickers Lane) which totalled approximately 9.7ha, and site area B (located to the immediate east of Windy Arbor Road) which totalled approximately 2.2ha. Both were located to the south of Whiston, Knowsley, Merseyside and are referred to collectively as the ‘Site’, or individually as ‘site area A’ and ‘site area B’.

2.3 At the time of survey site area A comprised an arable field which was out of farming use at the time of the survey, areas of woodland, semi-improved and marshy grassland, tall ruderal herbs, scrub and areas of bare ground. Site area B comprised three buildings, areas of woodland, scrub, tall ruderal herbs, introduced shrub and hard-standing. Scattered trees were also present throughout the Site.

2.4 Land use in the wider area comprised mixed-use farmland, residential areas, woodland, ponds and road networks, including the M62 motorway (refer to Appendix A - Site Location Plan).

2.5 Site area A was bounded to the north by Lickers Lane, to the east by areas of woodland, public open space and farmland, to the south by Halsnead Park Caravan Park and farmland and to the west by farmland. Site area B was bounded to the north

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and east by Main Drive, to the south by an arable field and to the west by Windy Arbor Road.

3.0 SURVEY METHODS

Desk-based study

3.1 The desk-based study comprised consultation with the following consultees:

- Defra - Magic Map
- Merseyside BioBank - the Local Biodiversity Records Centre for North Merseyside
- Ordnance Survey - OS mapping of the local and wider area

3.2 The desk-based study comprised consultation with Defra's online facility 'Magic Map' to search for statutorily designated nature conservation sites within the local and wider area.

3.3 BioBank was asked to provide information on statutory and non-statutory nature conservation sites and protected/Biodiversity Action Plan (BAP) Priority species within, and surrounding, the Site (within approximately a 2.5km radius from the centre of the Site).

3.4 BioBank was asked to provide information on non-statutory Local Wildlife Sites occurring within approximately a 2.5km radius from the centre of the Site.

Extended Phase 1 Habitat Survey

3.5 This survey involved the mapping of various habitat types on the Site in addition to any habitat features and botanical species of conservation importance. A thorough walk-over survey was undertaken of the site. The methodology for this survey followed that described by the Joint Nature Conservation Committee (JNCC, 2010).

3.6 Priority habitats, for which there is a national or local Biodiversity Action Plan (BAP) and those listed under Section 41 of the Natural Environment and Rural Communities Act, 2006, were recorded as such where present. The UK BAP list of priority habitats and species has now been superseded by the S41 list, however, as it is still widely recognised the two should be considered interchangeable.

3.7 Preliminary searches were also carried out for protected/BAP species such as badgers, bats, reptiles and great crested newts (GCN) that may potentially use the Site. Scientific names and the national status of vegetative species recorded follow Stace (2019). Scientific and common names stated in the text are also presented in Appendix C.

3.8 The abundance of all recorded botanical species identified in potential Biodiversity Action Plan (BAP)/Priority habitats was assessed using the DAFOR scale, as described by Sutherland (1996). The DAFOR scale is a broad interpretive assessment whereby the surveyor assigns one of the following categories to the abundance of the species; Dominant, Abundant, Frequent, Occasional or Rare.

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Survey Limitations

3.9 The observations made during this survey have been used to assess the presence, or potential presence, of protected and/or BAP species within the proposed area of works and to recommend further actions where required. It should however, be noted that this survey serves as a single visit representing a 'snap-shot in time' whereby only the species present at the time of survey were recorded.

3.10 Positive evidence of species that use this site periodically or are in growth at different times of the year may not have been recorded. It is important to consider that the absence of a species from a particular survey does not necessarily indicate the absence (or continued absence) of that species from the area.

4.0 RESULTS

Desk-based Study

4.1 Defra's online facility 'Magic Map' indicates that the closest statutorily designated nature conservation sites are Thatto Heath Meadows Local Nature Reserve (LNR) and Childwall Woods & Fields LNR which total 3.81Ha and 27.44Ha respectively. Thatto Heath Meadows LNR is located approximately 4.4km to the north-east of the Site and is a river valley site noted for its unimproved grassland, hedgerows and stream habitats. Childwall Woods & Fields LNR is located approximately 5.2km to the south-west of the Site and is noted for its neutral grassland and broadleaved woodland habitats and exposed sandstone faces. Notable species include native bluebell, linnet, butterflies and orchid species.

4.2 Defra's 'Magic Map' also indicated that the Mersey Estuary Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site which has an area of approximately 6710 Ha is located approximately 6.6km to the south of the Site, at its nearest point. This site is an internationally important site for wildfowl, with it supporting large numbers of wildfowl and waders during the winter and migratory birds during spring and autumn. It comprises large areas of intertidal sand and mudflats and an area of reclaimed marshland.

4.3 BioBank indicates that twenty-five non-statutorily designated Local Wildlife Sites (LWS) are located within a 2.5km radius of the centre of the Site:

- Lickers Lane Wood LWS – located at site area A, adjacent to the northern boundary with Lickers Lane.
- Woodland, Sandfield Park LWS – located immediately adjacent to the north-eastern boundary of site area A.
- Big Water and Big Water Wood, Halsnead LWS - located approximately 0.17km to the south of site area B.
- Stadt Moers Q4 LWS – located approximately 0.29km to the north-west of site area B.
- The Old Wood, North LWS – located approximately 0.37km to the south of site area B.

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- Tushingham's Pond, Stadt Moers Country Park LWS – located approximately 0.4km to the west of site area B.
- Parrens Covert LWS – located approximately 0.47km to the east of site area A.
- The Old Wood, South LWS – located approximately 0.6km to the south of site area B.
- Blundell Hills Golf Course LWS – located approximately 0.6km to the east of site area A.
- Land, east of Fox's Bank Brook LWS – located approximately 0.72km to the south-east of site area A.
- Strettles Bog, Tarbock LWS – located approximately 0.75km to the south of site area B.
- Stadt Moers Q3 LWS – located approximately 0.8km to the west of site area B.
- Stadt Moers Q2 and visitor centre LWS – located approximately 0.84km to the north-west of site area B.
- Mine Waste, Cronton LWS – located approximately 0.93km to the south of site area B.
- Daggers Bridge Wood LWS – located approximately 0.97km to the south of site area B.
- Coppice Lane Council Depot, Huyton LWS – located approximately 1.05km to the south-west of site area B.
- Rough Head Wood LWS – located approximately 1.3km to the south-east of site area A.
- Ochre Brook, Tarbock LWS – located approximately 1.43km to the south of Site A.
- Huyton and Prescot Golf Club LWS – located approximately 1.48km to the north-west of site area B.
- The Rough Woodland LWS – located approximately 1.6km to the east of site area A.
- Ox Lane Wood, Tarbock LWS – located approximately 1.66km to the south of site area A.
- Carr Lane Lake, Prescot LWS – located approximately 1.82km to the north-west of site area A.
- George's Wood and adjacent land LWS – located approximately 2km to the south-east of site area A.
- Dog Clog Brook, Tarbock LWS – located approximately 2.18km to the south-west of site area B.
- Huyton Lane Wetland LWS – located approximately 2.2km to the north-west of site area B.

4.4 BioBank also indicated that two Knowsley Local Geological Sites (LGS) are located within a 2.5km radius of the centre of the Site:

- Cronton Mineral Line, Windy Arbor, Whiston LGS – located approximately 0.49km to the south of site area B.
- Stadt Moers Park LGS – located approximately 0.54km to the north-west of site area A.

4.5 BioBank highlighted the presence of the following protected species occurring within a 2.5km radius of the centre of the Site since 2000:

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Scientific name	Common name	Designations
Acanthis cabaret	Lesser redpoll	S41, UKBAP, BRd(RSPB)
Aeshna cyanea	Southern Hawker	LBAP
Aeshna grandis	Brown Hawker	LBAP
Aeshna mixta	Migrant Hawker	LBAP
Alauda arvensis	Skylark	S41, UKBAP, LBAP, BRd(RSPB)
Alcedo atthis	Kingfisher	WCA1, Bam(RSPB)
Anax imperator	Emperor Dragonfly	LBAP
Apus apus	Swift	LBAP, Bam(RSPB)
Arvicola amphibius	Water vole	WCA5, S41, LBAP
Bufo bufo	Common toad	WCA5, S41, UKBAP
Charadrius dubius	Little ringed plover	WCA1
Chiroptera sp.	Bat sp.	WCA5, HabRegs2, S41, LBAP
Coenagrion puella	Azure damselfly	LBAP
Cotoneaster horizontalis agg.	Cotoneaster horizontalis agg.	WCA9
Cotoneaster simonsii	Himalayan cotoneaster	WCA9
Crocosmia pottsii x aurea = C. x crocosmiiflora	Montbretia	WCA9
Delichon urbicum	House martin	LBAP, Bam(RSPB)
Emberiza citrinella	Yellow hammer	S41, BRd(RSPB)
Emberiza schoeniclus	Reed Bunting	S41, UKBAP, BAm(RSPB)
Enallagma cyathigerum	Common Blue Damselfly	LBAP
Erinaceus europaeus	Hedgehog	S41, UKBAP
Erythromma najas	Red-eyed damselfly	LBAP
Fallopia japonica	Japanese knotweed	WCA9, INNS
Hyacinthoides non-scripta	Bluebell	WCA8, LBAP
Hypochaeris glabra	Smooth cat's-ear	LBAP
Impatiens glandulifera	Indian balsam	WCA9, INNS
Ischnura elegans	Blue-tailed Damselfly	LBAP
Lasiommata megera	Wall	S41, UKBAP
Lepus europaeus	Brown hare	S41, UKBAP, LBAP
Lestes sponsa	Emerald Damselfly	LBAP
Libellula depressa	Broad-bodied Chaser	LBAP
Libellula quadrimaculata	Four-spotted Chaser	LBAP
Linaria cannabina	Linnet	S41, UKBAP, BRd(RSPB)
Lissotriton vulgaris	Smooth newt	WCA5
Locustella naevia	Grasshopper Warbler	S41, UKBAP, BRd(RSPB)
Lutra lutra	Otter	S41, HabRegs2, WCA5
Meles meles	Badger	PBA
Myotis daubentonii	Daubenton's bat	WCA5, HabRegs2, LBAP
Myotis mystacinus/brandtii	Whiskered/Brandt's bat	WCA5, HabRegs2, LBAP
Myotis sp.	Myotis sp.	WCA5, HabRegs2, S41, UKBAP, LBAP
Nyctalus noctula	Noctule bat	WCA5, HabRegs2, S41, UKBAP, LBAP
Passer domesticus	House sparrow	S41, UKBAP, LBAP, BRd(RSPB)
Passer montanus	Tree Sparrow	S41, UKBAP, BRd(RSPB)
Perdix perdix	Grey partridge	S41, UKBAP, LBAP, BRd(RSPB)
Pipistrellus nathusii	Nathusius's pipistrelle	WCA5, HabRegs2, LBAP
Pipistrellus pipistrellus	Common pipistrelle	WCA5, HabRegs2, LBAP
Pipistrellus pygmaeus	Soprano pipistrelle	WCA5, HabRegs2, S41, UKBAP, LBAP
Plecotus auritus	Brown long-eared bat	WCA5, HabRegs2, S41, UKBAP, LBAP

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Poecile montana	Willow Tit	S41, UKBAP, BRd(RSPB)
Prunella modularis	Dunnock	S41, UKBAP, Bam(RSPB)
Pyrrhula pyrrhula	Bullfinch	S41, UKBAP, Bam(RSPB)
Rana temporaria	Common frog	WCA5
Rhododendron ponticum	Rhododendron ponticum	WCA9, INNS
Spilosoma lutea	Buff Ermine	S41
Sturnus vulgaris	Starling	S41, UKBAP, LBAP, BRd(RSPB)
Sympetrum sanguineum	Ruddy Darter	LBAP
Sympetrum striolatum	Common Darter	LBAP
Triturus cristatus	Great crested newt	WCA5, HabRegs2, S41, UKBAP, LBAP
Turdus philomelos	Song thrush	S41, UKBAP, LBAP, BRd(RSPB)
Vanellus vanellus	Lapwing	S41, UKBAP, LBAP, BRd(RSPB)

Note: All species names and designations provided by BioBank.

Designations key:

WCA1 – Wildlife & Countryside Act, 1981 – Schedule 1
WCA5 – Wildlife & Countryside Act, 1981 – Schedule 5
WCA9 – Wildlife & Countryside Act, 1981 – Schedule 9
S41 – National Environment and Rural Communities Act 2006, Section 41 species
HabRegs2 – Conservation (Habitats and Species) Regulations 2010 – Schedule 2
UKBAP – UK Biodiversity Action Plan Priority Species
LBAP – Local Biodiversity Action Plan Species
BRd(RSPB) – Birds of Conservation Concern (RSPB) - Red
BAm(RSPB) – Birds of Conservation Concern (RSPB) – Amber
PBA – Protection of Badgers Act 1992

4.6 A number of other species records were provided but have not been included in this report as it is considered highly unlikely that they would be associated with the Site. For example, records of aquatic plants and fish were provided, as well as otter and water vole. Given the habitat composition of the site and the nature of the proposed works, it is considered highly unlikely that the proposed development would impact upon such species.

Fieldwork

4.7 Features of interest recorded on the site during this survey are described in the Target Notes (TN) below. All numbered Target Notes correspond with the Phase 1 Habitat Maps (Appendix B). Species lists for each area and photographic plates are presented within Appendices C and D respectively.

4.8 Natural England's 'Magic Map' and BioBank highlighted the presence of Ancient Woodland, Lakes/Ponds, Hedgerows, Lowland acid grassland, Woodland, Neutral grassland, Lowland fen and Priority habitat located within a 2.5km radius of the Site.

Target Notes

Site area A - Land immediately south of Lickers Lane

TN1 - Lickers Lane Wood Local Wildlife Site (LWS) (Plates 1a,1b, 10)

TN2 – Semi-natural, broad-leaved, deciduous woodland – potential to support bats and nesting birds (Plates 1a, 1b, 2, 10)

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TN3 - Marshy grassland (Plates 3a, 3b)

TN4 - Herb-rich semi-improved neutral grassland (Plate 4)

TN5 – Japanese knotweed - listed on Schedule 9 of the *Wildlife and Countryside Act, 1981.* (Plate 5)

TN6 – Cotoneaster sp. - potentially listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Plate 6)

TN7 – Rhododendron sp. - potentially listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Plate 7)

TN8 – Rubble piles – potential to support sheltering amphibians, reptiles and small mammals (Plate 8)

Site area B – Land to the immediate east of Windy Arbor Road

TN1 – Building 1 - potential to support bats and nesting birds (Plate 15a)

TN2 - Semi-natural broadleaved, deciduous woodland – potential to support bats and nesting birds (Plates 16)

TN3 - Mammal holes (Plate 17)

TN4 - Rubble piles – potential to support sheltering amphibians, reptiles & small mammals (Plate 18))

TN5 - Cotoneaster sp. – potentially listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Plate 19)

TN6 - Rhododendron sp. – potentially listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended) (Plate 20)

5.0 DISCUSSION

Designated Sites

5.1 Defra's online facility 'Magic Map' indicated that the closest statutorily designated nature conservation sites are Thatto Heath Meadows Local Nature Reserve (LNR) and Childwall Woods & Fields LNR which total 3.81Ha and 27.44Ha respectively. These sites are located approximately 4.4km and 5.2km from the Site, respectively. It is considered unlikely that the proposed development would directly adversely impact upon these sites due to distance and a lack of habitat connectivity.

5.2 Defra's 'Magic Map' also indicated that the Mersey Estuary Site of Special Scientific Interest (SSSI), Special Protection Area (SPA) and Ramsar Site which has an area of approximately 6710 Ha is located approximately 6.6km to the south of the Site, at its nearest point. The Site lies within the SSSI Impact Risk Zone for this site, however residential development is not cited as a potential impact. Given that the Site forms part of a wider Sustainable Urban Extension area, it is considered appropriate to

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recommend consultation with Natural England regarding this and other statutorily designated sites within the local area.

5.3 BioBank indicated that twenty five non-statutorily designated nature conservation sites were located within a 2.5km radius from the centre of the Site. Lickers Lane Wood Local Wildlife Site (LWS) is present on site area A and Woodland, Sandfield Park LWS is located immediately adjacent the north-eastern boundary of site area A. A number of other LWSs are located within 1km of the proposed development site. Lickers Lane Wood is due to be retained and it is recommended that it be appropriately protected during the works. It is not known whether any other LWSs are to be impacted by the proposed development. Given the number of non-statutorily designated protected sites within a 2.5km radius of the centre of the Site, and the scale of the development, it is recommended that an updated Local Wildlife Site Impact Assessment be conducted when detailed plans are available.

5.4 BioBank indicated that two Local Geological Sites (LGS) are located within a 2.5km radius of the centre of the Site. These sites (as detailed in Paragraph 4.4) may be impacted by increased numbers visiting these sites for recreation.

5.5 BioBank identified deciduous woodland Priority Habitat (also designated as local BAP habitat) located at the Site. New draft proposals indicate that it should be possible to retain most of this habitat. It is recommended that all woodland be retained and incorporated into the proposed development where practicable. The trees/woodland to be retained should be adequately protected during the works. Appropriate protection would include a barrier to prohibit construction works in the area between itself and the tree trunk (i.e. create an exclusion zone). The minimum distance between the outermost tree stems and barriers must be either the distance of branch spread or half-tree height, whichever is the greater. This should be sufficient to protect from direct impact and from severance or asphyxiation of the roots.

5.6 In addition, under HSPD8 Green Infrastructure and open space, the Halsnead Masterplan Supplementary Planning Document (2017) identifies the following specific ecological measures to be designed within the green space framework:

‘*Creation of a minimum 15m buffer zone around woodland groups to retain semi-mature broadleaf woodland’*

5.7 New draft proposals do not indicate the inclusion of a 15m buffer zone, and it is recommended that such a zone be incorporated into the development layout.

5.8 Retained areas of woodland should be subject to a habitat management plan to ensure that these areas are protected following completion of the development and are subject to a suitable monitoring and management regime. It is recommended that appropriate signage be implemented at the Site post development, so that local residents and occupiers of the new dwellings are informed about the importance of these woodland habitats.

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Habitats

Site area A - Land immediately south of Lickers Lane

5.9 Semi-natural broadleaved woodland (Plates 1a, 1b, 2, 10)

Two distinct areas of woodland were present to the north of site area A. Species composition was similar in both areas. The larger area of woodland to the north-west of the site was Lickers Lane Wood LWS and had a canopy dominated by sycamore with occasional ash and oak. Understorey species included elder, hawthorn, rowan and hazel. Ground flora included bramble, hogweed, cow parsley, bracken, ivy, and bluebell sp. (predominantly native but non-native specimens were recorded).

The area of woodland to the north-east also had common lime in the canopy. Understorey species included elder, rowan, laurel and willow sp. Ground flora included bluebell sp. (predominantly native but non-native specimens were recorded), cleavers, ivy and ground elder. The south eastern corner of this area was of a different composition dominated by young oak.

This habitat was identified by Defra's online facility 'Magic Map' and by BioBank as broad leaved deciduous woodland Priority Habitat. It is considered to be a poor example of this UK Bap habitat, on account of the species composition. However, this area should be retained and appropriately protected during the works.

5.10 Arable land (Plates 9)

Site area A was dominated by a large arable field which historically comprised a barley crop. At the time of the survey the land appeared not to have been recently actively farmed. The area was dominated by Yorkshire fog and arable weeds including creeping thistle and broadleaved-dock.

5.11 Field margins (Plate 10)

The field was bounded to the north, east and west by field margins that are dominated by bramble scrub and tall ruderal vegetation. During the 2017 survey the margins appeared more diverse and were not so heavily dominated by bramble. Grass species in these margins included false-oat grass, barren brome, cock's-foot, soft brome and rough meadow-grass. Herbaceous species included bramble, hogweed, cow parsley, bracken and raspberry. These margins have been mapped as tall ruderal herbs or scrub (refer to Appendix B).

5.12 Tall ruderal herbs (Plate 11)

Areas of tall ruderal herbs were present on site. An area to the north of the arable field included bracken, hedge bindweed, bramble, hedge woundwort and redshank. This vegetation was typically tall and unmanaged but there were areas of disturbed ground within this where vegetation was shorter.

The areas of tall ruderal herbs to the east of the site were dominated by rosebay willowherb with broadleaved dock, common nettle, fox glove, hogweed and vetch sp.

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5.13 Semi-improved neutral grassland (Plate 12)

Areas of semi-improved neutral grassland were present to the east of the site. To the south of the site these areas were more herb-rich and diverse. Grass species included sweet vernal-grass, rough meadow-grass, cock's-foot and Yorkshire-fog. Herbaceous species included creeping buttercup, ribwort plantain, common sorrel and silverweed. The more diverse grass to the south of the site comprised additional herbaceous species including common spotted orchid, northern marsh-orchid sp., fox and cubs and vetch sp.

5.14 Marshy grassland (Plates 3a, 3b)

A small area of marshy grassland was present to the north-east of the site. This area was located in a depression at the foot of a steep incline. Species included field wood-rush, compact rush, soft rush, oval sedge and glaucous sedge. Herbaceous species included self-heal, birds-foot trefoil, white clover and creeping cinquefoil. Marsh orchid sp. was also present in this area although in low numbers. Grass species were dominated by Yorkshire-fog and fescue sp. with occasional false-oat grass and rough meadow-grass.

Marshy grassland was also identified to the south of the site in small areas and was interspersed with herb-rich grassland. Detailed botanical surveys had previously been conducted at the site by Merseyside Environmental Advisory Service (MEAS). Under the National Vegetation Classification (NVC), the areas of marshy grassland were not considered to be Priority habitats and were of limited ecological value within the zone of influence of the site. During this 2020 survey these areas appear to have decreased in diversity, with willowherb sp. and grasses such as fescues becoming more dominant.

The small size and relative isolation of marshy grassland areas was considered to be of limited ecological value and could be recreated elsewhere. Most of the grassland is likely to be lost to the development. It is therefore recommended that suitable mitigation or compensation be provided at the site or district level.

5.15 Scrub (10, 13a, 13b)

Areas of dense bramble scrub were associated with the field boundaries and willow and birch scrub was present throughout the eastern extent of the site. In some areas to the east of the site the scrub is beginning to mature into secondary woodland. A dense bank of bramble scrub and immature trees was present to the west of the access track which leads to Lickers Lane at the north-western extent of the site.

5.16 Scattered trees (Plates 14a, 14b & 21)

Scattered trees were present to the east of the site and ranged from immature to mature. Species included oak sp., birch sp., elder, rowan and goat willow.

5.17 Bare ground (Plates 3a, 3b, 14)

Areas of bare ground were present to the north-east of the site. These were well-worn footpaths and cycling/off-road vehicle routes. Limited vegetation was present in these areas and they were typically too small to be mapped effectively.

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5.18 Ephemeral/short perennial (Plates 13a, 13b, 14)

Areas of ephemeral/short perennial vegetation was present in areas of disturbed ground including around the edge of the arable crop. Species included daisy, creeping thistle, scentless mayweed, scarlet pimpernel and fat hen. These areas were too small to be mapped effectively.

Site area B – Land to the immediate east of Windy Arbor Road

5.19 Semi-natural broadleaved woodland (Plate 16)

An area of semi-natural broadleaved woodland was present to the south-east of the site. The canopy of this woodland was dominated by sycamore with occasional ash and oak. Understorey species were more diverse with some ornamental species; remnants from the former nursery. The dominant species was elder with occasional willow sp., hawthorn, rowan and hazel. Ornamental species included bamboo, dogwood and laurel. Ground flora was dominated by nettle and ivy with occasional red campion, wood avens, cleavers, willowherb sp. and bluebells (predominantly native but non-native specimens were recorded). Dog's mercury was rare.

This habitat was identified by Defra's online facility 'Magic Map' and by BioBank as broad leaved deciduous woodland Priority Habitat. It is considered to be a poor example of this UK Bap habitat, on account of the species composition. However, this area should be retained and appropriately protected during the works.

5.20 Plantation woodland (Plate 21)

An area of younger trees was present adjacent the woodland. These trees were planted in rows and were clearly leftover from the nursery. Species included willow sp., birch sp., aspen and alder. These trees created a canopy and so were considered to constitute semi-mature plantation woodland. Ground flora included nettle, wood avens, tufted forget-me-not, bramble and willowherb sp.

5.21 Scrub (Plate 22)

Areas of scrub were present around the site. These areas included dense bramble scrub with nettle and hedge bindweed and more established areas of holly and rose sp., as well as birch and willow scrub.

5.22 Tall ruderal herbs (Plate 23)

Tall ruderal herbs were present in areas formerly used for bedding plants. These areas included species such as willowherb sp., nettle, horsetail sp. and creeping buttercup.

5.23 Scattered trees (Plate 24)

A number of trees were present across the site. Many of these were immature to semi-mature and were present in the former nursery area. A number of more mature trees were present in the former car park area and along the frontage with Windy Arbor Road. Species in the nursery included crack willow, alder, aspen, birch and sycamore. A mature oak tree stood in the car park whilst a number of non-native coniferous trees were present alongside the road.

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5.24 Ephemeral/short perennial (Plate 20)
Areas of ephemeral and short perennial vegetation over hard-standing and gravel was present across the site. Species included Lady's mantle which was locally abundant, herb-Robert, black medick, bitter stonecrop and colt's-foot.

5.25 Introduced shrub (Plate 25)
Introduced shrub was present most abundantly to the north-west of the site in the former car park. Species included pine sp., rhododendron, leylandii sp., dog-rose and laurel.

5.26 Buildings (15a, 15b, 15c)
Three buildings were present on site at the time of survey. Building 1 was a single storey brick building with a multi-pitched tiled roof which was partially boarded up and in a state of disrepair. Building 2 was a large warehouse-style building of a concrete block and corrugated metal construction with a pitched corrugated asbestos-type roof. This building was in a state of disrepair with holes in the roof and vegetation growing inside. Building 3 was a small concrete block building with the remnants of a wooden roof.

5.27 Hard-standing (Plate 25)
Areas of hard-standing were present throughout the site with the largest area to the north-west of the site. Material included asphalt, concrete and gravel.

Features of Ecological Interest

5.28 The following features of ecological interest were identified during the survey:

Site A - Former Nursery Site
- Semi-natural broadleaved woodland
- Mature trees

Site B - Land off Lickers Lane
- Semi-natural broadleaved woodland
- Marshy grassland
- Herb-rich grassland
- Mature trees

5.29 Although not necessarily afforded legal protection, it is recommended that where practicable, the above features of ecological interest should be retained and sufficiently protected during development works.

5.30 The habitat composition of the site has potential to support legally protected/BAP wildlife species. It was not within the scope of this survey to carry out detailed searches for protected species, although the potential for the study site to support the following species is discussed below:

- Badger
- Barn Owl

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- Bats
- Birds
- Bluebell
- Brown Hare
- Great crested newt and amphibians
- Hedgehog
- Invasive species
- Invertebrates
- Reptiles

Legislation relating to each species discussed in this report is presented in Appendix E – Legislation. No other legally protected species are considered likely to be associated with the proposed development site due to a lack of suitable habitat on, and surrounding the site.

5.31 Badgers

Badgers and their setts are protected under British law. Therefore surveys are required to check for the presence of badgers or their setts if they are likely to be disturbed for any reason. Statutory guidance indicates that a licence may be required if potentially disturbing works are to take place within 30m of a badger sett.

BioBank provided details of badgers occurring within a 2.5km radius of the centre of the Site since 2000.

The woodland and grassland habitats at site area A and the woodland habitats at site area B were considered suitable sett building, commuting and foraging habitat for badger. A number of mammal holes were recorded at both site area A and B, however these were considered to be that of rabbit. Rabbits were observed during the survey. A number of mammal paths were also recorded at both site area A and site area B.

CES have been commissioned to conduct a badger survey at the Site, the results of which are detailed in a separate report.

5.32 Barn owl

Barn owls receive special protection under Schedule 1 of the Wildlife & Countryside Act, 1981 (as amended). In addition to the protection afforded to all wild birds under Section 1 of the Act, species listed on Schedule 1 also receive special legal protection when breeding; making it an offence to intentionally or recklessly disturb any wild barn owl whilst it is at or near a nest containing eggs or young, or disturb the dependent young of such a bird. Barn owls nest and roost in buildings and within deep cavities in trees, and will readily utilise nest boxes where available.

BioBank did not provide any records of Barn Owl occurring within a 2.5km radius of the Site since 2000.

Whilst there are numerous trees present within site area A and site area B, none of the trees were considered to offer suitable features to support barn owl roosting or nesting.

The grassland to the south of site area A was considered to provide some limited suitable foraging habitat for barn owl. The grassland was tussocky in structure in some

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places and there was some evidence of a litter layer/thatch. This area is relatively small and so provides only limited opportunity for barn owl foraging.

The now unmanaged arable field is dominated by grasses, creeping thistle and broad leaved dock. Whilst the grasses did appear tussocky in structure, the dominant presence of creeping thistle would likely deter barn owl from utilising the area for foraging to any great degree, if present in the wider area.

The buildings at site area B were considered to provide very limited potential for roosting barn owl, and no evidence was recorded during the 2017 daytime internal bat and barn owl survey. Since the 2017 survey the buildings have deteriorated owing to fires and exposure to the elements. CES Ecology have been commissioned to undertake an updated daytime bat survey of the buildings, during which the continued suitability for use by barn owl will be assessed.

5.33 Bats

All British species of bat are protected under both European and British law. Therefore surveys are required to check for their presence in areas where bats or their roosts are likely to be disturbed for any reason.

Bats are known to roost in buildings and mature trees, where they rest, give birth, raise young and hibernate. Buildings provide a choice of safe, dry places and can present a whole range of potential roost sites such as within wall cavities, eaves or roofs.

Some bat species rely exclusively on trees for roost sites; others use them for only part of the year. The importance of trees to bats depends on species, season and foraging behaviour. Even in winter, deep cavities can provide protection against bad weather and fluctuations in temperature. Furthermore, trees and hedgerows, especially native ones, can host many species of insects, which are food for bats, and can also aid bat navigation.

BioBank provided details of daubenton's, whiskered/brandt's, myotis sp., noctule, common pipistrelle, soprano pipistrelle, nathusius pipistrelle, brown long-eared and unidentified bats occurring within a 2.5km radius of the centre of the Site since 2000.

A significant number of trees were present at both site area A and site area B, and trees were noted which offer potential roosting opportunities for bats. A number of trees will be lost to the development, although a detailed tree removal plan is not available at the time of writing. It is recommended that an updated bat roost potential assessment of all trees to be affected should be conducted. CES Ecology have been commissioned to undertake this updated assessment, the results of which will be detailed in a separate report.

The derelict buildings at site area B continue to provide potentially suitable roosting opportunities for bats by way of missing tiles and gaps/entry points into the structure such as soffits. CES Ecology have been commissioned to undertake an updated assessment of the buildings in respect of bats. The results of this survey will be detailed in a separate report.

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Since the 2017 EP1 survey, the Site has not materially changed and both site area A and site area B continue to offer suitable foraging and commuting habitat for bats by way of woodland, scattered trees and tree lines. CES Ecology have been commissioned to undertake an updated bat activity survey to assess any changes to the way in which the site is used by bats, and the impacts that the development may have on them. The results of this survey will be detailed in a separate report.

5.34 Birds

All species of wild bird, their nest and eggs are protected under Section 1 of the *Wildlife and Countryside Act*, 1981 (as amended). Therefore surveys are required to check for their presence where they are likely to be disturbed for any reason. In addition to the protection afforded to all wild birds under Section 1 of the Act, species listed on Schedule 1 receive special legal protection when breeding; making it an offence to intentionally or recklessly disturb any wild bird listed on Schedule 1 whilst it is at or near a nest containing eggs or young, or disturb the dependent young of such a bird. Legislation does not permit disturbance licences to be issued for nesting birds in relation to development of land.

BioBank provided numerous records of priority and protected bird species occurring within the search area since 2000.

The Site has not significantly changed since the 2017/2018 survey and continues to offers a range of suitable habitats for both small passerine and farmland birds. Following the 2017 EP1, a breeding bird appraisal of the Site was undertaken, and a breeding bird survey was undertaken of site area A (located immediately south of Lickers Lane). The following reports should be referred to for full details:

CES: Halsnead Park, Whiston, Merseyside – Breeding Bird Appraisal (November 2017)
CES: Land south of Lickers Lane, Whiston, Knowsley – Breeding Bird Survey (2018)

NB: Please be aware that the names/labelling of each of the two areas of land in this 2020 report is not consistent with that of the 2017 reports.

The appraisal concluded that the potential ornithological interest/value of site area B (located to the immediate east of Windy Arbor Road) was considerably less so than site area A, due to its smaller size and habitat composition. The 2017 development proposals included the retention of a large area of the broad-leaved deciduous woodland to the south east of the site, and hence a degree of mitigation had been built into the development of site area B. Current draft proposals indicate that the development layout continues to include retention of much of the broad-leaved deciduous woodland and so this conclusion remains valid.

The breeding bird survey was conducted in 2018 and concluded that impacts upon woodland/garden and farmland species would be low, and that the populations of breeding farmland birds was considered to be of local importance. The recommendations of this survey are considered to remain valid and the report should be referred to for full details. In summary, development activities that may impact upon breeding birds should be undertaken outside of the bird nesting season which

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generally encompasses March to September. If this is not possible and works must be carried out during this period, then a nesting bird survey will be required prior to any potentially disturbing works. It is recommended that at least one nest box should be erected for every four dwellings built (i.e. no less than 25% of the number of dwellings) suitable for house sparrow, starling and swift (in equal quantity). House sparrow and swift nest boxes should be mounted on buildings, and starling nest boxes on retained mature trees.

A scheme for the provision of nest boxes should be formulated when more details plans are available.

5.35 Bluebell

BioBank provided details of native bluebell occurring within a 2.5km radius of the centre of the Site, since 2000. The native bluebell is listed on the North Merseyside BAP and is protected from uprooting with intent to sell by the Wildlife and Countryside Act, 1981 (as amended) (refer to Appendix E). Both native and non-native bluebells were recorded in Lickers Lane Wood LWS, in the diverse field margins around the LWS as well as within the other area of woodland at site area A. At site area B both native and non-native bluebells were recorded within the woodland to the south-east of the site.

Non-native species can cross-breed with the native British bluebell which causes the dilution of the native bluebell's unique characteristics. As such, it is recommended that where possible, non-native or hybrid varieties be removed and replaced with native British bluebells. These areas should be retained and suitably protected during the development activities if at all practicable. A habitat management plan should be formulated which includes retained areas colonised by native bluebell, to ensure their continued protection following development (see Appendix G). No further survey effort in respect of this species is considered necessary.

5.36 Brown hare

Brown hare is a Local and UK BAP Priority species, and is listed on Section 41 of the Natural Environment & Rural Communities Act, 2006. BioBank provided details of brown hare occurring within a 2.5km radius of the Site since 2000.

Brown hares are associated with farmland habitats, such as those found at site area A, where they feed on grass shoots and utilise areas of tall vegetation for cover. It is therefore recommended that any work which has potential to disturb leverets (young brown hares) be conducted outside of the brown hare breeding season; which generally encompasses February to August. If this is not practicable, it is recommended that the site be made unsuitable for breeding brown hares before February. The grass on site should be cut to a short sward height (<10cm) and maintained at this level until development works begin. This should deter brown hares from breeding on the site.

If brown hares or leverets are discovered during development works, CES Ecology should be contacted for advice. No further survey effort in respect of this species is considered necessary.

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5.37 Great crested newt and smooth newt

GCN are protected under both European and British law. Adult GCN predominantly live terrestrially, but utilise ponds for breeding purposes during the spring and summer months. Statutory guidance indicates that a survey may be necessary to check for the presence of GCN if background information on distribution suggests that they may be present. Detailed indicators include:

- Any historical records for GCN on the site, or in the general area
- A pond on or near the site (within around 500m), even if it holds water only seasonally. Note that muddy, cattle-poached, heavily vegetated or shady ponds, ditches and temporary flooded hollows can be used by GCN
- Sites with refuges (such as piles of logs or rubble), grassland, scrub, woodland, or hedgerows within 500m of a pond

BioBank provided details of great crested newt, smooth newt, common toad and common frog occurring within a 2.5km radius of the Site since 2000.

No ponds/waterbodies were present on the Site at the time of survey, with the exception of a small ephemeral pool of water collected within a tyre rut at site area A. This wet area was considered to have formed due to a period of recent rainfall. There was no aquatic vegetation within the pool and it was not considered to be suitable to support great crested newt breeding.

OS mapping highlighted the presence of six ponds and two waterbodies within 250m and a further three ponds and two waterbodies within 250m to 500m of the Site.

CES have been commissioned to conduct an updated GCN eDNA survey of all relevant ponds within 250m of the Site. The results of this survey will be detailed in a separate report.

5.38 Hedgehog

Hedgehog is a UK BAP Priority species and is listed on Section 41 of the Natural Environment & Rural Communities (NERC) Act, 2006. BioBank provided details of hedgehog occurring within a 2.5km radius of the centre of the Site since 2000.

The Site was considered to offer hedgehog with suitable foraging and shelter habitat. Development of the Site does have potential to impact upon hedgehogs, therefore it is recommended that all woody and scrub vegetation (standing or fallen) to be affected by the works be removed by hand prior to any potentially disturbing works taking place. These measures should be sufficient in discouraging and/or displacing hedgehogs from the working areas. Upon completion of the development, it is also recommended that hedgehogs be able to gain access to the gardens through a series of holes/gaps if close-panel fencing or walls are to be used; although ideally boundaries would comprise hedgerows. Gaps should be at ground level, approximately 10cm by 15cm, and incorporated in to each garden. Creation of brash piles within retained areas of woodland is also recommended to create suitable shelter habitat for hedgehog.

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5.39 Invasive species

BioBank provided details of cotoneaster horizontalis agg, Himalayan cotoneaster, montbretia, Japanese knotweed, Himalayan balsam and rhododendron occurring within a 2.5km radius of the centre of the Site since 2000.

No Himalayan balsam or montbretia were recorded at either site area A or site area B during the survey. Montbretia was recorded at site area B during the 2017 survey. It is likely still present but could not be located due to the extensive areas of tall ruderal vegetation and scrub. Rhododendron sp., cotoneaster sp., and Japanese knotweed were recorded at site area A. Rhododendron sp., and cotoneaster sp. were recorded at site area B.

Montbretia is a non-native, ornamental species which escaped from gardens in the early 1900s. This species spreads mainly by rhizomes, rarely by seed, and can completely dominated habitat and exclude native plan species. Montbretia is listed under Schedule 9 to the Wildlife and Countryside Act 1981 with respect to England and Wales. As such, it is an offence to plant or otherwise allow this species to grow in the wild. Care should be taken to avoid causing the spread of this species.

Rhododendron is a highly invasive exotic plant that out-competes native shrub species leading to a reduction in diversity. It is also a host of Phytophthora which causes a potentially lethal disease that affects plants, trees and shrubs.

Cotoneaster is a popular garden and landscaping species, the berries of which are utilised and spread by birds. When introduced to the wild they damage native vegetation and can be difficult to eradicate. As a result, rhododendron and cotoneaster are listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended).

Should development works be likely to affect area/s colonised by these species, appropriate measures to prevent their spread (such as digging up and allowing the roots to become dried out, thus killing the plant before disposal), will be required prior to the commencement of works.

Japanese knotweed is an invasive non-native plant which has an adverse effect upon native plant communities. This is due to the fact that this vigorous plant readily out-competes and excludes any native flora present. Left unchecked, this species can become a major problem and can lead to the eventual domination and degradation of habitats present. As a result, Japanese knotweed, is listed on Part 2 of Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended), which refers to Section 14 of the Act.

All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act, 1990 (this can include moving contaminated soil from one place to another, or incorrectly handling and transporting contaminated material and plant cuttings). Therefore, should development works be likely to affect areas colonised by this species care must be taken to avoid causing its spread.

Further information on issues associated with Japanese knotweed and development projects can be found on the Environment Agency website (www.environment-

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agency.gov.uk). A strategy should be formulated to eradicate it prior to any ground works.

5.40 Invertebrates

BioBank provided records of southern hawker, brown hawker, migrant hawker, emperor dragonfly, broad-bodied chaser, four-spotted chaser, ruddy and common darter dragonflies, azure, common blue, red-eyed, blue-tailed, and emerald damselflies, wall butterfly and buff ermine moth occurring within a 2.5km radius of the centre of the Site since 2000. Wall is a UK BAP Priority species and is listed on Section 41 of the Natural Environment & Rural Communities (NERC) Act, 2006. The dragonfly and damselfly species are Local BAP Priority Species and Buff ermine is listed on Section 41 of the Natural Environment & Rural Communities (NERC) Act, 2006.

The damselfly species are all primarily associated with pond and wetland habitats. The dragonflies all breed at pond or lake edges with some often frequenting woodland rides and edges for foraging. The wall butterfly's caterpillar feeds on grasses such as false-brome, cock's-foot, bent sp. and Yorkshire-fog. This species likes to bask on rock, walls and stony places. Numbers of this species have declined by 38% since the 1970's. The buff ermine caterpillar food plants include a wide range of herbaceous plant species such as common nettle and adults frequent most habitats including gardens, woodland and hedgerows.

No aquatic habitat is located at site area B, and a small ephemeral pool collected in a tyre rut is located at site area A, therefore it is considered unlikely that either site area A or B would support breeding dragonflies and damselflies. The woodland glades provide suitable habitat for foraging dragonflies and as there are a number of ponds in the local area, it is considered possible that dragonflies could be associated with the Site. Site area A supports a number of grass species including those utilised by wall caterpillars. It also has areas of bare stony ground to the north and east of the arable field which may support basking wall butterflies. The areas of herb-rich grassland, marshy grassland and woodland glades provide suitable basking, feeding and commuting habitat for butterflies and other insects.

A habitat scoping assessment conducted by Conops Entomology at site area A in 2017 indicated that there is a low probability that the site supports wall butterfly, and concluded that it was unlikely that many, if any, other nationally significant species would be recorded from site area A. It is recommended that a survey for wall butterfly be carried out by a suitably experienced entomologist, to determine presence/likely absence and suitable mitigation if required.

Irrespective of the results of the entomological survey, it is recommended that where new planting is to be implemented across the Site, species should be native and/or wildlife friendly, and preferably include a diverse range of grasses, flowering plants and trees (refer to Appendix F: Wildlife Friendly Plants List).

Draft proposals indicate the inclusion of an attenuation pond and surrounding grassland. This area offers an opportunity for biodiversity enhancement for invertebrates as well as other wildlife. It is recommended that a habitat management

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plan be formulated so that this area may be managed for the benefit of wildlife. Refer to Appendix G for a recommended habitat management plan scope.

5.41 Reptiles

All six species of British reptile are protected against intentional killing, injury or sale under Schedule 5 of the *Wildlife and Countryside Act*, 1981. The sand lizard and smooth snake are afforded a higher degree of protection under European law, which, amongst other things, makes it an offence to damage, destroy or obstruct their places of shelter or disturb these species in such a place. However, the distribution of these species is limited, and is largely restricted to a few southern counties in England, with the exception of some coastal sites in Merseyside and North Wales which support populations of sand lizard. The distribution of the remaining 'common' species (i.e. adder, grass snake, slow worm and common lizard) is widespread. With some variation between species, reptiles prefer undisturbed habitats with open areas for basking and warmth, and more vegetated areas for shelter and feeding. They shelter and hibernate in crevices underground, such as within old mammal burrows, cracks within concrete bases and within spoil/rubble mounds.

BioBank did not provide any records of reptile occurring within a 2.5km radius of the centre of the Site since 2000, although the historical data search from the 2017 EP1 indicates that there is a record of grass snake from 1998 from within the search area, pertaining to Stadt Moers LWS.

The Site offers a mosaic of suitable habitat for reptiles by way of woodland, scrub and mammal holes for shelter and/or commuting and foraging, as well as suitable basking areas. In 2017 CES Ecology undertook a survey for reptile at the Site. Based upon the survey findings, reptiles were concluded as 'likely absent' from the Site. Given that there has been very little material change in the composition of the habitats at the site since that time, and that neither site area A or site area B have direct links to any known reptile populations, it is concluded that the status of 'likely absence' remains valid for the Site.

No further survey for reptiles is considered necessary. However, during the 2017 reptile survey, common frog and common toad were recorded at the Site. Common toads were also recorded sheltering underneath a fence panel during the 2020 EP1. As such, Best Practice Measures (BPM) were therefore recommended to be implemented during the development for the protection of common toad and common frog. The measures have been repeated below:

Best Practice Measures

a) Prior to development related works at the Site, a suitably experienced consultant ecologist should be appointed by the landowner, developer or agent, to ensure that the BPM and all other relevant ecological issues are successfully implemented.

b) It is recommended that any areas of grassland be cut prior to the commencement of potentially disturbing works on the Site. This will allow any animals potentially taking

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shelter within the tall grass to disperse into the adjacent hedgerows. Regular cutting of this area and the rest of the Site during the growing season is recommended to discourage amphibians and other animals from taking shelter on site. Grass/vegetation height should be maintained at less than 10cm.

c) Grass cuttings and vegetation cuttings should be disposed of off-site, so as not to create compost heaps which may inadvertently attract amphibians.

d) Existing refugia, for example rubble piles, should ideally be carefully dismantled by hand and removed from the Site.

e) The Site, together with any on-site storage/lay down areas, should be kept clear of debris and, where practicable, stored materials should be kept off the ground on stillages or pallets so as to prevent reptiles/amphibians from inadvertently straying on to the Site and seeking shelter or protection under/within them.

f) All open excavations should ideally incorporate soil 'ramps' at either end to allow reptiles, amphibians and small mammals potentially falling into them to escape.

g) In the event that a reptile is seen or encountered on-site, the developer/contractor should immediately contact the appointed ecologist for advice on how to proceed.

h) The developer or contractor must report all encounters of reptiles on the Site to the appointed ecologist. In the unlikely event that the number of reptiles discovered is greater than that anticipated, it may be necessary for the appointed ecologist to modify the best practice measures accordingly.

5.42 The implementation of the BPM detailed above should be undertaken with due regard and consideration for the potential presence of other species, such as amphibians and nesting birds, which may be associated with the Site.

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6.0 SUMMARY RECOMMENDATIONS TABLE

	Species potentially associated with the site/s?	Further survey effort required?	Survey timing	Recommendations
Badger	Yes	Yes: CES have been commissioned to conduct an updated **badger survey**.	**Any time of year Ideally November-April**	No potentially disturbing work should take place until the results of the survey are known.
Barn owl	Unlikely	Yes: An updated **daytime internal bat & barn owl survey** of the buildings should be conducted prior to the commencement of potentially disturbing works.	**Any time of year**	No potentially disturbing work should take place until the results of these surveys are known.
Bats	Yes	Potentially: If any trees on site are to be affected/lost as part of the development, a **bat roost potential assessment** prior to the commencement of works**.** Yes: An updated **daytime internal bat & barn owl survey** of the buildings should be conducted prior to the commencement of potentially disturbing works.	**Any time of year Ideally when the trees are not in leaf** **Any time of year**	No potentially disturbing work should take place until the results of these surveys are known.

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		Yes: An updated **bat activity survey** should be conducted along woodland edges prior to the commencement of potentially disturbing works.	**Optimal mid-May - early September but possible late April – early October**	
Birds	Yes	Potentially: **Nesting bird surveys** will be required if vegetation removal works are to take place between March & September.	**March – September**	Vegetation removal works should take place outside of the bird breeding season (i.e. October – February). A survey will not be required if potentially disturbing works are undertaken during this period. A scheme for the provision of nest boxes on 25% of the dwellings should be formulated.
Bluebell	On-site	No	-	Where possible, non-native and hybrid varieties should be replaced with native British bluebells. Woodland and other areas supporting native bluebells should be retained and protected during the works.
Brown hare	Yes	No	-	Grassland on site should be kept low (<10cm) to deter brown hare from using the site.
Great crested newt	Yes	Yes: CES have been commissioned to conduct an updated GCN eDNA survey of ponds within 250m of the site boundary.	**April - June**	No potentially disturbing work should take place until the results of the survey are known.
Hedgehog	Yes	No	-	Where possible, all woody/scrub vegetation to be affected should be removed by hand prior to potentially disturbing works taking place. Gaps should be left in fences to enable hedgehogs to move through gardens. Brash piles should be created in retained areas of woodland as shelter sites for hedgehog.

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Invasive species	On-site	Yes	-	Care should be taken to avoid causing the spread of these species. A scheme for the eradication of Japanese knotweed is required.
Invertebrates	Yes	Yes: It is recommended that a survey for Wall butterfly be carried out.	**May**	No potentially disturbing work should take place until the results of the assessment are known.
Reptiles	No	No	-	Development works should proceed in accordance with the best practice measures listed in para. 5.41.
Mature trees	On-site	Yes: If any trees on site are to be affected/lost as part of the development, a **bat roost potential assessment** prior to the commencement of works**.**	**Any time of year Ideally when the trees are not in leaf**	No potentially disturbing works should take place until the results of the assessment are known.
Local Wildlife Sites (LWS)	On-site	Yes: An updated Local Wildlife Site Impact Assessment is required.	**March - September**	No potentially disturbing works should take place until the results of the assessment are known.

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7.0 REFERENCES

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Appendices

Appendix A: Site Location Map



Legend

- Site boundary
- 250m radius
- 500m radius
- Indicative location of pond/ waterbody
- Indicative location of Local Wildlife Sites (LWS)
- Indicative location of local geological sites (LGS)

Priority Habitats

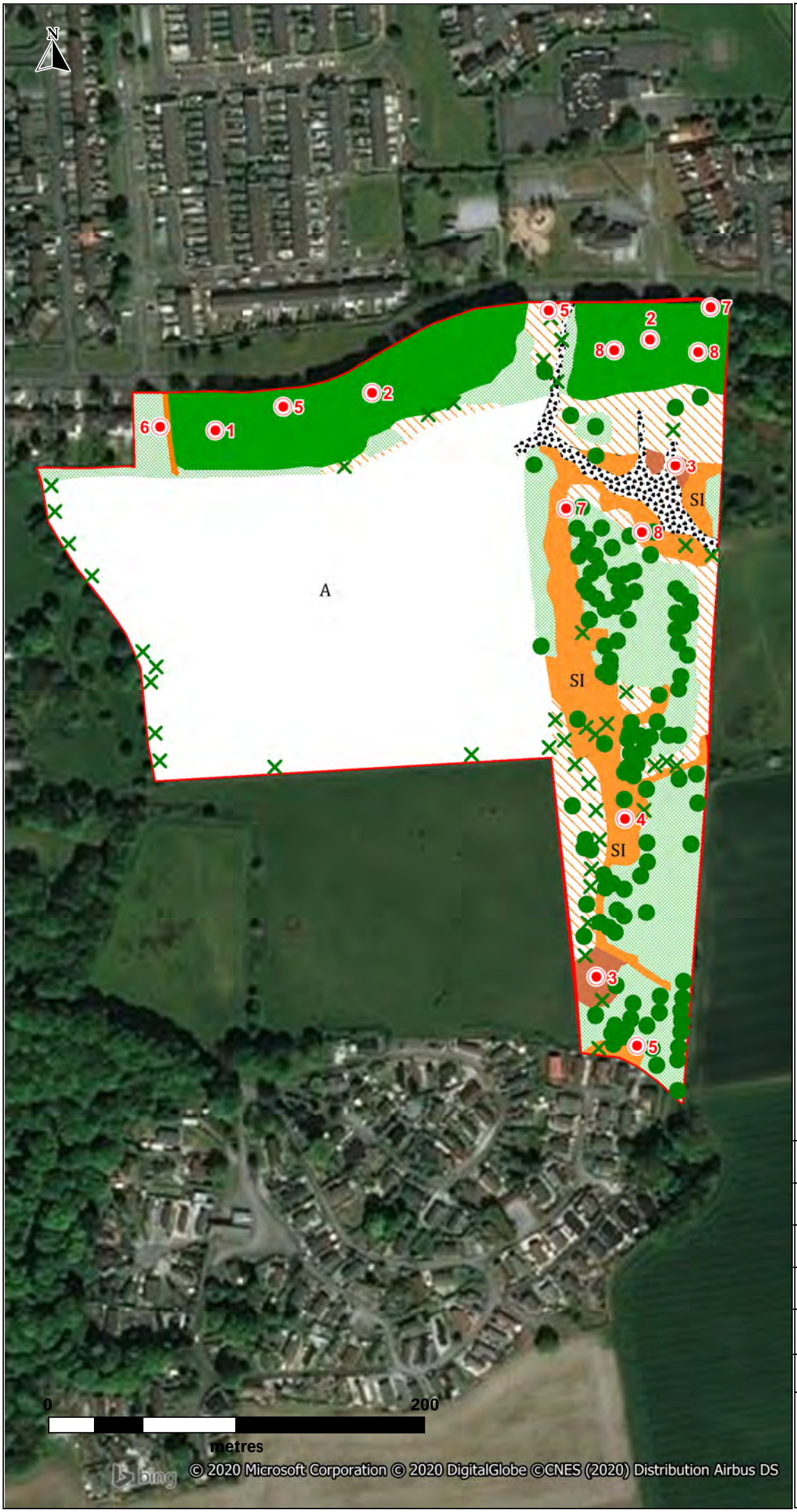
- Deciduous woodland
- Lowland fens
- Lowland meadows
- No main habitat but additional habitats

Project:	Halsnead Park, Whiston	
Map:	Site Location Plan	
CES Ref:	CES/1349/05-2020/LO	
Scale:	Not to scale / Indicative	
Date/Rev:	May 2020	0

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Appendix B: Extended Phase 1 Habitat Survey Maps & Key



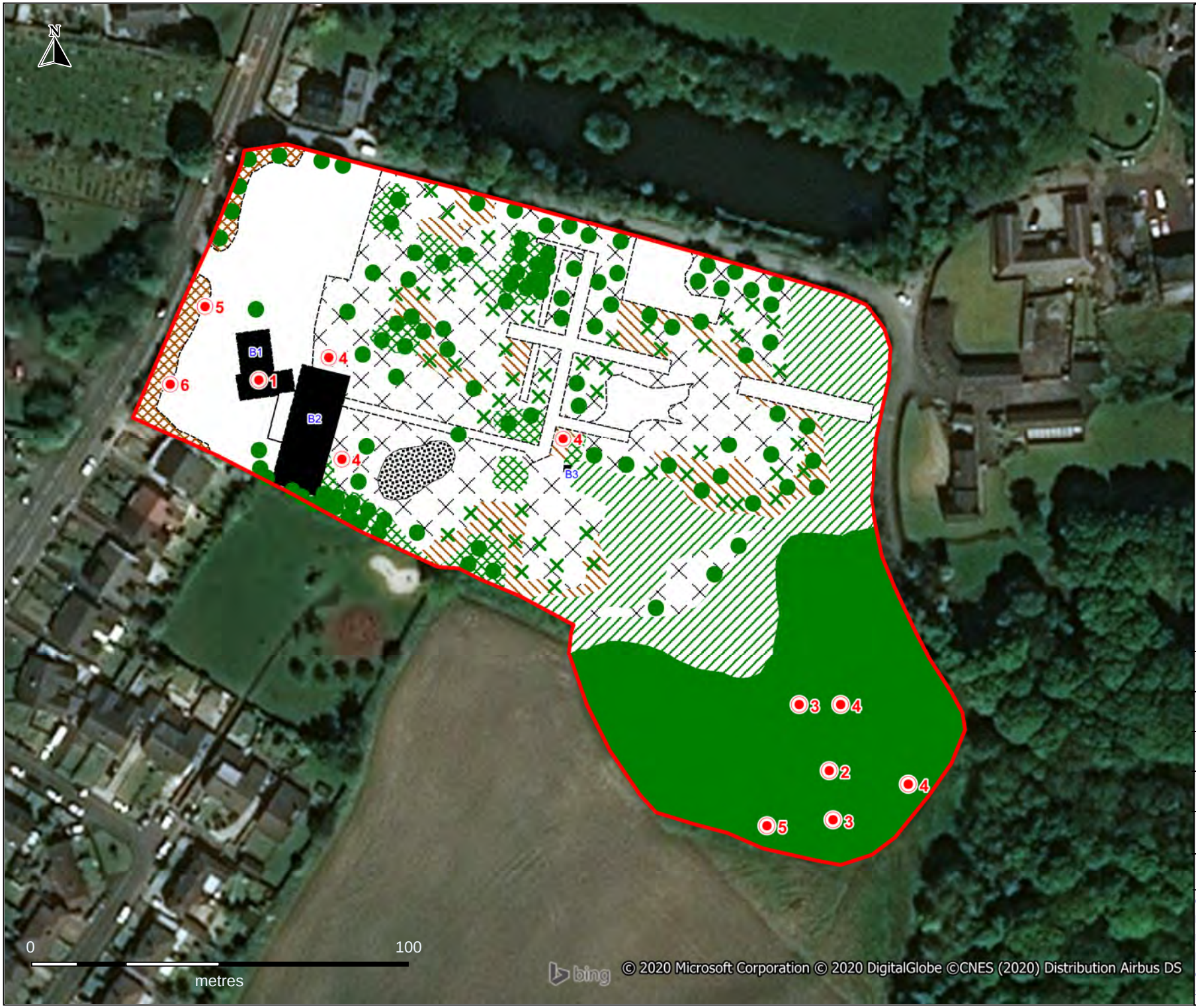
Legend

- Development site boundary
- Broad-leved deciduous woodland
- SI — Semi-improved neutral grassland
- A — Arable
- Tall ruderal vegetation
- Marshy grassland
- Dense/continuous scrub
- Bare ground
- Scattered trees
- Scattered scrub
- Target notes

Project:	Halsnead Park, Whiston	
Map:	Extended Phase 1 Habitat Map - Site area A	
CES Ref:	CES/1349/05-2020/LO	
Scale:	Not to scale / Indicative	
Date/Rev:	May 2020	0

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Legend

Site Boundary

Habitats

- Scattered scrub
- Scattered broadleaved trees/ woodland
- Semi-natural broadleaved woodland
- Broadleaved plantation woodland
- Dense scrub
- Tall ruderal herbs
- Ephermal/short perennial
- Introduced shrub
- Buildings
- Bare ground
- Hard-standing

Project:	Halsnead Park, Whiston	
Map:	Extended Phase 1 Habitat Map - Site area B	
CES Ref:	CES/1349/05-2020/LO	
Scale:	Not to scale / Indicative	
Date/Rev:	May 2020	0

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Appendix C: Species Lists

Site area A (land immediately south of Lickers Lane)

Species present in Lickers Lane Wood

Scientific name	Common name	*Abundance
Canopy		
Acer pseudoplatanus	Sycamore	Dominant
Betula sp.	Birch sp.	Rare
Fraxinus excelsior	Ash	Occasional
Quercus sp.	Oak sp.	Occasional
Ulmus sp.	Elm sp.	Occasional
Understorey		
Acer pseudoplatanus	Sycamore	Frequent
Corylus avellana	Common hazel	Rare
Crataegus monogyna	Common hawthorn	Occasional
Fagus sylvatica	Beech	Rare
Fraxinus excelsior	Ash	Rare
Sambucus nigra	Elder	Frequent
Sorbus aucuparia	Rowan	Occasional
Taxus baccata	Yew	Occasional
Ground flora		
Aegopodium podagraria	Ground-elder	Locally abundant
Anthriscus sylvestris	Cow parsley	Occasional
Dactylis glomerata	Cock's-foot	Occasional
Digitalis purpurea	Foxglove	Rare
Epilobium sp.	Willowherb sp.	Occasional
Fallopia japonica	Japanese knotweed	Rare
Galium aparine	Cleavers	Frequent
Geum urbanum	Wood avens	Occasional
Hedera helix	Ivy	Abundant
Heracleum sphondylium	Hogweed	Frequent
Hyacinthoides sp.	Bluebell sp.	Abundant
Poa trivialis	Rough meadow-grass	Frequent
Pteridium aquilinum	Bracken	Occasional
Rubus fruticosus	Bramble	Frequent
Silene dioica	Red campion	Occasional
Stachys sylvatica	Hedge woundwort	Occasional
Urtica dioica	Common nettle	Abundant

Species present in the area of woodland to the north-east of the site

Scientific name	Common name	*Abundance
Canopy		
Acer pseudoplatanus	Sycamore	Dominant
Betula sp.	Birch sp.	Rare
Fraxinus excelsior	Ash	Occasional
Quercus sp.	Oak sp.	Occasional
Tilia x europaea	Lime	Rare
Ulmus sp.	Elm sp.	Occasional
Understorey		
Acer pseudoplatanus	Sycamore	Frequent
Aucuba japonica	Spotted laurel	Rare

Fraxinus excelsior	Ash	Rare
Prunus laurocerasus	Cherry laurel	Rare
Salix sp.	Willow sp.	Occasional
Sambucus nigra	Elder	Frequent
Sorbus aucuparia	Rowan	Occasional
Ground flora		
Aegopodium podagraria	Ground-elder	Locally abundant
Anthriscus sylvestris	Cow parsley	Occasional
Dactylis glomerata	Cock's-foot	Occasional
Digitalis purpurea	Foxglove	Rare
Epilobium sp.	Willowherb sp.	Occasional
Galium aparine	Cleavers	Frequent
Geum urbanum	Wood avens	Occasional
Hedera helix	Ivy	Abundant
Heracleum sphondylium	Hogweed	Frequent
Hyacinthoides sp.	Bluebell sp.	Abundant
Plantago major	Greater plantain	Occasional
Poa trivialis	Rough meadow-grass	Frequent
Pteridium aquilinum	Bracken	Occasional
Rubus fruticosus	Bramble	Frequent
Silene dioica	Red campion	Occasional
Stachys sylvatica	Hedge woundwort	Occasional
Taraxacum agg.	Dandelion	Occasional
Urtica dioica	Common nettle	Abundant

Species present in the arable field

Scientific name	Common name
Anthoxanthum odoratum	Sweet vernal-grass
Chenopodium album	Fat hen
Cirsium arvense	Creeping thistle
Euphorbia peplus	Petty spurge
Festuca sp.	Fescue sp.
Gnaphalium sp.	Cudweed sp.
Holcus lanatus	Yorkshire-fog
Hordeum sp.	Barley sp.
Myosotis laxa	Tufted forget-me-not
Plantago lanceolata	Ribwort plantain
Rumex obtusifolius	Broad-leaved dock
Senecio jacobaea	Common ragwort
Urtica dioica	Common nettle

Species present in the diverse field margins

Scientific name	Common name	*Abundance
Agrostis capillaris	Common bent	Frequent
Anagallis arvensis	Scarlet pimpernel	Occasional
Anisantha sterilis	Barren brome	Locally frequent
Anthoxanthum odoratum	Sweet vernal-grass	Frequent
Anthriscus sylvestris	Cow parsley	Occasional
Arrhenatherum elatius	False oat-grass	Frequent

Artemisia vulgaris	Mugwort	Rare
Ranunculus ficaria	Lesser celandine	Occasional
Bromus hordeaceus	Soft brome	Locally frequent
Calystegia sepium	Hedge bindweed	Frequent
Cerastium fontanum	Common mouse-ear	Occasional
Chamerion angustifolium	Rosebay willowherb	Frequent
Chenopodium album	Fat hen	Occasional
Cirsium vulgare	Spear thistle	Occasional
Crataegus monogyna	Common hawthorn	Rare
Dactylis glomerata	Cock's-foot	Occasional
Dactylorhiza fuchsii	Common spotted orchid	Rare
Equisetum spp.	Horsetail sp.	Frequent
Galium aparine	Cleavers	Frequent
Geranium robertianum	Herb-robert	Occasional
Geum urbanum	Wood avens	Occasional
Heracleum sphondylium	Hogweed	Occasional
Holcus lanatus	Yorkshire-fog	Frequent
Hyacinthoides sp.	Bluebell sp.	Occasional
Hypochaeris radicata	Cat's-ear	Occasional
Juncus effuses	Soft rush	Occasional
Lolium perenne	Perennial rye-grass	Frequent
Petasites hybridus	Butterbur	Locally frequent
Picris hieracioides	Bristly ox-tongue	Rare
Plantago major	Greater plantain	Occasional
Poa annua	Annual meadow grass	Frequent
Poa trivialis	Rough meadow-grass	Frequent
Prunus sp.	Cherry sp.	Rare
Pteridium aquilinum	Bracken	Frequent
Quercus sp.	Oak sp.	Rare
Ranunculus repens	Creeping buttercup	Frequent
Rubus fruticosus	Bramble	Abundant
Rubus sp.	Raspberry	Locally abundant
Rumex acetosa	Common sorrel	Occasional
Rumex obtusifolius	Broad-leaved dock	Occasional
Senecio jacobaea	Common ragwort	Occasional
Silene dioica	Red campion	Occasional
Sorbus aucuparia	Rowan	Rare
Stachys sylvatica	Hedge woundwort	Occasional
Trifolium repens	White clover	Frequent
Tripleurospermum inodorum	Scentless mayweed	Occasional
Urtica dioica	Common nettle	Frequent
Veronica persica	Common field speedwell	Occasional
Vivia hirsuta	Hairy tare	Occasional

Species present in the areas of semi-improved neutral grassland

Scientific name	**Common name**	***Abundance**
Achillea millefolium	Yarrow	Occasional
Anthoxanthum odoratum	Sweet vernal-grass	Frequent
Arrhenatherum elatius	False oat-grass	Frequent
Carex flacca	Glaucous sedge	Frequent
Cerastium fontanum	Common mouse-ear	Occasional

Chamerion angustifolium	Rosebay willowherb	Locally abundant
Cardamine pratensis	Cuckoo flower	Rare
Chenopodium album	Fat hen	Rare
Cirsium arvense	Creeping thistle	Locally abundant
Equisetum spp.	Horsetail sp.	Frequent
Heracleum sphondylium	Hogweed	Occasional
Holcus lanatus	Yorkshire-fog	Frequent
Juncus inflexus	Hard rush	Occasional
Lotus corniculatus	Common bird's-foot-trefoil	Occasional
Plantago lanceolata	Ribwort plantain	Frequent
Poa annua	Annual meadow grass	Frequent
Potentilla anserine	Silverweed	Locally abundant
Potentilla reptans	Creeping cinquefoil	Occasional
Ranunculus acris	Meadow buttercup	Frequent
Ranunculus repens	Creeping buttercup	Frequent
Rubus fruticosus	Bramble	Frequent
Rumex acetosa	Common sorrel	Occasional
Senecio jacobaea	Common ragwort	Occasional
Senecio jacobaea	Common ragwort	Occasional
Taraxacum agg.	Dandelion	Occasional
Trifolium repens	White clover	Occasional

Species present in area of herb-rich grassland

Scientific name	**Common name**	***Abundance**
Achillea millefolium	Yarrow	Occasional
Anthoxanthum odoratum	Sweet vernal-grass	Frequent
Arrhenatherum elatius	False oat-grass	Frequent
Carex flacca	Glaucous sedge	Frequent
Cerastium fontanum	Common mouse-ear	Occasional
Chamerion angustifolium	Rosebay willowherb	Locally abundant
Chenopodium album	Fat hen	Rare
Cirsium arvense	Creeping thistle	Occasional
Dactylorhiza fuchsii	Common spotted orchid	Occasional
Equisetum spp.	Horsetail sp.	Frequent
Geranium dissectum	Cut-leaved crane's-bill	Occasional
Heracleum sphondylium	Hogweed	Rare
Holcus lanatus	Yorkshire-fog	Frequent
Hypochaeris radicata	Cat's-ear	Occasional
Juncus inflexus	Hard rush	Occasional
Lotus corniculatus	Common bird's-foot-trefoil	Occasional
Lycopus europaeus	Gypsywort	Occasional
Orchis mascula	Early purple orchid	Rare
Pilosella aurantiaca	Fox-and-cubs	Frequent
Plantago lanceolata	Ribwort plantain	Frequent
Poa annua	Annual meadow grass	Frequent
Poa trivialis	Rough meadow-grass	Frequent
Potentilla anserine	Silverweed	Locally frequent
Potentilla reptans	Creeping cinquefoil	Frequent
Ranunculus acris	Meadow buttercup	Occasional
Ranunculus repens	Creeping buttercup	Occasional
Rubus fruticosus	Bramble	Frequent

Rumex acetosa	Common sorrel	Occasional
Rumex crispus	Curled dock	Occasional
Senecio jacobaea	Common ragwort	Occasional
Senecio jacobaea	Common ragwort	Occasional
Taraxacum agg.	Dandelion	Occasional
Trifolium repens	White clover	Frequent
Vicia sp.	Vetch sp.	Frequent

Species present in areas of marshy grassland

Scientific name	Common name	*Abundance
Anacamptis pyramidalis	Pyramidal orchid	Rare
Anthoxanthum odoratum	Sweet vernal-grass	Frequent
Carex flacca	Glaucous sedge	Frequent
Carex leporina	Oval sedge	Frequent
Holcus lanatus	Yorkshire-fog	Frequent
Hypochaeris radicata	Cat's-ear	Occasional
Juncus conglomeratus	Compact rush	Frequent
Juncus effuses	Soft rush	Frequent
Lotus corniculatus	Common bird's-foot-trefoil	Occasional
Luzula campestris	Field woodrush	Abundant
Potentilla reptans	Creeping cinquefoil	Frequent
Prunella vulgaris	Self-heal	Frequent
Ranunculus repens	Creeping buttercup	Frequent
Salix sp.	Willow sp.	Occasional
Trifolium repens	White clover	Occasional

Species associated with areas of scattered trees

Scientific name	Common name
Betula sp.	Birch sp.
Crataegus monogyna	Common hawthorn
Fraxinus excelsior	Ash
Quercus sp.	Oak sp.
Salix caprea	Goat willow
Salix sp.	Willow sp.
Sambucus nigra	Elder
Sorbus aucuparia	Rowan

Species present in areas of tall ruderal herbs

Scientific name	Common name
Arrhenatherum elatius	False oat-grass
Calystegia sepium	Hedge bindweed
Chamerion angustifolium	Rosebay willowherb
Cirsium arvense	Creeping thistle
Digitalis purpurea	Foxglove
Dryopteris sp.	Fern sp.
Fallopia japonica	Japanese knotweed
Galium aparine	Cleavers

Heracleum sphondylium	Hogweed
Holcus lanatus	Yorkshire-fog
Juncus conglomeratus	Compact rush
Persicaria maculosa	Redshank
Pilosella aurantiaca	Fox-and-cubs
Plantago lanceolata	Ribwort plantain
Plantago major	Greater plantain
Pteridium aquilinum	Bracken
Ranunculus repens	Creeping buttercup
Rubus fruticosus	Bramble
Rumex obtusifolius	Broad-leaved dock
Senecio jacobaea	Common ragwort
Silene dioica	Red campion
Stachys sylvatica	Hedge woundwort
Tripleurospermum inodorum	Scentless mayweed
Urtica dioica	Common nettle
Vicia sp.	Vetch sp.

Species associated with areas of ephemeral vegetation

Scientific name	**Common name**
Agrostis stolonifera	Creeping bent
Bellis perennis	Daisy
Cirsium arvense	Creeping thistle
Equisetum spp.	Horsetail sp.
Plantago lanceolata	Ribwort plantain
Plantago major	Greater plantain
Poa annua	Annual meadow grass
Ranunculus repens	Creeping buttercup
Rumex obtusifolius	Broad-leaved dock
Senecio jacobaea	Common ragwort
Tripleurospermum inodorum	Scentless mayweed

Site area B (land immediately east of Windy Arbor Road)

Species present in the area of semi-natural broadleaved woodland

Scientific name	**Common name**	***Abundance**
Canopy		
Acer pseudoplatanus	Sycamore	Dominant
Fraxinus excelsior	Ash	Occasional
Quercus sp.	Oak sp.	Occasional
Understorey		
Acer pseudoplatanus	Sycamore	Occasional
Bambusoideae sp.	Bamboo sp.	Locally abundant
Cornus sanguine	Dogwood	Locally frequent
Corylus avellana	Common hazel	Rare
Cotoneaster sp.	Cotoneaster sp.	Occasional
Crataegus monogyna	Common hawthorn	Rare
Prunus laurocerasus	Cherry laurel	Occasional
Prunus spinosa	Blackthorn	Occasional

Rosa sp.	Rose sp.	Rare
Salix cinerea	Grey willow	Occasional
Sambucus nigra	Elder	Dominant
Sorbus aucuparia	Rowan	Occasional
Ground flora		
Acer pseudoplatanus	Sycamore saplings	Frequent
Alliaria petiolata	Garlic mustard	Occasional
Arum maculatum	Lords & ladies	Locally frequent
Cardamine sp.	Bittercress sp.	Occasional
Chamerion angustifolium	Rosebay willowherb	Frequent
Cirsium arvense	Creeping thistle	Occasional
Cirsium vulgare	Spear thistle	Occasional
Dryopteris sp.	Fern sp.	Occasional
Epilobium parviflorum	Hoary willowherb	Occasional
Festuca sp.	Fescue sp.	Frequent
Galium aparine	Cleavers	Frequent
Geranium robertianum	Herb-robert	Occasional
Geum urbanum	Wood avens	Occasional
Hedera helix	Ivy	Abundant
Hyacinthoides sp.	Bluebell sp.	Locally frequent
Lolium perenne	Perennial rye-grass	Frequent
Mercurialis perennis	Dog's mercury	Rare
Mosses sp.	Mosses sp.	Frequent
Myosotis laxa	Tufted forget-me-not	Occasional
Ranunculus repens	Creeping buttercup	Occasional
Rubus fruticosus	Bramble	Frequent
Silene dioica	Red campion	Occasional
Urtica dioica	Common nettle	Abundant
Pentaglottis sempervirens	Green alkanet	Rare
Daffodil sp.	Daffodil	Occasional
Tellima grandiflora	Fringe cups	Locally abundant
Symphytum orientale	White comfrey	Locally frequent

Species present in the areas of plantation woodland/planted trees

Scientific name	**Common name**
Acer pseudoplatanus	Sycamore
Acer pseudoplatanus	Sycamore saplings
Alnus glutinosa	Common alder
Betula sp.	Birch sp.
Buddleja sp.	Buddleia sp.
Cornus sanguine	Dogwood
Crataegus monogyna	Common hawthorn
Epilobium sp.	Willowherb sp.
Galium aparine	Cleavers
Geranium sp.	Cranesbill sp.
Geum urbanum	Wood avens
Myosotis laxa	Tufted forget-me-not
Populus tremula	Aspen
Quercus sp.	Oak sp.
Rubus fruticosus	Bramble
Salix fragilis	Crack willow

Salix sp.	Willow sp.
Urtica dioica	Common nettle

Species present in areas of tall ruderal herbs

Scientific name	Common name
Cirsium arvense	Creeping thistle
Epilobium parviflorum	Hoary willowherb
Equisetum spp.	Horsetail sp.
Myosotis sp.	Forget-me-not sp.
Plantago lanceolata	Ribwort plantain
Prunella vulgaris	Self-heal
Ranunculus repens	Creeping buttercup
Trifolium repens	White clover
Urtica dioica	Common nettle

Species present in areas of scattered and dense/continuous scrub

Scientific name	Common name
Calystegia sepium	Hedge bindweed
Crocosmia x crocosmifolia	Montbretia
Dryopteris sp.	Fern sp.
Ilex aquifolium	Holly
Rosa canina	Dog-rose
Rubus fruticosus	Bramble
Taxus baccata	Yew
Urtica dioica	Common nettle

Species present in areas of ephemeral vegetation over hard-standing

Scientific name	Common name
Alchemilla mollis	Lady's mantle
Cirsium arvense	Creeping thistle
Epilobium parviflorum	Hoary willowherb
Geranium robertianum	Herb-robert
Geranium sp.	Cranesbill sp.
Geum urbanum	Wood avens
Medicago lupulina	Black medick
Mosses sp.	Mosses sp.
Myosotis sp.	Forget-me-not sp.
Ranunculus repens	Creeping buttercup
Sedum acre	Biting stonecrop
Sedum album	White stonecrop
Tussilago farfara	Colt's-foot

Species present in areas of introduced shrubs

Scientific name	Common name
Acer pseudoplatanus	Sycamore

Crataegus monogyna	Common hawthorn
Cupressus x leylandii	Leyland cypress
Fraxinus excelsior	Ash
Hedera helix	Ivy
Pinus sp.	Pine sp.
Prunus laurocerasus	Cherry laurel
Rhododendron sp.	Rhododendron sp.
Rosa canina	Dog-rose
Rubus fruticosus	Bramble

*** The abundance of all recorded botanical species identified in potential Biodiversity Action Plan Priority habitats was assessed using the DAFOR scale. The DAFOR scale is a broad interpretive assessment whereby the surveyor assigns one of the following categories to the abundance of the species; Dominant, Abundant, Frequent, Occasional or Rare.**

N.B. These species lists represent those species identified during the survey. Those species which were not in growth or could not be identified due to the growth stage are not included. Exotic species (such as garden escapes) may also have been omitted from the above lists. However, it is considered that the information gathered during the survey was sufficient to provide an accurate assessment of the site.

Appendix D: Photographic Plates

Site area A (land immediately south of Lickers Lane)




Plate 1a, 1b: View of Lickers Lane Wood Local Wildlife Site (TN1)



Plate 2: View of Semi-natural Broad-leaved Deciduous woodland (TN2)




Plate 3a, 3b: View of marshy grassland (TN3)



Plate 4: View of herb-rich semi-improved neutral grassland (TN4)



Plate 5: View of Japanese knotweed (TN5)



Plate 6: View of Cotoneaster sp. (TN6)



Plate 7: View of Rhododendron sp. (TN7)



Plate 8: View of rubble piles (TN8)



Plate 9: View of arable field (not recently managed, dominated by grasses and arable weeds)



Plate 10: View of field margins and scrub



Plate 11: View of tall ruderal vegetation



Plate 12: View of semi-improved neutral grassland





Plate 13a, 13b: View of bramble scrub (T) and birch/willow scrub (B)



Plate 14: View of areas of bare ground, with sparse ephemeral vegetation

Site area B (immediately east of Windy Arbor Road)



Plate 15a, 15b, 15c: View of Building B1 (Top left – TN1), B2 (Top right), B3 (Bottom)



Plate 16: View of semi-natural broad-leaved woodland (TN2)



Plate 17: View of mammal holes (TN3)



Plate 18: View of rubble piles (TN4) and ephemeral vegetation



Plate 19: View of cotoneaster sp. (TN5)



Plate 20: View of Rhododendron sp. (TN6)



Plate 21: View of plantation woodland/scrub



Plate 22: View of scrub



Plate 23: View of tall ruderal vegetation



Plate 24: View of scattered trees



Plate 25: View of introduced shrubs and hard standing

Appendix E: Legislation

Species/Habitat	Protected by:	UK BAP	Local BAP
Badger	*Protection of Badgers Act,* 1992	No	No
Barn owl	Schedule 1, Part 1 of the *Wildlife and Countryside Act,* 1981	No	Yes
Bats	Regulation 41 of *The Conservation of Habitats and Species Regulations*, 2010 Section 9 of the *Wildlife and Countryside Act,* 1981 (as amended) Section 40 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Dependent on species	Dependent on species
Bluebell	Schedule 8 of the *Wildlife and Countryside Act,* 1981 (as amended)	No	Yes
Brown hare	Section 41 of *The Natural Environment and Rural Communities (NERC) Act,* 2006	Yes	Yes
Common frog	Provision 5 of Section 9 of the *Wildlife and Countryside Act*, 1981 (as amended)	No	No
Common toad	Provision 5 of Section 9 of the *Wildlife and Countryside Act*, 1981 (as amended) Section 41 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Yes	No
Cotoneaster	Section 14 of the *Wildlife and Countryside Act,* 1981 (as amended)	No	No
Great crested newt	Regulation 41 of *The Conservation of Habitats and Species (Amendment) Regulations*, 2012 Section 9 of the *Wildlife and Countryside Act,* 1981 (as amended) Section 41 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Yes	Yes
Hedgehogs	Section 41 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Yes	No
Japanese knotweed	Section 14 of the *Wildlife and Countryside Act,* 1981 (as amended)	No	No
Montbretia	Section 14 of the *Wildlife and Countryside Act,* 1981 (as amended)	No	No
Nesting birds	Section 1 of the *Wildlife and Countryside Act,* 1981	Dependent on species	Dependent on species
Rhododendron	Section 14 of the *Wildlife and Countryside Act,* 1981 (as amended)	No	No
Smooth newt	Provision 5 of Section 9 of the *Wildlife and Countryside Act*, 1981 (as amended)	No	No
Wall butterfly	Section 41 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Dependent on species	Dependent on species
'Widespread' reptiles	Provisions 1 and 5 of Section 9 of the *Wildlife and Countryside Act*, 1981 (as amended) Section 41 of the *Natural Environment and Rural Communities (NERC) Act,* 2006	Yes	Dependent on species

The *Conservation of Habitats and Species Regulations,* 2017

European protected species are listed on Schedule 2 of the *Conservation of Habitats and Species Regulations* 2017. Those species listed on Schedule 2 are protected under Regulation 41, which refers to the protection of wild animals of a European Protected Species. The following is a summary of the offences listed under Regulation 41, however, the *Conservation Regulations* should always be referred to for the exact and current wording:

Under Regulation 41 of the *Conservation of Habitats and Species Regulations,* 2017 it is an offence to –

- deliberately capture or kill a wild animal of a European protected species;
- deliberately disturb wild animals, in particular any disturbance which is likely:
    - to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; or
    - to impair their ability, in the case of animals of a hibernating or migratory species, to hibernate or migrate;
    - to affect significantly the local distribution or abundance of the species to which they belong
- deliberately take or destroy the eggs of such an animal; or
- damage or destroy a breeding site or resting place of such an animal.
- keep, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a European protected species, or any part of, or anything derived from, such an animal.

***Wildlife and Countryside Act,* 1981 (as amended)**

British protected species of animal are listed on Schedule 5 of the *Wildlife and Countryside Act*, 1981 (as amended). Those species listed on Schedule 5 are protected under Part 1, Section 9, which refers to the protection of certain wild animals. The following is a summary of the offences listed under Section 9; however the Act should always be referred to for the exact and current wording:

Under Section 9 of the *Wildlife and Countryside Act*, 1981 (as amended) if any person –

- intentionally kills, injures or takes any wild animal included in Schedule 5;
- has in his possession or control any live or dead wild animal included in Schedule 5 or any part of, or anything derived from such an animal;
- intentionally or recklessly damages or destroys, or obstructs access to, any structure or place which any wild animal included in Schedule 5 uses for shelter or protection;
- disturbs any such animal included in Schedule 5 while it is occupying a structure or place which it uses for that purpose;
- sells, offers or exposes for sale, or has in his possession or transports for the purpose of sale, any live or dead wild animal included in Schedule 5, or any part of, or anything derived from, such an animal; or,
- publishes or causes to be published any advertisement likely to be understood as conveying that he buys or sells, or intends to buy or sell, any of those things, he shall be guilty of an offence.

***Wildlife and Countryside Act,* 1981 (as amended) - Birds**

All species of wild bird, their nests and eggs are protected under Section 1 of the *Wildlife and Countryside Act,* 1981 (as amended); therefore surveys are required to check for their presence where they are likely to be disturbed for any reason.

The following is a summary of the offences listed under Section 1; however the Act should always be referred to for the exact and current wording:

Under Section 1 of the *Wildlife and Countryside Act*, 1981 (as amended), if any person:

- Intentionally kills, injures or takes any wild bird;
- Intentionally takes, damages or destroys the nest of any wild bird while that nest is in use or being built;
- Intentionally takes or destroys an egg or any wild bird, he shall be guilty of an offence;
- Has in his possession or control any live or dead wild bird or any part of, or anything derived from, such a bird; or
- Has in his possession or control an egg of any wild bird or any part of such an egg, he shall be guilty of an offence.

Schedule 1 (Part 1 and Part 2) of the *Wildlife and Countryside Act,* 1981 (as amended) lists bird species that receive special attention under Section 1. Any person convicted of an offence listed above, in respect of a bird included in Schedule 1 or any part of, or anything derived from, such a bird; the nest of such a bird; or an egg of such a bird or any part of such an egg, shall be liable to a special penalty.

Also, if any person intentionally or recklessly disturbs any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or disturbs dependent young of such a bird, he shall be guilty of an offence and liable to a special penalty.

Schedules 1, 2, 3 and 4 of the *Wildlife and Countryside Act*, 1981 (as amended) list different species of bird and different Parts of Section 1 of the Act refer to different offences which may be committed in relation to the varying Schedules. The following is a summary of the type of protection offered to species of wild bird listed on each of the Schedules, however the Act itself should always be referred to for the exact and current wording and full species lists:

Schedule 1: Birds which are protected by special penalties:
- Part 1: At all times.
- Part 2: During the close season.

Schedule 2: Birds which may be killed or taken:
- Part 1: Outside the close season.
- Part 2: By authorised persons at all times.

Schedule 3: Birds which may be sold:
- Part 1: Alive at all times if ringed and bred in captivity.
- Part 2: Dead at all times.
- Part 3: Dead from 1st September to 28th February.

Schedule 4: Birds which must be registered and ringed if kept in captivity.

The *Natural Environment and Rural Communities (NERC) Act,* 2006 (as amended)

The following is a summary of the *Natural Environment and Rural Communities (NERC),* Act, 2006 (as amended), the *NERC Act* itself should be referred to for the exact and current wording:

- 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;
- In complying with the above, a Minister of the Crown, government department or the National Assembly for Wales must in particular have regard to the United Nations Environmental Programme Convention on Biological Diversity of 1992;
- Conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat.

The *Protection of Badgers Act,* 1992

The following is a summary of the offences contained in the Act; however the *Protection of Badgers Act,* 1992 itself should always be referred to for the exact and current wording.

Under the *Protection of Badgers Act*, 1992 a person is guilty of an offence if, except as permitted by or under this Act he:

- wilfully kills, injures or takes, or attempts to kill, injure or take, a badger;
- has in his possession or under his control any dead badger or any part of, or anything derived from, a dead badger;
- cruelly ill-treats a badger;
- uses badger tongs in the course of killing or taking, or attempting to kill or take, a badger;
- digs for a badger; or,
- sells a live badger or offers one for sale or has a live badger in his possession or control.

A person is also guilty of committing an offence under the *Protection of Badgers Act*, 1992 if he intentionally or recklessly interferes with a badger sett by doing any of the following things:

- damaging a badger sett or any part of it;
- destroying a badger sett;
- obstructing access to, or any entrance of, a badger sett;
- causing a dog to enter a badger sett; or,
- disturbing a badger when it is occupying a badger sett,

The definition of a badger sett within the meaning of the 1992 Act is given as “any structure or place, which displays signs indicating current use by a badger”. ‘Current’ is not defined in the Act, and may be open to interpretation. Natural England indicates that a sett is in ‘current’ use if it has been occupied at all over the previous 12 months. Whatever the interpretation of ‘current use’ however, it is important to note that a sett is protected whether or not there is a badger actually in residence at the time of inspection.

Natural England Guidelines state that work that disturbs badgers or their setts is illegal if not carried out under licence. Badgers could be disturbed by work near their sett even if there is no direct interference or damage to the sett itself, for example, using very heavy machinery within 30 metres of an active sett. Lighter machinery (particularly for any digging operation) within 20 metres, or light work such as hand digging or scrub clearance within 10 metres of an active sett, all require a licence. There are some activities which can cause disturbance at a far greater distance (such as using explosives or pile driving) and should therefore be given individual consideration. Certain criteria must be met before a licence can be issued to enable otherwise prohibited works to proceed. Such criteria may be subject to change without notice.

Timing of operations should also be considered. If required, site-specific badger disturbance licences are normally only issued between the months of July and October so as to avoid the badger’s breeding season. This aspect should be borne in mind when assessing any possible constraints upon the development timetable.

Appendix F: List of Wildlife Friendly Plants

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LIST OF NATIVE & WILDLIFE FRIENDLY PLANTS

Important note: It is entirely the responsibility of the client to ensure that any species chosen from the list provided is suitable for the specific attributes of the location.

Species	Height/Spread	Colours	Flowers/Berries	Wildlife benefits	Plant conditions and notes	Deciduous or Evergreen
Native Trees						
Field Maple *Acer campestre*	to 25m	Leaves: Green then amber in Autumn. Flowers: Yellow/green. Seeds: Green then brown with wings	Flowers May to June	51 species of insects/mites and 24 species of lepidoptera. Fruits eaten by small mammals	Calcareous or clay soils preferably in full sun	Deciduous
Alder *Alnus glutinosa*	6 - 15m	Leaves: Green, Catkins: Yellow/brown, Fruits: Cone-like, small and brown	Catkins in March to April	141 species of insects/mites and 71 species of lepidoptera. Seeds are good for birds such as siskins	Damp soil. Plant hardwood cuttings in the open in late autumn	Deciduous
Silver Birch *Betula pendula*	to 18m	Leaves: Green turning yellow in Autumn, Catkins: Yellow/brown then seeding, Bark: White	Catkins open in April and break up in winter releasing it's seeds	Excellent for insects and to attract inset eating birds. Best tree for moth larvae. Catkins good food source for birds such as redpolls and tits	Dry acid best.	Deciduous
Downy Birch *Betula pubescens*	to 24m	Leaves: Green turning yellow in Autumn, Catkins: Yellow/brown then seeding, Bark: White	Catkins open in April and break up in winter releasing it's seeds	Excellent for insects and to attract inset eating birds. Catkins good food source for birds	Favours wetter more peaty soil	Deciduous

Hornbeam *Carpinus betulus*	to 24m	Leaves: Green, Catkins: Green/crimson then seeding	Flowers in May	51 species of insects/mites and 32 species of lepidoptera. Seeds for birds. Can provide dense nesting cover	Woods and copses on clay soils, will tolerate shade. Sow seeds or fruits in spring	Deciduous
Hazel *Corylus avellana*	to 10m	Leaves: Green, Flowers: Long Yellow/Crimson tassels. Seeds: Brown nuts	Flowers in February	106 species of insects/mites and 68 species of lepidoptera. Nuts eaten by birds and mammals i.e. squirrels, mice and jays	Hedgerows, scrub and woodland in well-drained soil. Full sun or light shade preferable. Remove and plant rooted suckers or offsets in autumn	Deciduous
Beech *Fagus sylvatica*	to 46m	Leaves: Green then orange to red/brown in Autumn, Flowers: Green/white. Seeds: Brown nuts encased in a brown husk	Flowers March to April	98 species of insects/mites and 51 species of lepidoptera. The masts are eaten by birds and mammals including wood mice and jays	Well-drained soils. Can survive in shallow soil. Sow seeds or fruits in autumn	Deciduous. Can hold dead leaves through the winter
Juniper *Juniperus communis*	Shrub or tree to 7m	Leaves: Spiky Green needles, Flowers: Small green to yellow flowers, Berries: Green ripening to purple in the second year	Flowers May to June. Berries take two years to ripen	32 species of insects/mites and 14 species of lepidoptera	Well-drained limestone and acid sandstone	Evergreen
Crab Apple *Malus sylvestris*	to 10m	Leaves: Green, Flowers: White and pink. Fruits: Green/yellow/red apples	Flowers: April to May. Fruits ripen in Autumn	118 species of insects/mites and 76 species of lepidoptera. Fruits are eagerly consumed by birds and mammals despite its bitter taste	Well-drained soil in full sun	Deciduous

Scots Pine *Pinus sylvestris*	to 36m	Leaves: Green needles, Flowers: Yellow and crimson, Cones: Short and brown		172 species of insects/mites and 36 species of lepidoptera. Cones are a valuable food source for birds and other mammals	Prefers sandy well-drained soil in full sun	Evergreen
Black Poplar *Populus nigra*	33m	Leaves: Green turning yellow in Autumn, Flowers: Green and crimson catkins, turning fluffy when fruiting	Catkins produced in March	153 species of insects/mites and 69 species of lepidoptera found within all the poplar species. Good for larger moth species i.e. Hawk moths	Fertile soil near water. Remove and plant rooted suckers or offsets in autumn. Reduced in numbers due to easy hybridisation with other poplars	Deciduous
Aspen *Populus tremula*	to 24m	Leaves: Green turning yellow in Autumn, Flowers: Green and brown catkins, turning fluffy when fruiting	Catkins arrive in March and set seed in May	Good for invertebrates and birds. Food plant of the hairstreak butterfly	Will survive on most soils with full sun or partial shade	Deciduous
Wild Cherry *Prunus avium*	9 - 12m	Leaves: Green turning crimson in Autumn, Flowers: White, Berries: Bright red	Flowers: April, Berries: July	Birds feed on the cherries	Prefers fertile soil, will tolerate some shade	Deciduous
Bird Cherry *Prunus padus*	Shrub or tree to 19m	Leaves: Green, Flowers: White, Berries: Black cherries	Flowers in May	9 species of lepidoptera. Berries eaten by birds	Woods and scrub. Well-drained soil with full sun or light shading	Deciduous
Oaks (native) *Quercus spp.*	to 42m	Leaves: Green, Flowers: Slim yellow catkins, Seeds: Green acorns turning brown when ready to fall	Flowers in May. Acorns produced in Autumn.	423 species of insects/mites and 193 species of lepidoptera. Acorns eaten by a variety of birds and mammals. Very important for insect eating birds	Variety of soils with reasonable depth and preferably in full sun, below 300m altitude. Sow seeds or fruits in autumn	Deciduous

Willows *Salix spp.*	to 25m (species dependent)		Flowers February to March	450 species of insects/mites and 166 species of lepidoptera	Damp areas. Plant hardwood cuttings in the open in late autumn	Deciduous
Goat Willow aka 'pussy willow' *Salix caprea*	Shrubby tree to 10m	Leaves: Oval, dark grey/green on top with a hairy underside, Flowers; Green and yellow short catkins turning fluffy when seeding	Flowers March to April	Early provider of pollen and nectar for insects	Most soils as long as they are at least slightly damp	Deciduous
Grey Willow *Salix cinerea*	Shrubby tree to 6m	Leaves: Grey/green on top with a lighter hairy underside, Flowers; Yellow catkins turning fluffy when seeding	Flowers March to April	Good for insects and birds	Most soils as long as they are at least slightly damp	Deciduous
Crack Willow *Salix fragilis*	Can reach 25m	Leaves: Long, shiny green on top with a grey/green underside, Flowers; Green and yellow catkins turning fluffy when seeding	Flowers in April with the catkins appearing in May and ripening in the summer	Good for insects and birds	Most soils as long as they are at least slightly damp	Deciduous
Bay Willow *Salix pentandra*	to 10m	Leaves: Long, shiny green on top with a grey/green underside, Flowers: Yellowish catkins turning fluffy when seeding	Flowers May to June	Good for insects and birds	Wet ground by water	Deciduous
Elderberry *Sambucus nigra*	to 10m	Leaves: Green, Flowers: Small creamy white flowers in large numbers. Berries: Dark purple/black in bunches	Flowers May to June	Berries for birds and nectar for insects	Sun or partial shade	Deciduous

Whitebeam *Sorbus aria*	10 to 24m	Leaves: Green with white hairy underside turning yellow/crimson in Autumn, Flowers: White, Berries: Green ripening to bright red	Flowers: May	Flowers attract insects and the fruits are eaten by birds	Prefers calcareous soil	Deciduous
Rowan *Sorbus aucuparia*	18m	Leaves: Pinnate green leaves turning crimson in Autumn, Flowers: Small white flowers in clusters, Berries: Bright red	Flowers in May. Produces berries in autumn	58 species of insects/mites and 28 species of lepidoptera. The ripe berries attract birds such as redwings and fieldfares	Will tolerate most soils apart from very heavy soils	Deciduous
Wild Service Tree *Sorbus torminalis*	to 20m	Leaves: Shiny green leaves with a lighter coloured underside, turning purple/red in Autumn, Flowers: Creamy white in clusters, Seeds: Brown speckled seeds in clusters	Flowers: May or June Fruit: September	Good for insects. Fruits eaten by birds	Withstands shade. Prefers clay and limestone soil	Deciduous
Lime *Tilia europaea*	to 46m	Leaves: Green heart-shaped leaves with slightly hairy underside, Flowers: Greenish/yellow flowers, Seeds: Small round and hairy with a grey-brown colour	Flowers June to July	57 species of insects/mites and 31 species of lepidoptera. The nectar is highly sought by bees	Needs well-drained soil with full or partial sun	Deciduous

Wych Elm *Ulmus glabra*	to 37m	Leaves: Green turning yellow in autumn , Flowers: very small purplish flowers, Seeds: Circular winged fruits with the seed in the centre	Flowers produced in spring prior to the leaves, with winged fruits produced in July	Good tree for insects and birds	Full sun or light shade on most soils especially limestone. This species is less susceptable to Dutch elm disease	Deciduous
English Elm *Ulmus procera*	to 33m	Leaves: Green, Flowers: Small crimson flowers, Seeds: Circular winged fruits with the seed in the centre	Crimson flowers produced in spring with winged fruits produced in July	124 species of insects/mites and 24 species of lepidoptera are associated with elm trees	Full sun or light shade. 1 in 5 trees have caught Dutch elm disease to which English elms are susceptable	Deciduous

Species	Height/Spread	Colours	Flowers/Berries	Wildlife benefits	Plant conditions and notes	Deciduous or Evergreen
Introduced Trees						
Sweet Chestnut *Castanea sativa*	to 35m	Leaves: Green, Flowers: Long yellow tassels. Seeds: Brown nuts encased in a green spiky husk	Flowers July. Seeds produced in autumn decreasing in size the further north the plants are situated	11 species of insects/mites and 1 species of lepidoptera. Seeds eaten by a variety of mammals	Well-drained soil, in full or partial sun. Sow seeds or fruit in spring	Deciduous
European Larch *Larix decidua.*	to 46m	Leaves: light green needles, Flowers Yellow/dull-red small globes, Cones: Light brown	Spring	38 species of insects/mites and 15 species of lepidoptera. Cones provide food for tits and finches	Likes plenty of space in full sun	Deciduous
Magnolia *Liriodendron*				Early source of nectar for insects		
Apple *Malus domestica*	to 11m	Leaves: Green, Flowers: Deep pink. Fruits: Reddish-purple	Flowers: April to May. Fruits ripen in Autumn.	Good for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous
Purple Crab *Malus purpurea*	to 10m	Leaves: Green, Flowers: White and pink. Fruits: Green/yellow/red apples	Flowers: April to May. Fruits ripen in Autumn	Good for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous

Norway Spruce *Picea abies*	to 46m	Leaves: Green needles, Flowers: Yellow and pink, Cones: Long and brown	Flowers open in May. Cones ripen in autumn	70 species of insects/mites and 13 species of lepidoptera. The cones are eaten by birds and mammals which include crossbills, treecreepers and red squirrels	Any reasonable soil, preferably in good sun	Evergreen
White Poplar *Populus alba*	24m	Leaves: Dark green upper with pale hairy underside, Flowers: Green catkins, turning fluffy when fruiting	Catkins produced in March	Good for invertebrates and birds especially larger moth species	Full sun or partial shade. Remove and plant rooted suckers or offsets in autumn. Can tolerate pollution well, but the roots can damage pipelines and paving	Deciduous
Wild Plum *Prunus domestica*	to 8m	Leaves: Green, Flowers: White, Fruits: Small purple plums	Flowers: March to May. Fruits ripen in Autumn	Nectar and fruits for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous
Peach *Prunus persica*	6m	Leaves: Dark green, Flowers: Deep pink, Fruits: Usual peach	Flowers: April to May. Fruits ripen in Autumn.	Nectar and fruits for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous
Pear *Pyrus communis*	to 15m	Leaves: Dark glossy green, Flowers: White, Fruits Yellow-green to brown	Flowers: April to May. Fruits ripen in Autumn.	Good for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous

Wild Pear *Pyrus pyraster*	to 15m	Leaves: Dark glossy green, Flowers: White, Fruits Yellow-red to brown, 1-4cm. The tree/shrub is usually spiny	Flowers: April to May. Fruits ripen in Autumn	Good for invertebrates. Fruits are eagerly consumed by birds and mammals	Well-drained soil in full sun	Deciduous

Native Shrubs						
Box *Buxus sempervirens*	to 3m	Leaves: Small, dark green and glossy, Flowers: Small green/yellow, Seeds: Black encased in blue green capsules turning brown in September	Flowers April to May	Provides good nesting cover and winter roosting cover for birds	Calcareous soils in full sun or partial shade	Evergreen
Heather *Calluna vulgaris*	50-100cm	Leaves: Green and minute, Flowers: Pink/purple, Seeds: Very small replacing flowers	Flowers in July to November	Good for invertebrates with a late supply of nectar	Well-drained acid soil in full sun	Evergreen
Dogwood *Cornus sanguinea*	to 4m	Leaves: Green and hairy turning crimson an Autumn, Flowers: Greenish white in groups, Berries: Black in clusters	Flowers in June. Produces bitter black berries in August-September	17 species of lepidoptera. Larval food plant of the green hairstreak butterfly. Flowers produce an unpleasant smell which is attractive to insects. Some birds manage to eat the berries	Woods and scrub on limestone or base rich clays	Deciduous
Hawthorn *Crataegus monogyna*	6m	Leaves: Small and green, Flowers: Bright yellow, Seeds: In green pods	Flowers: White – mid May. Berries: Red/orange in Autumn	Nectar. Berries good food source for thrushes, redwings and fieldfares. Good nesting if dense. Excellent for moth larvae	Any soil	Deciduous
Broom *Cytisus scoparius*	2.5m	Leaves: Small green and deeply lobed, Flowers: White, Berries: Red	Yellow flowers April-June	Good for 39 species of lepidoptera. Food plant of the hairstreak butterfly	Calcifuge, heathland, sandy banks, open woodland and rough ground. Well drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Semi-evergreen

Spurge Laurel *Daphne laureola*	1m	Leaves: Light green, Flowers: White/green, Berries: Black	Flowers in February to April	Early source of nectar for insects. Berries for birds which are poisonous to man	Well-drained humus-rich or chalky soil in full sun or deep shade	Evergreen
Mezereon *Daphne mezereum*	1m	Leaves: Light green with cream tinged edges, Flowers: Bright pink, Berries: Red	Flowers in February to April	Early source of nectar for insects	Well-drained humus-rich soil in full sun or light shade	Deciduous
Heath 'Bell' *Erica cinerea*	to 50cm	Leaves: Green and minute, Flowers: Pink/purple, Seeds: Very small replacing flowers	Flowers July to August	Provides nectar for invertebrates	Well-drained acid soil in full sun	Evergreen
Heath 'Cross-leaved' *Erica tetralix*	to 50cm	Leaves: Green and minute, Flowers: Pink/purple, Seeds: Very small replacing flowers	Flowers July to August	Provides nectar for invertebrates	Damp acid soil in full sun	Evergreen
Spindle *Euonymus europaeus*	5m (8m max)	Leaves: Light green turning to crimson in Autumn, Flowers: Greenish yellow, Seeds: encased in a four lobed pink capsule	Fruit October to December	10 species of lepidoptera. Nectar is good for insects. Berries are good for birds but induce vomiting in people	Woods, hedgerows and scrub on calcareous or base rich clays. Plant semi-ripe cuttings in a cold frame in summer	Deciduous
Alder Buckthorn *Frangula alnus*	2.5m	Leaves: Shiny green, Flowers: very small greenish flowers, Berries: Green berries turning red then purple	Flowers: Early summer. Berries: Autumn	Berries for birds. Important food plant for brimstone butterfly larvae	Damp acidic soil/peat	Deciduous
Tutsan *Hypericum androsaemum*	80cm	Leaves: Green turning red in autumn, Flowers: Yellow, Berries: Black	Flowers June to October followed by berries	Flowers attract insects especially bees. Berries are eaten by birds and small mammals	Full sun or light shade in damp soil. Plant semi-ripe cuttings in a cold frame in summer	Deciduous

Holly *Ilex aquifolium*	300 x 150+ cm	Leaves: spiky glossy green, Flowers: Small pink/white, Berries: Bright red	Flowers: May. Berries: (only on female trees) October to December	Berries good for birds and small mammals. Caterpillars of the holly blue butterfly feed on the leaves. Holly leaf miner provides winter food for birds	Not wet. Layer stems in spring. Need male and female plants near each other to produce berries	Evergreen
Privet *Ligustrum vulgare*	3m	Leaves: Green, Flowers: White, Berries: Small black berries	Flowers: July	24 species of insects/mites, nectar for the butterflies. Berries eaten by birds	Hedgerows and scrub, especially on base rich soil. Plant hardwood cuttings in the open in late autumn	Deciduous or semi-evergreen in mild areas
Shrubby Cinquefoil *Potentilla fruticosa*	1m	Leaves: Green, Flowers: Yellow	Flowers May to September	Nectar source for bees and butterflies	Well-drained soil in full sun or light shade. Semi-ripe cuttings in a cold frame in summer	Deciduous
Blackthorn *Prunus spinosa*	4m	Leaves: Green, Flowers: White, Berries: Blue/black	Flowers: spring	Good for nesting birds if grown as thicket or in hedge. Rich in insects. Fruit for birds. Black hairstreak butterfly lays its eggs mainly on blackthorn	Well-drained soil preferably in a sunny location	Deciduous
Buckthorn *Rhamnus catharticus*	5m	Leaves: Yellow green, Flowers: Yellow/green, Berries: Black. Stems with spines	Flowers: May to June	Larval food plant for brimstone butterfly	Damp, peat or base-rich soils	Deciduous
Dog Rose *Rosa canina*	3 - 4m	Leaves: Green , Flowers: Pink/white, Hips: Red	Flowers: June to July. Hips: autumn	Provides nectar for bees and butterflies. Hips good for small birds and mammals	Dislikes wet or exposed sites Can tolerate poor fertility	Deciduous
Sweet Briar *Rosa rubiginosa*	240 x 240cm	Leaves: Green , Flowers: Pink, Hips: Red/orange	Flowers: mid summer. Berries: autumn	Hips food source for small mammals and birds. Good nesting cover	Prefers sun and well drained soil	Deciduous

Raspberry *Rubus idaeus*	1.5 - 2.5m	Leaves: Green with thorns on underside, Flowers White, Berries: Red, Stems also have thorns	Flowers May to August with berries following	Nectar source for bees and butterflies. Berries for birds and mammals	Any reasonable soil in full sun or partial shade	Deciduous shrub
Gorse *Ulex europaeus*	2 - 2.5m	Leaves: Thin and spiky, green in colour, Flowers: Yellow	Autumn flowers, can flower throughout the year	29 species of insect. Provides good protection for birds nests frequently used by linnets, whinchats and stonechats.	Sandy or peaty well-drained soil in full sun. Grassland, heathland and open woods. Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Wayfaring Tree *Vibernum lantana*	3m	Leaves: Green, Flowers: Whitish yellow, Berries: Red then becoming black	Flowers in June to July	Berries for birds and nectar for insects	Most soils especially base rich	Deciduous
Guelder Rose *Viburnum opulus*	300 x 250cm	Leaves: Green, Flowers: White, Berries: Bright red	Flowers: May to June. Berries: autumn	Nectar for insects, particularly hoverflies. Fruits for birds and small mammals, especially liked by woodmouse. Note: leaves, bark and berries are all poisonous	Plant semi-ripe cuttings in a cold frame in summer	Deciduous
Introduced Shrubs						
Juneberry *Amelanchier lamarkii*	to 6m	Leaves: Pink when unfolding, turning green then yellow-brown in Autumn, Flowers: White in large quantities, Berries: Round red fruits turning purple when ripe	Flowers April to May with berries in the summer	Nectar source for bees and butterflies. Berries for birds	Full sun or partial shade on light acid soils	Deciduous

Spotted Laurel *Aucuba japonica*	2 - 3m	Leaves: Dark green with yellow speckles, leathery in texture, Flowers: Small and white, Berries: Green, ripening to red the following spring	Berries: October-January	Berries for birds	Sun or deep shade, all soils	Evergreen
Darwin's Barberry *Berberis darwinii*	to 3m	Leaves: Sharp holly-like green leaves, Flowers: Orange in small clusters, Berries: Blue berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Evergreen
Hooker's Barberry *Berberis hookeri*	to 3m	Leaves: Sharp green leaves, Flowers: Yellow in small clusters, Berries: Black berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Evergreen
Hedge Barberry *Berberis stenophylla*	to 3m	Leaves: Small sharp green leaves, Flowers: Yellow in small clusters, Berries: Blue/black berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Evergreen
Thunberg's Barberry *Berberis thunbergii*	to 1.5m	Leaves: Bright red in Autumn, Flowers: Yellow in small clusters, Berries: Red berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Deciduous

Thunberg's Barberry *Berberis thunbergii 'Atropurpurea'*	to 2m	Leaves: Bronze leaves bright red in Autumn, Flowers: Yellow in small clusters, Berries: Red berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Deciduous
Thunberg's Barberry *Berberis thunbergii 'Atropurpurea Nana'*	60cm	Leaves: Bronze leaves bright red in Autumn, Flowers: Yellow in small clusters, Berries: Red berries in bunches, Stems: Almost spineless	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Deciduous
Barberry *Berberis vulgaris*	to 3m	Leaves: Green leaves, Flowers: Yellow in small clusters, Berries: Red berries in bunches, Stems: with spines	Flowers in spring. Berries in autumn	Berries for birds and nectar for insects. Can provide good nesting cover for small passerines	Sun or light shade. Various propagation methods. Note: this shrub is a winter host for wheat rust - agricultural fungal pest	Deciduous
Orange Ball Tree *Buddleia globosa*	to 5m	Leaves: Dark green above with a lighter hairier underside, Flowers: Orange in a globular shape, Seeds: Found in the flower heads which stay on the plant for most of the winter	Flowers May to June	Nectar for bees and butterflies	Dryish soil	Deciduous to semi-evergreen
Blue Spiraea *Caryopteris clandonensis*	1m	Leaves: Blue/green, Flowers: Blue in clusters	Flowers, September to October	Provides a late source of pollen and nectar	Requires well-drained soil in full sun	Deciduous
Californian Lilac *Ceanothus 'Autumnal Blue'*	1.8 x 1.8+m	Leaves: Green and shiny, Flowers: Purple in clusters	Flowers in July to October	Nectar for bees and butterflies	Fertile soil in a sunny location	Evergreen

Californian Lilac *Ceanothus 'Gloire de Versailles'*	1.8 x 1.8m	Leaves: Dark green and shiny, Flowers: Light blue in clusters	Flowers in July to October	Nectar for bees and butterflies	Fertile soil in a sunny location	Deciduous
Japanese Quince *Chaenomeles japonica*	1m	Leaves: Green , Flowers: Red, Fruits: Large, golden brown	Flowers March-May followed by fruits which ripen in October	Berries for birds and mammals	Full sun	Deciduous
Quince variety *Chaenomeles speciosa*	Bush to 1.5m or train as a Climber to 3m x 30cm thick	Leaves: Green sparser then *japonica* , Flowers: depends on variety, Fruits: Large, golden brown	Flowers March-May and the fruits ripen in October	Nectar source for bees and butterflies. Berries for birds and mammals. Good for birds to nest in as branches are sturdy with spines to deter cats	Sun or shade	Deciduous
Smoke Bush Cotinus coggygria	3m	Leaves: Green turning orange or red in autumn, Flowers: Light pink feathery flowers	Flowers June - July	Good for bees and birds	Sandy infertile soil best, full sun preferred	Deciduous
Daphne *Daphne odora*	1m	Leaves: Dark green, Flowers: Bright pink	Flowers in February to April	Early source of nectar for insects	Well-drained humus-rich soil in full sun or light shade	Evergreen
Broad-leaved Oleaster *Elaeagnus macrophylla*	to 3m	Leaves: Silvery when unfolding turning dark glossy green, Flowers: Creamy yellow bell shaped, Berries: Red	Flowers in October to November	Provides a late source of pollen and nectar	Any reasonable soil, preferably in good sun	Evergreen

Spreading Oleaster *Elaeagnus umbellata*	2 - 6m	Leaves: Silvery when unfolding turning bright green, Flowers: Creamy yellow bell shaped, Berries: Red	Fragrant flowers in May to June. Berries in October to December	Provides nectar for bees and butterflies, and food for wild birds	Any reasonable soil, preferably in good sun	Deciduous
Hydrangea *Escallonia macrantha*	1 - 3m (Species dependent)	Leaves: Dark green and glossy, Flowers: Pinkish red	Flowers June to September	Provides nectar for bees and butterflies	Full sun or light shade	Evergreen
Fuchsia *Fuchsia magellancia*	2 - 3m	Leaves: Dark green leaves, Flowers: Purple and red	Flowers: July to October	Attracts bees	Full sun or light shade	Deciduous
Hebe *Hebe spp.*	80cm		Flowers May-September (depending on variety)	Food source for 26 species of butterfly including the Speckled Wood	Well-drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Hebe *Hebe albicans.*	30cm x 90cm	Leaves: Small and Green, Flowers: White	Flowers in June to July	Nectar for bees and butterflies	Well-drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Hebe *Hebe andersonii 'variegata'.*	to 2m	Leaves: Small and Green, Flowers: Mauve	Flowers in August to September	Good for invertebrates with a late supply of nectar	Well-drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Hebe *Hebe brachysiphon.*	to 2m	Leaves: Small and Green, Flowers: White	Flowers in June to July	Nectar for bees and butterflies	Well-drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Hebe *Hebe salicifolia.*	90 - 150cm	Leaves: Small and Green, Flowers: White	Flowers in June to September	Nectar for bees and butterflies	Well-drained soil in full sun. Plant semi-ripe cuttings in a cold frame in summer	Evergreen

Shrubby Helichrysum *Helichrysum italicum*	60cm	Leaves: Grey-green silvery leaves, Flowers: Yellow	Yellow flowers in June to August	Nectar source for bees and butterflies	Well-drained sandy soil in full sun	Evergreen
Hydrangea *Hydrangea spp.*	1 - 2.5m	Leaves: Green, Flowers: Depends upon species/varieties	Flowers July to September	Provides nectar for bees and butterflies	Well-drained fertile soil in full sun, needs watering through dry spells	Deciduous
St. John's Wort aka 'Rose of Sharon' *Hypericum calycinum*	to 1m	Leaves: Green turning red in autumn, Flowers: Yellow, Berries: Red	Flowers June to October	Flowers attract insects especially bees. Berries are eaten by birds and small mammals	Full sun or light shade. Plant semi-ripe cuttings in a cold frame in summer	Semi-evergreen
Hyssop *Hyssopus officinalis*	60cm	Leaves: Green, Flowers: Small blue flowers on spikelets	Low evergreen shrub	Attractive for some butterflies	Well-drained fertile soil in full sun	Semi-evergreen
Holly 'Golden King' *Ilex altaclerensis*	300 x 150+ cm	Leaves: Glossy green with yellow borders and small spines, Flowers: Small pink/white, Berries: Bright red	Flowers: May. Berries: (only on female trees) October to December	Berries good for birds and small mammals. Holly leaf miner provides winter food for birds	Any reasonable soil in full sun or partial shade. Need male and female plants near each other to produce berries	Evergreen
Lavender *Lavandula angustifolia*	75 x 75 cm	Leaves: Greyish-green, Flowers: Blue/purple	Flowers: July to September	Attracts butterflies	Plant semi-ripe cuttings in a cold frame in summer	Evergreen
Oregon Grape *Mahonia aquifolium*	1m	Leaves: Green and glossy with small spikes, Flowers: Yellow	Flowers March to April	Nectar for bees and butterflies	Thrives best in partial shade	Evergreen
Daisy Bush *Olearia haastii*	1 - 2m	Leaves: Green and glossy, Flowers: White	Flowers white, July to August	Nectar for bees and butterflies	Well drained soil in full sun	Evergreen
Russian Sage *Perovskia atriplicifolia*	1m	Leaves: Greyish-green, Flowers: Blue/purple	Flowers: August to October	Good for bees	Full sun essential	Deciduous

Mock Orange *Philadelphus coronarius*	1.5 - 3m	Leaves: Yellow and green, Flowers: White	Flowers June to July	Nectar for bees and butterflies	Full sun	Deciduous
Firethorn *Pyracantha atalantioides*	3m	Leaves: Dark green, Flowers: White, Berries: Red/orange	Berries: October-January	Good for nesting thrushes and a site or an open robin box. Nectar for bees, berries for birds	Thrives in most good soils	Evergreen
Firethorn *Pyracantha coccinea*	to 3.5m	Leaves: Dark green, Flowers: White, Berries: Red/orange	Berries: October-January	Good for nesting thrushes and a site or an open robin box. Nectar for bees, berries for birds	Thrives in most good soils	Evergreen
Black Currant *Ribes nigrum*	2m	Leaves: Green , Flowers: Pink, Berries: Black	Flowers: April	Good for bees, birds and small mammals	Thrives in full sun or partial shade	Deciduous
Ornamental Currant *Ribes odoratum*	2m	Leaves: Green turning purple in Autumn, Flowers: Yellow, Berries: Black	Flowers: April	Good for bees and birds	Thrives in full sun or partial shade	Deciduous
Flowering Currant *Ribes sanguineum*	2m x 1.5m	Leaves: Green , Flowers: Pink, Berries: Black.	Flowers March to April	Provides nectar for bees and butterflies	Full sun or light shade	Deciduous
Rosemary *Rosemarinus officinalis*	1.5m	Leaves: Green and thin, Flowers: Lilac	Flowers April to May	Nectar source for bees and butterflies	Well-drained soil in full sun.	Evergreen
Blackberry *Rubus fruticosus*	Sprawling plant 1.5 - 2.5m	Leaves: Green with thorns on underside, Flowers White, Berries: Red turning black when ripening	Flowers May to September with berries following the flowers until mid September	Nectar source for bees and butterflies. Berries for birds and mammals	Any soil in full sun or partial shade. Can be very invasive	Deciduous shrub

Loganberry *Rubus loganobaccus*	1.5 - 2.5m	Leaves: Green with thorns on underside, Flowers White, Berries: Dark red, Stems also have thorns	Flowers May to August with large berries following	Nectar source for bees and butterflies. Berries for birds and mammals	Any reasonable soil in full sun or partial shade	Deciduous shrub
Skimmia *Skimmia japonica*	to 1m	Leaves: Dark glossy green, Flowers: White, Berries: Red (but only if male and female trees are located near each other)	Flowers in April to May	Nectar source for bees and butterflies	Well-drained, neutral to acid soil in full sun or partial shade	Evergreen
Bridal Wreath *Spiraea arguta*	2m	Leaves: Green, Flowers: Masses of white flowers	Flowers April to May	Nectar for bees and butterflies	Full sun on most soils	Deciduous
Snowberry *Symphoricarpos albus*	1 - 2m	Leaves Green, Flowers: Small and pink in terminal spikes, Berries: White	Flowers: June to September	Caterpillars of the death's head hawk moth feed on the leaves. Good ground cover. Birds may feed on the berries when other food is scarce	Forms dense thickets unless regularly pruned	Deciduous
Lilac *Syringa vulgaris*	150 x 300cm	Leaves Green, Flowers: Colour depends on variety, in terminal spikes	Flowers May to June	Nectar for bees and butterflies	Best in full sun	Deciduous
Viburnum *Viburnum bodnantense*	1 - 2.5m	Leaves: Green, Flowers: Pink	Flowers January to March	Provides early nectar source for invertebrates and berries for birds. One of the most valuable winter flowering shrubs	Sun or shade in most soils	Deciduous
Laurustinus *Viburnum tinus*	2 - 6m	Leaves: Green, Flowers: White to pink, Berries: Blue/black	Flowers November - February	Provides late nectar source for invertebrates and berries for birds	Sun or shade in most soils	Evergreen

Weigela *Weigela florida*	1.2m x 1.2m	Leaves: Green or green with yellow tinges (variety dependant), Flowers: Pink	Flowers May to June	Provides nectar for bees and butterflies	Rich, moist soils in full sun or partial shade	Deciduous
Native Herbaceous						
Teasel *Dipsacus fullonum*	2m	Leaves: Green, Flowers: Light purple	Flowers: July to August	A food source of the Brimstone butterfly. Attracts other insects for its nectar and birds for its seeds	Well-drained soil in full sun or light shade	Biennial
Purple Loosestrife *Lythrum salicaria*	to 1.8m	Leaves: Green, Flowers: Purple	Flowers in June to September	Provides nectar for bees and butterflies	Humus-rich soil in full sun or light shade with plenty of water, preferably boggy	Border perennial
Musk Mallow *Malva moschata*	60cm	Leaves: Green Flowers: Pink	Flowers between July and August	Provides nectar for bees and butterflies	Well-drained soil in full sun	Border perennial
Cat-mint *Nepeta cataria*	60 - 90cm	Leaves: Green above, white below. Flowers: White	Flowers July to September	Berries for birds and nectar for insects	Well-drained soil in full sun	Perennial
Wild Marjoram *Origanum vulgare*	50 - 70cm	Leaves: Green Flowers: Pale pink	Flowers July to September	Good plant for butterflies and bees	Dry soil preferably on calcareous soil	Perennial
Tormentil *Potentilla erecta*	30 - 45cm	Leaves: Green, Flowers: Yellow	Flowers June to September	Good plant for butterflies and bees	Well drained soil preferably acidic	Perennial
Goldenrod *Solidago virgaurea*	70 - 100cm	Leaves: Green. Flowers: Yellow	Flowers July to September	27 species of lepidoptera.	Open woodland, grassland and hedgerows. Well-drained soil. Full sun or light shade	Perennial
Betony *Stachys officinalis*	to 60cm	Leaves: Green. Flowers: Pink/purple	Flowers June to September	Nectar source for bees and butterflies	Well-drained soil in full sun or partial shade	Border perennial

Common Valerian *Valeriana officinalis*	Stems to 1m	Leaves: Green. Flowers: Pink/white	Flowers June to September	Provides nectar for bees and butterflies	Dry or damp grassy or rough ground	Perennial
Introduced Herbaceous						
Rockery Alyssum *Alyssum saxatile*	20cm	Leaves: Green, Flowers: Bright yellow	Flowers April to June	Provides nectar for bees and butterflies	Grows well in poor, well-drained soil in full sun. It can soon spread if left unchecked	Perennial
Michaelmas Daisy *Aster novae-belgii*	to 75cm	Leaves: Green, Flowers: Dark pink	Dark pink flowers in September to October	Good for invertebrates with a late supply of nectar	Well-drained soil in full sun. Needs watering in dry weather	Border perennial
Perennial Wallflower *Erysimum 'Bowles Mauve'*	to 75cm	Leaves: Dark green, Flowers: Mauve	Blooms nearly all year round	Provides nectar for insects	Well-drained non-acid soil in full sun	Evergreen perennial
Dame's-violet *Hesperis matronalis*	60 - 100cm	Leaves: Green Flowers: Pink	Flowers May to July	Very good nectar source for bees and butterflies	Well-drained soil in full sun or partial shade	Border perennial
Candytuft *Iberis sempervirens*	20cm high with 60cm spread	Leaves: Dull yellowish green, Flowers: White	Flowers May to June	Very good nectar source for bees and butterflies	Well-drained soil in full sun	Rocky perennial
Golden Rays aka Leopardplant *Ligularia dentata*	to 1m	Leaves: Bluish green, Flowers: Yellow	Flowers July to September	Provides nectar for bees and butterflies	Humus-rich soil in light shade with plenty of water, preferably boggy	Border perennial
Ice Plant *Sedum spectabile*	60 x 30cm	Leaves: Grey/green. Flowers: Pink	Flowers, June to October	Provides nectar for bees and butterflies. The plant is extremely good for butterflies	Average garden soil in full sun	Perennial

Nasturtium *Tropaelumm majus*	1.8m	Leaves: Green. Flowers: Red, orange and yellow	Flowers: June-October	Good for bees and beetles. Seeds eaten by birds and small mammals. Good insect plant	Plant in sun or partial shade. Likes poor soil	Climbing annual
Native Climbers						
Clematis 'Old Mans Beard' *Clematis vitalba*	Climber to 30m	Leaves: Green. Flowers: White/green	Flowers in July	Provides nectar for bees and butterflies	Prefers calcareous and alluvial soils	Deciduous
Ivy *Hedera helix*	Climber	Leaves: Dark green, shiny. Flowers: Green/yellow. Berries: Black	Flowers October to November	Provides late nectar source and cover/hibernating sites for invertebrates. Food source for the Holly Blue butterfly larva	Trees, banks, rocks and crawling over the floor. Thrives in shade. Remove and plant rooted runners in spring	Evergreen
Hop *Humulus lupulus*	Climber to 8m	Leaves: Yellowish-green, Flowers: Small yellowish brown	Flowers July to August	Provides nectar for bees and butterflies	Well-drained soil in full sun or light shade	Perennial
Honeysuckle *Lonicera periclymenum*	Climber to 6m	Leaves: Dark green on top and bluish underneath. Flowers: red outside cream within Berries: Bright red	Flowers July to August	Excellent food source for invertebrates including the Speckled Wood butterfly. Berries eaten by birds	Woods, scrub and hedges. Sun or light shade. Plant semi-ripe cuttings in a cold frame in summer or Layer stems in spring	Deciduous
Introduced Climbers						
Everlasting Pea *Lathyrus latifolius*	Spreading climber to 1.8m	Leaves: Green, Flowers: Pink-purple. Has long thin seed pods	Flowers in July to September	Provides nectar for bees and butterflies	Well-drained soil in full sun or light shade	Border perennial
Japanese Wisteria *Wisteria floribunda*	Climber (needs tying)	Leaves: Yellowish-green Flowers: Blue-purple in large drooping clusters	Flowers early to mid summer but may not flower for the first year or two	Provides nectar for bees and butterflies	Well-drained soil in full sun or light shade. Needs plenty of space	Evergreen

Appendix G: Habitat Management Plan Scope

HALSNEAD GARDEN VILLAGE NORTH - HABITAT MANAGEMENT PLAN SCOPE

This document serves to detail the scope of features and actions that should be included within a habitat management plan for the above site, during/post development. The below list is not exhaustive and additional elements may be included in the plan as required.

The habitat management plan should be implemented by a suitably experienced land management contractor appointed by the developer, who must give due regard to the potential presence of protected species in the managed areas. As advised by Merseyside Environmental Advisory Service, the scope should be agreed by the Local Planning Authority.

1.1 Requirement for 25% of new dwellings to incorporate nest box provision for house sparrow, swift and starling. Boxes should be replaced if damaged.

1.2 Creation of log piles and hibernacula in retained areas of woodland.

1.3 Any new hedgerows should comprise of at least five native, wildlife friendly species, and those in areas of POS should be managed for the benefit of wildlife. Retained natural areas (i.e. woodland) and newly created habitats should be connected where possible, for example by hedgerows.

1.4 Retained non-statutory sites (i.e. Lickers Lane Wood LWS and Sandfield Park LWS) should have clearly displayed information boards which should be replaced if damaged.

1.5 A scheme for the management/maintenance of any proposed attenuation ponds and the surrounding habitats, Lickers Lane Woodland LWS and any other areas of retained woodland including removal of non-native bluebell.

1.6 Continued provision of gaps and holes in boundary fencing for badger and hedgehog.

1.7 Detailed native planting proposals for any landscaped areas of the site, which should include native species from lost field margin and marshy grassland.

1.8 Monitoring of fly-tipping in public open space and clear responsibility for addressing any such issues including tipping of garden waste.

1.9 Installation and maintenance of litter and dog waste bins, and a formal footpath through Lickers Lane Woodland LWS (and other retained areas of woodland) with edging rails, to prevent additional informal pathways which will damage ground flora.

1.10 Installation of bat boxes within retained areas of woodland. Boxes should be replaced if damaged/lost.



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APPENDIX 8.5
MERSEYSIDE ENVIRONMENTAL ADVISORY SERVICE PRE-APP

Merseyside Environmental Advisory Service
2nd Floor Magdalen House, Trinity Road
Bootle, Merseyside, L20 3NJ
Director: Alan Jemmett, PhD, MBA

Enquiries: 0151 934 4951

Contact: Lesley Bye
Email: measdcconsultations@sefton.gov.uk

PRE-APPLICATION ADVICE

To: Clare Appleyard
Organisation: Knowsley Council

From: Lesley Bye

21/00043/PREAPP: PRIVATE AND CONFIDENTIAL RESIDENTIAL DEVELOPMENT FOR UPTO 95 DWELLINGS
Land To The South Of Lickers Lane Whiston Knowsley

1. Thank you for seeking pre-application advice from Merseyside Environmental Advisory Service on your proposal for up to 95 dwellings.

2. Having reviewed your proposal and available environmental information, our advice, is set out below in two parts.

   - Part One deals with issues of regulatory compliance, action required **prior to determination** and matters to be dealt with through planning conditions. Advice is only included here where action is required or where a positive statement of compliance is necessary for statutory purposes.
   - Part Two sets out guidance to facilitate the implementation of Part One advice and informative notes.

Part One

Environmental Impact Assessment

1. Halsnead Park SPD (June 2017) states that all applications within the Halsnead Park Garden Village should be subject to Environmental Impact Assessment. The proposals would likely fall 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 impacts of the whole Halsnead development in addition to the individual application site

Ecology

2. Halsnead Park SPD provides ecological priorities for the site and wider 'Garden Village'. The SPD should therefore be used to inform design, layout and detailed plans as the proposal moves forward through the EIA process.

Designated Sites

4. The development site is adjacent and close to the following designated sites and Local Plan Core Strategy policy CS8 applies:

    - Sandfield Park Woodland LWS (adjacent); and
    - Lickers Lane Woodland LWS (100m to the west).

5. Halsnead Park also includes a wider network of LWSs and Ancient Woodland. The applicant should consider how effects on these sites will be avoided, minimised and mitigated. If adverse effects cannot be avoided, options for compensation should be identified (NPPF paragraph 175). Proposals should only be taken forward where the benefits of the development clearly outweigh the effects on habitats and species.

Habitats Regulations Assessment

6. Direct impacts on European sites can be reasonably discounted. The Mersey Estuary SPA and Ramsar are 6.9km to the south and Sefton Coast European sites 17.5km northwest of the development site.

Indirect impacts

7. The proposal is for 95 net residential units, this will result in increased visits (recreational pressure) to the sites identified above. This may result in significant effects on habitats and species for which these sites have been designated.

8. 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**Error! Bookmark not defined.**&**Error! Bookmark not defined.** as Medium-High risk to qualifying features of the European sites.

9. The applicant must demonstrate how increased recreational pressure will be avoided or mitigated to enable the LPA to undertake HRA **prior to determination of any future planning application**. This information can be incorporated in a Preliminary Ecological Appraisal (see below). Design of on-site greenspace and connection with the wider network of existing and planned greenspace and LWSs is recommended in accordance with the Halsnead Park SPD (2017).

Preliminary Ecological Appraisal

10. I advise that a Preliminary Ecological Appraisal (PEA) that meets BS 42020:2013 is required **to inform the Environmental Statement prior to determination**. The PEA should be undertaken in accordance with CIEEM (2017) guidelines[1]. Surveys should

[1] CIEEM (2017) Guidelines for Preliminary Ecological Appraisal

be carried out by suitably qualified and experienced persons and follow relevant good practice. Further information is included in Part Two.

Archaeology

11. There are two heritage assets recorded on the Merseyside Historic Environment Record within the proposed development: MME15147 Halsnead Park, Whiston, a late 18th century or 19th century park, and MME15681, a section of Halsnead Park Wall being the boundary to the landscaped park.

12. In addition, the application site has remained as agricultural and park land throughout the Post-Medieval and Modern periods. Undeveloped and historically undisturbed areas of green space are considered to have an as yet undefined archaeological potential.

13. The Halsnead Garden Village Masterplan Supplementary Planning Document (adopted June 2017) considers the area to the north of the M62 to have a low to moderate potential for prehistoric, Roman and medieval remains, and a high potential for those of the post-medieval period, where the site had not been subject to truncation by modern development. In Section 5.18 it recommends that further archaeological investigation will be required to accompany any planning applications, in order to gain further detail of the archaeological potential of the development area.

14. NPPF paragraph 194 is clear that "Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation."

15. Consequently, in accordance with NPPF paragraph 194 I advise that **prior to determination**, a programme of archaeological investigation (geophysical survey) will need to be carried out to determine the presence, nature, extent and significance of any surviving archaeological remains. This will inform the requirement for further intrusive archaeological investigation. The applicant should submit a written scheme of investigation for archaeological work for approval in writing by the LPA. If this is not submitted at application stage, then it is likely to be requested by condition.

Waste

16. The proposal is major development and involves excavation and construction activities which are likely to generate significant volumes of waste. Policy WM8 Waste Prevention and Resource Management of the Merseyside and Halton Joint Waste Local Plan (WLP), the National Planning Policy for Waste (paragraph 8) and Planning Practice Guidance (paragraph 49) apply.

17. I advise that any planning application should be accompanied by clear evidence showing what steps will be taken to design out waste, minimise waste production and how wastes arising will be re-used and recycled, and off-site disposal minimised. This should be in the form of a waste audit or a similar mechanism such as a site waste management plan. Further advice is provided in Part Two.

18. Policy WM9 (Sustainable Waste Management Design and Layout for New Development) of the Merseyside and Halton Joint Waste Local Plan (WLP) and the National Planning Policy for Waste (paragraph 8) apply. I advise that information relating to household waste storage and collection is required by policy WM9 and should be included with any planning application. Further information is provided in Part Two below.

Sustainable and Low Carbon Development

19. The requirements of policy CS22 (Sustainable and Low Carbon Development) should be taken into account in any future application including the consideration of low carbon and renewable energy technologies. Inclusion of sustainable energy is also in line with the requirements of the Halsnead Masterplan SPG policy MPG3 and tables 7.4 (Macro-scale opportunities part n)) and 7.5 (Micro-sustainability opportunities part a)).

Land Contamination

20. Advice regarding land contamination matters will be provided within a separate memo to colleagues in Environmental Health.

Part Two

Ecology

21. The following information should be included in the Preliminary Ecological Appraisal report:

- A desk study, including data from the Local Environmental Records Centre following CIEEM (2017) guidelines. The desk study should identity records for designated sites, protected and priority species and habitats on site and within a suitable buffer. However, a data search with a 1km radius is expected as a minimum;
- An Extended Phase 1 Habitat survey identifying the habitats on and adjoining the site. This should include a Phase 1 Habitat map and target notes and should follow JNCC Guidelines[2];
- An assessment of impact to designated sites and Ancient Woodland within Halsnead Park and the potential for protected species to be present;
- The requirement for further specialist surveys, for example, breeding birds, bats, badger and hedgehog, amphibians, farmland species e.g. brown hare and priority/protected invertebrates e.g. wall butterlfy;
- An assessment of the likely ecological effects of the proposals, because of construction works and site operation;
- A completed Biodiversity Metric 3.0 which demonstrates whether or not there will be a net loss of Priority Habitat, should any be present upon the site and affected by the proposed development. This can be used to identify opportunities for biodiversity net gain;
- Any avoidance or mitigation measures that will be implemented;

[2] JNCC (2010) Handbook for Phase 1 Habitat Survey

- The presence of any invasive species (*Wildlife and Countryside Act 1981 as amended*) on site or within 7m of the site boundary. The location and extent of any invasive should be shown on a scaled plan; and
- Identify opportunities for biodiversity net gain in line with NPPF and Defra's 25 Year Plan for the Environment.

22. The applicant should be aware that the once the Environment Bill is enacted into law there will be a legal requirement to provide net gain for biodiversity. Depending on timescales this development may be required to provide biodiversity net gain. Further information is available at https://www.gov.uk/government/news/government-introduces-ground-breaking-environment-bill

23. Examples of mitigation measures are listed below. Following the Sweetman ruling[3], a clear distinction must be made between essential features of the development and additional mitigation measures needed to protect the national and international sites:

- Provision of public open space within the development boundary;
- Improving access to and promoting use of Suitable Alternative Natural Greenspaces (SANG) (including contributions to management);
- Provision of information in sales packs or on information boards, informing residents of the importance of the national site network and Ramsar sites, and responsible user code and the location of SANGs. Example household information leaflets are available: http://www.meas.org.uk/1383; and
- Financial contributions to the management of European sites and SAMM (Strategic Access Management & Monitoring).

24. Incorporation of these measures may enable the LPA to conclude that there are no adverse effects on the integrity of the SACs, SPAs and Ramsar sites.

Archaeology

25. The archaeological geophysical survey will need to be implemented in accordance with best-practice and appropriate professional standards. It should be described in a Written Scheme of Investigation (WSI) produced by an appropriately qualified and experienced archaeological contractor. I will be able to supply further details of the work on request.

Waste

26. A waste audit or similar mechanism provides a mechanism for managing and monitoring construction, demolition and excavation waste. This is a requirement of WLP policy WM8 and the National Planning Policy for Waste (paragraph 8); and is advised for projects that are likely to produce significant volumes of waste (nPPG, paragraph 49). Implementation of such mechanisms may also deliver cost savings and efficiencies for the applicant. The following information could be included within the waste audit (or similar mechanism) as stated in the Planning Practice Guidance:

- the anticipated nature and volumes of waste that the development will generate;

[3] People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

- where appropriate, the steps to be taken to ensure the maximum amount of waste arising from development on previously developed land is incorporated within the new development;
- the steps to be taken to ensure effective segregation of wastes at source including, as appropriate, the provision of waste sorting, storage, recovery and recycling facilities; and
- any other steps to be taken to manage the waste that cannot be incorporated within the new development or that arises once development is complete.

27. Information to comply with policy WM8 could be integrated into a Construction Environment Management Plan (CEMP) if one is to be produced for the development. This would have the benefit of ensuring that the principles of sustainable waste management are integrated into the management of construction on-site to improve resource efficiency and minimise environmental impacts.

    Guidance and templates are available at:

    - http://www.meas.org.uk/1090
    - https://www.gov.uk/guidance/waste
    - http://www.wrap.org.uk/
    - http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8983

28. Guidance on design and access to accommodate sustainable household waste management is available for Knowsley Council in the following documents:

    - Knowsley – Waste and Recycling Collection Policies (August 2013)

    Other useful sources of guidance include:

    - NHBC Foundation – Avoiding Rubbish Design (2015)
    - Building for Life Partnership – The Sign of a Good Place to Live: Building for Life 12 (2014)

Our advice is based on our understanding of your proposal. If there are any subsequent changes to your proposal, or to legislation, policy and/or statutory guidance, when your planning application is considered, our advice to Knowsley Local Planning Authority may change or raise additional matters.

Please let me know if you have any specific queries regarding the advice provided.

Lesley Bye
Contaminated Land Specialist Team Leader

APPENDIX 9.1
LICKERS LANE HISTORIC ENVIRONMENT DESK BASED ASSESSMENT

HISTORIC ENVIRONMENT DESK-BASED ASSESSMENT

LICKERS LANE
WHISTON

MERSEYSIDE

PREPARED BY LANPRO SERVICES
ON BEHALF OF
VISTRY PARTNERSHIPS NORTH WEST

June 2022

Lanpro

Planning + Development | Design Studio | Archaeology + Heritage

Project Reference: 3267H/01

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Revision	Reason for Update	Document Updated
V2	Scoping Opinion Comments	14/09/2022

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Non-Technical Summary

This historic environment desk-based assessment of land south of Lickers Lane, Whiston, Merseyside (henceforth referred to as the study site) has been prepared by Lanpro Services Limited on behalf of Vistry Partnerships North West, and forms part of a full planning application for a residential development that comprises part of the wider Halsnead Garden Village masterplan.

This report has been produced to provide an assessment of the potential for the survival of archaeological remains within the approximately 2.6ha study site and assesses the direct impacts that the proposed development could have on any below-ground assets that may survive within the study site. This assessment also provides an initial assessment of the potential impact the proposed development may have upon the setting of designated and non-designated heritage assets.

This assessment has identified the potential for below-ground, non-agricultural archaeological remains to be low for the prehistoric and Roman periods. The site is located within Halsnead Park, part of the wider Halsnead Estate which likely had medieval origins. It is possible that the park itself originated as a smaller, medieval park to the south-west. The current post-medieval parkland boundaries were established in the late-17th century, with the naturalistic landscape and built heritage elements established and developed throughout the late-17th-mid-20th century. It is considered that there is the low-medium potential for medieval remains and the medium-high potential for post-medieval remains to survive within the study site.

Historic mapping from 1894 (not illustrated) has indicated that there is the possibility that mine workings extended into the western portion of the study site. Furthermore, magnetometry survey works carried out adjacent the southern boundary of the study site identified possible ferrous anomalies, which have the potential to relate to mining activity. It is therefore considered that there is the medium potential for industrial/mining remains to be found within the study site. During the 20th century, the majority of the study site was included within the Halsnead Park Nursery complex, with the site the former location of a number of agricultural/landscape features associated with this business. There is the medium potential that remains associated with this operation will be found within the study site.

The assessment has shown that there are no archaeological constraints to the promotion and subsequent deliverability of the study site. Any archaeological interest can be safeguarded by an appropriately worded planning condition.

This report has concluded that the proposed development will not impact upon the significance nor settings of the Grade II Listed Sandfield House or Church of St Nicholas.

There will be no impact to the significance and setting the Grade II Listed North East Lodge (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) possesses due to their illustrative historical, aesthetic and design values, as well as their architectural interest, and their group value as a result of their direct relationship with one another. However, there will be 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, specifically the non-designated Halsnead Park and boundary walls.

The proposed development will result in the further suburbanisation of the Halsnead Park landscape, a cumulative impact resulting from the wider Halsnead Garden Village Masterplan. Whilst this suburbanisation will not impact upon the significance and character of the individual elements of the former parkland landscape, it will have a slight impact upon the significance these assets possess as a result of their *group value*. However, this impact will be *minor*, as the study site contains no known landscape elements, and due to its location along the northern boundary of the former parkland, is not historically and presently included within any significant views across the parkland.

1 INTRODUCTION

1.1 This historic environment desk-based assessment of land south of Lickers Lane, Whiston, Merseyside (henceforth referred to as the study site) has been prepared by Lanpro Services Limited on behalf of Vistry Partnerships North West, and forms part of a full planning application for a residential development that comprises part of the wider Halsnead Garden Village masterplan.

1.2 This report has been produced to provide an assessment of the potential for archaeological remains within the approximately 2.5ha study site and assesses the direct impacts that the proposed development could have upon below-ground assets that may survive. It also provides an assessment of the indirect potential impact the proposed development may have upon the setting of designated and non-designated heritage assets.

1.3 The assessment has been undertaken to meet the requirements of the *National Planning Policy Framework's* Section 16: 'Conserving and enhancing the historic environment' (MHCLG 2021) and is in line with the Chartered Institute for Archaeologists (CIfA) guidelines *Standard and guidance for historic environment desk-based assessment* (CIfA 2020).

2 LEGISLATION, POLICY AND GUIDANCE

2.1 In considering any planning application for development, the local planning authority will be guided by current legislation, the policy framework set by government planning policy, by current Local Plan policy and by other material considerations.

Current Legislation

2.2 The applicable legislative framework is summarised as follows:

- Ancient Monuments and Archaeological Areas Act (AMAAA) 1979;
- Planning (Listed Buildings and Conservation Areas) (P(LBCA)) Act 1990

2.3 The AMAAA largely relates to Scheduled Monuments (SMs) and designated archaeological areas, detailing in particular what can and cannot be undertaken on archaeological grounds.

2.4 The Planning (Listed Buildings and Conservation Areas) Act 1990 (the 1990 Act) provides for the protection of listed buildings and Conservation Areas and is largely expressed in the planning process through policies in regional and local planning guidance, as outlined below. This act is the primary legislative instrument addressing the treatment of listed buildings and Conservation Areas through the planning process.

2.5 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'.*

2.6 Section 72 then adds that '*…with respect to any buildings or other land in a Conservation Area, of any powers under any of the provisions mentioned in subsection (2), special attention shall be paid to the desirability of preserving or enhancing the character or appearance of that area'*.

2.7 As far as Section 72 is concerned, it has previously been established by the Courts that development which does not detract from the character or appearance of a Conservation Area is deemed to be in accordance with the legislation. In other words, there is no statutory requirement to actively 'enhance'.

2.8 Buildings on the list are graded to reflect their relative architectural and historic interest, based on the below:

- Grade I buildings are of exceptional interest;
- Grade II* buildings are particularly important buildings of more than special interest;
- Grade II buildings are of special interest, warranting every effort to preserve them.

2.9 In addition to the statutory criteria for listing, i.e. architectural and historic interest, and group value, the following general principles are also considered by the Secretary of State when determining if a building is suitable for addition to the list of building of special architectural and historic interest:

Age and rarity: the older a building is, and the fewer the surviving examples of its kind, the more likely it is to have special interest. The following chronology is meant as a guide to assessment; the dates are indications of likely periods of interest and are not absolute. The relevance of age and rarity will vary according to the particular type of building because for some types, dates other than those outlined below are of significance. However, the general principles used are that:

- before 1700, all buildings that contain a significant proportion of their original fabric are listed;
- from 1700 to 1840, most buildings are listed;
- after 1840, because of the greatly increased number of buildings erected and the much larger numbers that have survived, progressively greater selection is necessary;
- particularly careful selection is required for buildings from the period after 1945;
- buildings of less than 30 years old are normally listed only if they are of outstanding quality and under threat.

Aesthetic merits: the appearance of a building, both its intrinsic architectural merit and any group value, is a key consideration in judging listing proposals, but the special interest of a building will not always be reflected in obvious external visual quality. Buildings that are important for reasons of technological innovation, or as illustrating particular aspects of social or economic history, may have little external visual quality.

Selectivity: where a building qualifies for listing primarily on the strength of its special architectural interest, the fact that there are other buildings of similar quality elsewhere is not likely to be a major consideration. However, a building may be listed primarily because it represents a particular historical type in order to ensure that examples of such a type are preserved. Listing in these circumstances is largely a comparative exercise and needs to be selective where a substantial number of buildings of a similar type and quality survive. In such cases, the Secretary of State's policy is to list only the most representative or most significant examples of the type.

National interest: the emphasis in these criteria is to establish consistency of selection to ensure that not only are all buildings of strong intrinsic architectural interest included on the list, but also the most significant or distinctive regional buildings that together make a major contribution to the national historic stock. For instance, the best examples of local vernacular buildings will normally be listed because together they illustrate the importance of distinctive local and regional traditions. Similarly, for example, some buildings will be listed because they represent a nationally important but localised industry, such as shoemaking in Northamptonshire or cotton production in Lancashire.

State of repair: the state of repair of a building is not a relevant consideration when deciding whether a building meets the test of special interest. The Secretary of State will list a building which has been assessed as meeting the statutory criteria, irrespective of its state of repair.

National Planning Policy Framework

2.10 Section 16 of the NPPF (MHCLG 2021), entitled *Conserving and enhancing the historic environment* provides guidance for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets.

2.11 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.

2.12 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.

2.13 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)'.

2.14 Annex 2 also defines '*Archaeological Interest'* as a heritage asset which holds or potentially could hold, evidence of past human activity worthy of expert investigation at some point. Heritage Assets with archaeological interest are the primary source of evidence about the substance and evolution of places, and of the people and cultures that made them.

2.15 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.

2.16 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.'*

2.17 In short, government policy provides a framework which:

- Protects nationally important designated Heritage Assets (which include World Heritage Sites, Scheduled Ancient Monuments, Listed Buildings, Protected Wreck Sites, Registered Parks and Gardens, Registered Battlefields or Conservation Areas)
- Protects the settings of such designations
- In appropriate circumstances seeks adequate information (from desk based assessment and field evaluation where necessary) to enable informed decisions
- Provides for the excavation and investigation of sites not significant enough to merit *in situ* preservation.

Planning Practice Guide

2.18 The Planning Practice Guidance (MHCLG 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

2.19 The Knowsley Local Plan comprises several documents, including the *Core Strategy* (KMBC 2016), which sets out the strategic framework for the growth and development of Knowsley up to 2028 and beyond. The following policy relevant to heritage contained within the *Core Strategy* is as follows:

Policy CS20 – Managing the Borough's Historic Environment

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 no subject to statutory designation will be identified in a local list and will be afforded consideration in the decision making process.

Professional Guidance

2.20 This assessment has been produced in line with the guidelines set out within the Merseyside Environmental Advisory Service's (MEAS) *Guidance on Archaeological Desk-Based Assessments* (MEAS 2019).

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

2.22 The Historic England publication *Historic Environment Good Practice Advice in Planning Note 2: Managing Significance in Decision Taking in the Historic Environment* (2015) outlines a seven-stage process for the assembly and analysis of relevant information relating to heritage assets potentially affected by a proposed development:

- Understand the wider social, cultural, economic and environmental benefits brought by the conservation of the historic environment;
- Understand the significance of the affected assets;
- Understand the impact of the proposal on that significance;
- Avoid, minimise and mitigate impact in a way that meets the objectives of the NPPF;
- Look for opportunities to better reveal or enhance significance;
- Justify any harmful impacts in terms of the sustainable development objective of conserving significance and the need for change; and
- Offset negative impacts on aspects of significance by enhancing others through recording, disseminating and archiving archaeological and historical interest of the important elements of the heritage assets affected.

2.23 In order to understand the nature, extent and level of significance the note advocates considering the four types of heritage value an asset may hold, as identified in Conservation Principles (English Heritage 2008): aesthetic, communal, historic and evidential. Significance results from a combination of any, some or all of the values.

2.24 The Historic England publication *Historic Environment Good Practice Advice in Planning Note 3 (Second Edition): The Setting of Heritage Assets Setting* (2017) recognises that whilst setting is not a heritage asset, elements of a setting *'may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral'* (para. 4). Setting is described as being distinct to curtilage, character and context. This guidance also notes that the contribution of setting to the significance of a heritage asset is often expressed by reference to views, although the importance of setting lies in what it contributes to the significance of the heritage asset, and this can be influenced by a number of other factors.

2.25 In order to assess the contribution made by setting to the significance of a heritage asset, and the implications of new developments, the guidance recommends that a systematic and staged approach to assessment should be adopted, namely:

i) identify which heritage assets and their settings are affected;

ii) assess the degree to which these settings make a contribution to the significance of the heritage asset(s) or allow significance to be appreciated;

iii) assess the effects of the proposed development, whether beneficial or harmful, on that significance or on the ability to appreciate it;

iv) explore the way to maximise enhancement and avoid or minimise harm;

v) make and document the decision and monitor outcomes.

2.26 This report therefore follows steps (i) and (ii) to identify the local heritage assets and their

settings and then makes an assessment of the potential impact of the proposed development having regard to steps (iii) and (iv).

2.27 The Historic England advice note, *Statement of Heritage Significance: Analysing Significance in Heritage Assets. Historic England Advice Note 12* (2019), 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. This is aimed at providing assistance for owners, applicants, local planning authorities, planning and other consultants in the implementation of not only the guidance but also historic environment legislation and policy. It emphasises the level of detail required in support of both planning and listed building consent applications, which should be no more than is necessary, i.e. proportionate to the significance of the heritage asset affected, to reach an informed decision.

3 METHODOLOGY

Information Sources

3.1 All records held by the Merseyside Historic Environment Record (HER) within a 1km search area for information regarding designated and non-designated heritage assets and details of previous archaeological investigations. A gazetteer of these results is provided in Appendix 1 and their locations illustrated on Figures 1.

3.2 The Historic England National Heritage List for England (NHLE) for information regarding designated heritage assets within a 1km search area. A gazetteer of the results is provided in Appendix 1 and their locations illustrated on Figure 1.

3.3 The Merseyside Historic Characterisation Project (MHCP), which was carried out in 2012 by staff within the former Merseyside Archaeological Advisory Service (MAAS) and made available via the Archaeology Data Service (ADS). The broad types within the study area have been illustrated on Figure 2.

3.4 Historic England's Aerial Photo Explorer for historic aerial photographs of the study site.

3.5 Various on-line repositories for historical maps and plans and other relevant documentary sources.

3.6 The Environment Agency website for LiDAR data published on the DEFRA Data Service Platform was also consulted in order to identify any previously unrecorded earthworks or other surface remains within the study site. No unknown archaeological earthwork or cropmark remains were identified within the study site (Figure 11).

Site Visit

3.7 Two site visits were undertaken, the first on 10th May 2022 and the second and 15th June 2022, both in in sunny, warm and dry conditions with good overall visibility. These site visits were carried out to provide an assessment of the character of the study site and to appraise the

potential physical and visual impacts of the proposed development on any heritage and archaeological assets (Plates 1-30).

Assessment Criteria

3.8 The purpose of a historic environment desk-based assessment is to meet the relevant guidance given in the NPPF and any local plans. This outlines the need to inform the planning decisions when considering proposals that have the potential to have some impact on the character or setting of a heritage asset. It is not concerned with other planning issues.

3.9 The degree of impact a development could have on such heritage assets is variable and can sometimes be positive rather than negative. The wide range of possible impacts can include loss of historic fabric, loss of historic character, damage to historic setting, and damage to significant views.

3.10 Under the requirements of the NPPF and of other useful relevant guidance, such as English Heritage's *Conservation Principles, Policies and Guidance* (English Heritage 2008) and Historic England's *Statements of Heritage Significance: Analysing Significance in Heritage Assets* (Historic England 2019), as well as its various Good Practice Advice in Planning Notes (GPAs), the process of desk-based assessments can be summarised as involving three parts:

1. understanding the heritage values and significance of the designated and non-designated heritage assets involved and their settings;
2. understanding the nature and extent of the proposed developments;
3. making an objective judgement on the impact that the proposals outlined in Part 2 may have on the information outlined in Part 1.

Definition of Significance

3.11 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. 71-72).

3.12 In order to understand the nature, extent, and level of significance, the Historic England (2015) document *Managing Significance in Decision Taking in the Historic Environment. Historic Environment Good Practice Advice in Planning: 2* advocates considering the four types of heritage value an asset may hold, as identified in *Conservation Principles* (English Heritage 2008): aesthetic, communal, historic and evidential, as defined below.

- *Evidential value*: derives from the potential of a place to yield evidence about past human activity.
- *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.*

- *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.

3.13 The Historic England document *Statements of Heritage Significance. Analysing Significance in Heritage Assets. Historic England Advie Note 12* (Historic England 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.

3.14 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.

3.15 The relative contribution of the heritage values to the significance of the asset(s) are graded as either high, medium, low, neutral or detrimental.

Heritage significance	Description
Very High	• World Heritage Sites
High	• Scheduled Monuments

Heritage significance	Description
	• 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

Definition of Setting

3.16 The NPPF defines the setting of a heritage asset as: '*The surroundings in which a heritage asset is experienced. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to the significance of an asset, may affect the ability to appreciate that significance or may be neutral*'

3.17 Historic England's *Historic Environment Good Practice Advice in Planning Note 3: The Setting of Heritage Assets Setting* (2017) was used to inform the methodology for this assessment which follows steps i) to iv) outlined in the guidance.

3.18 The production of this assessment has taken into account the physical and sensory surroundings of the asset, in order to understand the contribution 'setting' makes to the heritage significance of the asset(s). This has included topography and intervening development and vegetation. It also considers how the asset is currently experienced and understood through its setting, in particular views to and from the asset and the site, along with key views, and the extent to which setting may have already been compromised.

3.19 The relative contribution of the heritage values to the significance of the asset(s) are graded as either high, medium, low, neutral or detrimental.

Definition of Harm

3.20 Current guidance by Historic England is that 'change' does not equate to 'harm'. The NPPF and its accompanying PPG effectively distinguish between two degrees of harm to heritage assets – substantial and less than substantial. Paragraph 201 of the NPPF states that:

'Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss...'

3.21 Paragraph 202 of the NPPF states that:

'Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal...'

3.22 In determining the effects of the Proposed Scheme this assessment is cognisant of case law. Including the below:

- Flag Station, Mansel Lacy, Herefordshire [22/09/2015] Case Number EWHC 2688

3.23 This ruling has emphasised the primacy of the 1990 Planning Act – and the fact that it is up to the decision makers in the planning system to 'have special regard to the desirability of preserving the [listed] building or its setting'. As stated by HH Judge David Cooke in a judgment of 22 September 2015 regarding the impact on the setting of a listed building:

'It is still plainly the case that it is for the decision taker to assess the nature and degree of harm caused, and in the case of harm to setting rather than directly to a listed building itself, the degree to which the impact on the setting affects the reasons why it is listed.'

- PALMER Appellant and Herefordshire Council and ANR [04/11/16] Case No: C1/2015/3383

3.24 The judgment was agreed by Lord Justice Lewison at the Court of Appeal, who stated that:

'It is also clear as a matter both of law and planning policy that harm (if it exists) is to be measured against both the scale of the harm and the significance of the heritage asset. Although the statutory duty requires special regard to be paid to the desirability of not harming the setting of a listed building, that cannot mean that any harm, however minor, would necessarily require planning permission to be refused.

4 SITE APPRAISAL

Site Location and Description

4.1 The study site is an irregular shape and comprises approximately 2.5ha of open green space (centred at NGR SJ 47510 90372; Figure 1). The northern part of the study site is bounded by Lickers Lane, which lies at the southern edge of the town of Whiston, Knowsley. The eastern and southern parts of the study site are bounded by agricultural fields, whilst the western part is bounded by open green space and some scattered trees. Primary access to the site is obtained from Lickers Lane in the north.

4.2 The topography of the study site is undulating with gentle rises and slopes, rising slightly from the east towards the west, then dipping down again towards the tree-lined boundary screening the area towards Windy Arbor Road. The site as a whole is well screened to the north, north-east and west, with the southern boundary of the site showing views across the former Halsnead Park and glimpsed views of the M62 to the south (Plates 1-12).

Geology and Soils

4.3 The recorded bedrock geology within the majority of the study site consists of sandstone of the Kinnerton Saandstone Formation, with an area of mudstone, siltstone and sandstone of the Pennine Middle Coal Measure Formation extending into the western part of the site. A small area of Pemberton Rock sandstone extends into the north-western boundary of the study site. This is all overlain by superficial deposits of Devensian Till – Diamicton (BGS 2022).

4.4 The soils of the study site comprise slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (CSAI 2022).

5 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

Introduction

5.1 This section reviews existing archaeological evidence for the study site and the archaeological and historical background of the surrounding area, based on a consideration of evidence in the Merseyside HER and the NHLE. It is not the purpose of this document to create a detailed archaeological or historical narrative of the area, but to provide an assessment of the study site's historical development and archaeological potential in accordance with the NPPF.

Designated Heritage Assets

5.2 The study site contains no designated heritage assets.

5.3 The NHLE records nine designated heritage assets within the 1km study area, all of which are Grade II listed buildings. 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) c. 330m east of the study site, and Old Halsnead (NHLE 1261787), located c. 690m to the south. The remaining structures primarily comprise vernacular and agricultural structures, apart from the Anglican Church of St Nicholas (NHLE 1261894), located c. 725m west of the study site.

5.4 Pre-Application response provided by Knowsley Metropolitan Borough Council (KMBC) noted that these designated heritage assets are located adjacent to or within the vicinity of the site and, therefore, their setting may be impacted upon by the proposed development. In addition to the nine designated assets within the 1km study area, KMBC has raised the identified the potential that the Grade II listed Carr House Farmhouse (NHLE 1253441) and The Paddocks and The Stables (NHLE 1253505), which are located c. 1.2km south-west of the study site, may be impacted by the proposed development.

5.5 The scoping opinion from KMBC have also highlighted that these assets (apart from Ropers Bridge) are historically associated with the Halsnead Park Estate, which has been confirmed through documentary research. An examination of historic mapping has shown that historically, views between many of these assets and the study site would not have existed,

such as at the adjacent Carr Farm Farmhouse and The Paddocks and The Stables, which are shielded from the wider estate by mature belts of plantation (e.g. Paradise Covert) to the north and north-east, in addition to planting around Big Water and Hallsnead Hall to the north-east.

5.6 Historically, some intervisibility may have existed between Old Halsnead and the study site. However, these views would have only been glimpsed, given the woodland bounding the north of this structure, in addition to various woodland 'clumps' (e.g. Fox Clump) and the former tree-lined eastern drive into Halsnead Park. This asset is now physically separated from the remainder of the parkland with the construction of the M62 in the late-20th century, with the site walkover showing some glimpsed views of this motorway from within the study site, but nothing of Old Halsnead c.90m further south.

5.7 A site visit has confirmed that there is no intervisibility between the study 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) and 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, using professional judgement, as well as the available documentary resources and the results of the site visit, it has been decided that the above assets will be scoped out of further assessment, as there will be no harm to their significance in terms of the heritage values which are embodied in their physical presence

5.8 The site visits have indicated that due to their proximity to the study site, there is the potential for intervisibility between the remaining four designated heritage assets and the study site, specifically those listed below. They have been included within sections 6 and 7 for further assessment.

NHLE Ref.	HER Ref.	Name	Period
1253249	DME100 MME6862	North East Lodge to Halsnead Park	Post-medieval
1253251	DME103 MME6858	Sandfield House	Post-medieval
1253429	DME106 MME6861	Gate Piers beside North East Lodge to Halsnead Park	19th century
1261894	DME121 ME10891	Church of St Nicholas	19th century

5.9 Full details of all designated heritage assets are listed in a gazetteer in Appendix 1 and their positions illustrated on Figure 1.

Non-designated Heritage Assets

5.10 The Merseyside HER contains 87 non-designated heritage asset records within the 1km study area, the great majority of which date to the post-medieval and modern periods. One non-

designated heritage asset falls within the study site. This is Halsnead Park (MME15147), the former landscaped park which surrounded the 17th century Halsnead House and extended both to the north and south of the present M62.

5.11 The pre-application response provided by KMBC has noted that that this former parkland landscape contains a number of notable features, namely:

- 'Set piece' of 19th century Lodge, stone gate piers and flanking walls at the entrance to Main Drive from Windy Arbour Road (MME18748)
- Route of Main Drive
- Built remnants of the 'Princes House Farm' (MME13083; MME6857)
- Site of Halsnead Hall (MME6856)
- Walled Garden and outbuilding
- Woodland Clumps and Belts
- Ponds and Streams
- Designed and dynamic views across the landscaped formed by the open landscape between routes, water features and tree clumps//belts
- Estate Walls (MME15681)

5.12 Five of these features (route of main drive; walled garden and outbuilding; woodland clumps and belts; ponds and streams; and designed and dynamic views across the landscape) comprise the more ephemeral elements of the non-designated Halsnead Park (MME15147).

5.13 Scoping opinion from KMBC highlighted that these assets are historically associated with Halsnead Park. However, site visits have confirmed that there is no intervisibility or historical connection between two of these sets of assets, specifically the walled garden and outbuilding and ponds and streams, and the study site due to intervening topography and vegetation. Therefore, using professional judgement, they have been scoped out of further assessment as there will be no harm to their significance in terms of the heritage values which are embodied in their physical presence.

5.14 The remaining three features and four non-designated built heritage elements will be included within the assessment of significance and impact of Halsnead Park (MME15147).

5.15 Details of all non-designated HER records are listed in a gazetteer in Appendix 1 and are marked on Figure 1.

5.16 These HER records, all of which relate to archaeological remains, built heritage, parkland, and findspots within the 1km search area, have been broken-down by period, as follows. It should be noted that some records cover more than one period, so the earliest documented period for such assets have been noted below.

Period	Within Study Site	Within Search Area
Prehistoric	0	1
Roman	0	0
Medieval	0	6
Post-medieval/Modern	2	71
Undated	0	7

Previous Investigations

5.17 Nineteen archaeological events are recorded within the 1km study area (Figure 1), almost all of which are composed of non-invasive archaeological works (e.g. desk-based assessment and magnetometry survey). Seventeen of these events have been carried out within the former extent of Halsnead Park, which forms part of the wider Halsnead Garden Village development. The very southern edge of the study site, which extends into an agricultural field to the south, was included within two such events in 2018: a desk-based assessment (EME3090); and magnetometry survey (EME2953). The latter did not note any probable archaeological remains within the southern extent of the study site, with identified anomalies appearing to largely be of natural origin. Several discrete features may correspond to the sites 20th century use as a nursery, with a service pipe also documented, with this latter feature appearing to extend beyond the surveyed section into the south-eastern part of the study site (SUMO Geophysics Limited 2018).

5.18 Whilst not recorded by the Merseyside HER, the study site has been included within the extent of two additional desk-based assessments (Oxford Archaeology North 2008; L-P Archaeology 2020). Full details of archaeological investigations recorded by the Merseyside HER can be found in the gazetteer in Appendix 1 and are illustrated on Figure 1.

Historic Landscape Characterisation

5.19 The wider 1km study area includes parts of over 200 separate Historic Landscape Characterisation (HLC) units, over 100 of which are classified as part of the Residential broad type (Figure 2). The remaining units cover a wide range of broad types, including those representing different elements of urban development, including Civil, Commercial, Communications, Industrial, and Recreational and Ornamental Grounds. The study area also includes un-developed areas of within the landscape, including different styles of Field Systems, Rough Land, Water Bodies, and Woodland.

5.20 The study site itself falls within three separate HLC units of this latter category: 'Field Systems' (HLC 15340), 'Woodland' (HLC 15455), and 'Rough Land' (HLC 15456). Almost the entirety of the study site falls within the 'Field System' broad type, the land within the study site has been classified as regular/small fields that were created during parliamentary enclosures. These were carried out broadly between 1750 and 1850 and are the most important single factor in shaping the modern countryside. Within the study site, this unit

appears to represent the enclosed remains of the former Halsnead Park, which was created during the late-18th or early-19th century.

5.21 The 'Woodland' broad type comprises just over 2% of the HLC units within Knowsley District, with plantations being the primary type within this unit. An area of plantation extends along and within the northern and north-eastern boundary of the study site, with the HLC noting that conifer plantations form parts of many large estates across the borough, including the Earl of Derby's estate in Knowsley (NML 2011, 63).

5.22 The part of the 'Rough Land' broad type, which extends into the north-western corner of the study site, comprises 'scrub', is noted within Knowsley district as being of largely 20th century origin. It is comprised mainly of small, semi-natural stands of brushwood and rough grassland plots, many of which are the result of residential and industrial demolition and clearance, although a few natural sites do occur (NML 2011, 223).

Prehistoric – Roman Periods (c. 9500 BC – c. AD 410)

5.23 There is a scarcity of evidence for prehistoric and Roman period remains across much of north-west England, with remains of the early-prehistoric hunter-gatherer groups primarily occupying seasonal camps along the Mersey and Sefton coast largely restricted to lithic scatters. One such scatter was identified c. 1.7km south-west of the study site at Ochre Brook, where Mesolithic and some Neolithic worked flints, including cores, blades, flakes, and a possible scraper were recovered. Within the study area, the only asset positively dated to the prehistoric period is a Neolithic polished stone axe (MME6866), found within a garden c. 730m north of the study site. Two flint flakes (MME13386) were also recovered during a fieldwalking survey (EME1938) c. 620m north-west of the study site, though they remain undated.

5.24 South-west Lancashire was thought to have had no major urban or military sites, with the main Roman road in the region extending from the important Roman town at *Deva* (Chester), crossing the river Mersey near Warrington, before extending northwards to the fort at *Bremetennacum Veteranorum* (Ribchester), approximately 12km east of the study site. Whilst even smaller farmsteads sites are scarce within this region, work carried out as part of the A5300 (Knowsley Expressway) project revealed evidence for Roman rural settlement within the wider Whiston area. A rectilinear enclosure, internally sub-divided (MME6289) was identified c. 1.6km south-west of the study site at the junction of the M62 and A5300. Large quantities of pottery and tile (MME15640) were found during its excavation, dating the enclosure to the early 2nd century AD, with consular stamps found on several sherds associating the site with the 20th Legion based at *Deva*.

5.25 Whilst there is evidence from the surrounding landscape to indicate occupation and activity during the prehistoric and Roman periods, this does not appear to have been particularly intensive. Based on the above evidence, it is considered that there is a low potential for remains of prehistoric and Roman activity within the study site.

Medieval Period (c. AD 410 – c. AD 1540)

5.26 Whilst not included within the 1086 Domesday Survey (though coverage across Lancashire is incomplete), Whiston is thought to have early-medieval origins (MME18263), although this is largely based on place-name evidence rather than physical remains. *Quistan* is first recorded on a 1190 grant contained within the *Chartulary of Cockersand Abbey*, which documents a grant from Henry Travers of two shillings in yearly rent to the Abbey, paid out of his mill in *Quistan* (Farrer 1900, 603-4). The name itself is thought to mean 'white stone', likely in reference to a conspicuous white stone within the area (Mills 2011, 494). Halsnead is recorded in 13th century texts, with the latter part of this name deriving from the Old English *snæd,* or 'small piece of land'. The earliest recorded form of this name, *Grewinton Halfsnede,* indicates that Halsnead likely once formed part, or half, of Cronton to the south (Ekwall 1922, 108).

5.27 The vill of Halsnead, as recorded in the 13th century, is thought to have been located within Halsnead Park, with the boundaries being given as east at the Wiggalache, which was the boundary between Halsnead and Rainhill, and following the syke to Longleigh Brook in the south; along this to the Spital House in the west, and following into the Deep Clough as far as the Casselache in the north; thence by the Hecseptese Gate to the cross upon the waste (Farrer and Brownbill 1907). Whilst Speed's 1610 plan of *The Countie Pallatine of Lancaster* (not illustrated) does not show a park within this area, a possible medieval ditch (MME20871) was uncovered during recent archaeological trenching works (EME3227), c. 980m south-west of the study site, east of Windy Arbor Road, within the known post-medieval boundary of Halsnead Park. There was evidence for ploughing activity, in addition to a clay floor and wall also having been identified at the aforementioned Ochre Brook site further to the south, at the junction of the M62 and A5300.

5.28 A medieval estate known as Shaw (MME16079), located c. 470m south-east of the study site within Cronton, has been identified in both documentary sources and by a continuous oval-shaped curvilinear enclosure surrounding Higher Shaw Farm (Cowell 1982, 18-19). Within the 1km study area, evidence for other medieval remains is scarce, with pottery having been recovered from within the postulated vill of Halsnead (MME15823) and Shaw (MME7129).

5.29 The most substantial physical evidence for medieval occupation within the immediate area can be found c. 1.3km east of the study site, where the scheduled remains of the moated Rainhill Hall and fishponds (NHLE 1017860) are located.

5.30 Woodland present within the post-medieval boundaries of Halsnead Park suggest that much of this area may have also been woodland during the medieval period, though the possible presence of the vill would also suggest some of this area would have been cleared for agricultural and settlement use as well. It is considered that the potential for the presence of significant (i.e. non-agricultural) medieval remains within the study site is therefore to be low/medium.

Post-Medieval and Modern Periods (c.1540 - Present)

5.31 Throughout the medieval and post-medieval periods, the ownership of both Whiston and Halsnead changed a number of times, with Thomas Willis, a merchant from Liverpool, purchasing the Halsnead estate in 1684. As noted earlier, the exact origins of Halsnead Park (MME are uncertain. Early-18th century leases document enclosed fields occupying the western and south-western areas of the known parkland, within the area of the possible medieval ditch (MME20871) uncovered during recent archaeological trenching works (EME3227) east of Windy Arbor Road, suggesting that this part of the site may have been emparked.

5.32 It would appear that upon his purchase of the Halsnead Estate, Thomas Willis had 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, with this rebuilt portion comprised a 'pedimented central feature, set slightly forward, flanked by narrow wings', built of local red sandstone, leading to the structure being known as the 'Red Hall.' Yates' 1786 *Survey of the County Palatine of Lancaster* (not illustrated) is the earliest available plan which shows this area in any detail. Whilst no park is specifically identified south of Whiston, the modern boundaries of Halsnead Park follow that of the surrounding roads (e.g. Lickers Lane in the north, Fox's Bank Lane in the east, Windy Arbor Road in the west, and modern Cronton Road/Dacre's Bridge Lane in the south), and this road layout is depicted by Yates' plan. It is likely Halsnead Park exists in full by this period, with the boundaries separated from the surrounding roads by a boundary wall (MME15681). This plan identifies the 'Red Hall' within the centre of this enclosed space, further noting that it is owned by Thomas Willis Esquire.

5.33 Yates' plan depicts several other structures within this area, including a building labelled 'Horselet' to the south-east. It is likely this structure represents the location of the Grade II listed Old Halsnead (NHLE 1261787). This structure dates to 1680 (though it may have once possessed a datestone of 1637) and whilst its relationship to the Halsnead Estate it largely unknown, it has been speculated that Thomas Willis resided here whilst Halsnead Hall was being constructed in the late-17th century. It is possible this two-storeyed stone building may have once been home to the previous owners of the estate.

5.34 Two additional buildings (MME20923) are depicted to the north-west of the 'Red Hall' on Yate's 1786 plan, both of which are unnamed. However, the southernmost of these structures appears to be what is later known as Prince's House (MME13083). The study site falls immediately inside the northern boundary of this possible parkland, though no structures are depicted within its extent.

5.35 In 1788, the Halsnead Estate passed to Richard Earle, who adopted the Willis name and arms. Upon his inheritance of the estate, the now Richard Willis had the south front of the 'Red Hall' redesigned, to the designs of architect Sir John Sloan, with this commission notable for being Sloan's only design within either Lancashire or Cheshire.

5.36 Greenwood's 1818 *Map of the County Palatine of Lancaster* (not illustrated) is the first plan to show Halsnead Park as a green, enclosed space, with various belts of woodland providing privacy from the surrounding landscape. The name of the hall appears to have changed to Halsnead sometime in the late-18th/early-19th century, with the house located within the north-central part of the enclosed parkland, accessed from a drive to the east. No features of interest are located within the study site, though a small pond is depicted immediately adjacent to the north-eastern boundary of the site, one of several depicted throughout the entire parkland.

5.37 The 1842 *Tithe Plan of the Township of Whiston* is the first map to show Halsnead Park and Whiston in detail (Figure 3), though it should be noted that the southernmost part of the park is not included on this plan, as it falls within the northern boundary of the Parish of Tarbock. Halsnead Hall is shown in detail to the south-east of the study site, comprised of a main house with a number of outbuildings to the west, and a walled garden with glasshouse. Prince's House and Old Halsnead, with their respective outbuildings are also depicted within the parkland, with all three properties connected by a number of driveways extending across the site. The accompanying tithe apportionment documents that Richard Ellis Esquire owns c. 420ha of the land within the township of Whiston, with c. 207ha of this land occupied by him, including all of Halsnead Park.

5.38 The study site itself includes parts of four separate plots, with the site largely within plot no. 422 known as North Park. Parts of the north-eastern and western boundary of the study site extend across areas of plantation, with the eastern plantation including an L-shaped pond. Beyond this woodland and pond is the Grade II Sandfield House (NHLE 1253251). Whilst dated to the 18th century, it first appears on the 1842 Tithe plan as a rectangular structure fronting Licker's Lane, c. 80m north-east of the study site.

5.39 The 1850 Ordnance Survey (OS) plan (Figure 4) does not depict any significant changes from the earlier 1842 Tithe plan across Halsnead Park or within the study site. However, it is the first to depict the many collieries and coal pits that began to dot the Whiston landscape. The township of Whiston has been synonymous with coal mining since the 16th century, with a number of shafts sunk within the area throughout the post-medieval period. The opening of the Liverpool and Manchester Railway (MME9292) c. 500m north of the study site allowed for an increase in production, with Halsnead Colliery (MME6306), Stank Colliery (MME6877), and Hig Hey Colliery (MME6303) all present to the west of Halsnead Park by the 1850 OS plan, with a coal pit (MME6865) also shown immediately south of Prince's House, c. 430m west of the study site.

5.40 It is not until the 1891 OS plan (Figure 5) that some changes have been carried out within the Halsnead Estate boundary. Of particular note is the establishment of a main access extending east-west across the northern part of the park. Utilising existing earlier pathways, the eastern Fox's Bank Lane access now possesses a Lodge (NHLE 1253249) and four rusticated gate piers (NHLE 1253429) built into the existing park wall (MME15681). This

access leads south-west to Halsnead Hall, turning northwards to Princes House before terminating at the western park boundary. The 1891 OS plan now depicts a second lodge (MME18748) here, at the Tarbock Road (Windy Arbor Road) access.

5.41 In 1864, the site of St Nicholas Church (NHLE 1261894) was purchased and donated by Reverend Ellis Ashton, vicar of Huyton, and the foundation stone was laid by Daniel Willis Esquire. Opened in 1868, the church was located south-west of the western lodge to Halsnead Park, east of Halsnead Colliery, as depicted on the 1891 OS plan. The 1891 OS plan does not depict any changes within the study site during this period.

5.42 An 1894 Map of the mine workings at Bug Mine (KA177/P/M1, not illustrated) shows the approximate location of mine workings within and outside the extent of Halsnead Park. This plan shows that mine workings may have extended into the western part of the study site, with an 'old shaft' also noted c. 130m west of the study site.

5.43 There appears to have been little change carried out within the Halsnead Estate during the late-19th/early-20th century as indicated by the 1906 OS plan (Figure 6). In 1913, the Willis family leased the southern part of Halsnead Park to the Hulton Colliery Company for Cronton Colliery. The new Cronton Colliery (MME10028) is first depicted on the 1925 OS plan (Figure 7), which shows an extensive industrial complex with three shafts south of Old Halsnead. A branch mineral railway has also been constructed, connecting the colliery to the Liverpool and Manchester Railway in the north-west. Coal extraction would be carried out within this complex for the next 70+ years.

5.44 In 1929, the Halsnead Estate and other lands owned by the Willis family were sold in lots by auction, including Halsnead Hall, Princes House, and Sandfield House. Consequently, the parkland and study site underwent several gradual changes during the mid-late-20th century. In 1931, Halsnead Hall was demolished, with the 1938 OS plan (Figure 8), showing only several outbuildings and the remains of the garden walls still present within the landscape. Cronton Colliery within the southern part of the park has grown in size, now including a brick works to the west. Nurseries are now depicted within the eastern half of the park, with the eastern and southern edges of the study site falling within the northernmost nursery.

5.45 OS plans (Figures 9-12) indicate that the study site continues to fall within the boundaries of the Halsnead Park Nursery until the early 1990's. Aerial imagery from 1945 – 1962 (Historic England RAF_106G_UK_626_RS_42266; RAF_82_1146_F21_0009; RAF_58_5162_F22_0025) indicates that the nursery extended into the entire centre of the study site by 1962, with the site subdivided into a number of smaller plots. Modern aerial imagery shows that relic landscape features relating to the former nursery (e.g. pathways and boundaries) still survive within the landscape to the south and east, and whilst not visible within the study site boundary, may still be present as ephemeral features below-ground (Figure 13). This has also been confirmed by 2019 lidar imagery (Figures 14). No significant features of archaeological interest have been identified within the study site.

5.46 The study site appears to have been in use as parkland throughout the duration of the post-medieval period, with much of the site being utilised as part of a nursery in the early-mid-20th century when Halsnead Estate was dissolved. A number of features within the vicinity of the study site are still extant within the former Hansnead Park extent, including part of the parkland wall, which bounds the northernmost part of the study site, and a pond within woodland, which partly bounds the site to the north-east. Extensive coal extraction has taken place within the southern part of the parkland and, with the exception of the coal pit south of Prince's House, with mapping from the late-19th century suggesting mine workings may have extended into the western part of the site. It is considered that there is the low potential for significant (i.e. non-agricultural) post-medieval/modern remains to survive within the study site.

6 ASSESSMENT OF SIGNIFICANCE

6.1 Paragraph 194 of the NPPF 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.

6.2 It is recognised that not all parts of a heritage asset will necessarily be of equal significance. In some cases, certain elements could accommodate change without affecting the significance of the asset. Change is only considered harmful if it erodes an asset's significance. Understanding the significance of any heritage assets affected and any contribution made by their setting (MHCLG 2021, paragraph 195) is therefore fundamental to understanding the scope for and acceptability of change.

Designated Heritage Assets

6.3 The study site contains no designated heritage assets, nor is the site located within a Conservation Area.

6.4 As noted in Section 5.6, there is the potential for the proposed development to impact upon four Grade II listed buildings, all of which are located within or immediately adjacent to the former Halsnead Park boundary. Each of these designated heritage assets is considered potentially sensitive to future development on the study site in terms of impact to their setting. As noted within section 3 above, Grade II listed buildings are all considered to be *medium significance.* They have been individually assessed below.

North East Lodge to Halsnead Park (NHLE 1253429)

6.5 This designated heritage asset is located c. 330m east of the study 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 (Historic England 2022a) dates this lodge to the Georgian period: however, neither lodge appears on historic maps until the 1891 OS plan (Figure 5).

6.6 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 gablet, 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 site 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 value*, resulting in it possessing both *design value* and *architectural interest.*

6.7 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), and the non-designated Park (MME15147), boundary walls (MME15681), Halsnead Hall (MME6856), eastern driveway, and Church Lodge (MME18748).

6.8 Based on the above, 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, who owned and resided within the property for almost 250 years.

6.9 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 assets' *associative historical value.*

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

6.10 These Grade II listed piers are also located c. 330m east of the study 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 parkland.

6.11 The Historic England listing description (Historic England 2022b) 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.'*

6.12 There is an inconsistency between the listing description and the asset as it currently exists. The listing description (Historic England 2022b) 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.*

6.13 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 Halsnead Park and the former Halsnead Hall and eastern driveway.

6.14 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.*

Sandfield House (NHLE 1253251)

6.15 Sandfield House was one of several cottages included within the Halsnead Estate. Located c. 94m north-east of the study site, this house fronts Licker's Lane and is bound to the east by Sandfield Cottage, The Purlins and End Barn (MME15926), and to the south and west by woodland within the former Halsnead Parkland. This building is dated to the 18th century and first appears on Greenwood's 1818 *Map of the County Palatine of Lancaster* (not illustrated).

6.16 This two-storey building is composed of red brick, with the northern elevation of the middle structure possessing a central panelled door and fanlight, and Tuscan porch with cornice. There are two sash windows on the ground floor and three above, with flat brick arches, and a stone roof with moulded eaves. Flanking wings, slightly set back, possess two sash windows on each floor and hipped roofs. As a result of its age and design, this structure possesses some *historic interest*, largely due to its *illustrative historical* and *aesthetic values,* resulting in it possessing *architectural interest.*

6.17 The structure is currently utilised as a children's day nursery, with the nursey also operating a natural play centre within its associated enclosed gardens and adjoining woodland to the south and west of the main house. This current usage lends this structure a degree of *communal value.*

6.18 This cottage was one of 80 cottages which formed a part of the holdings of the Willis family, all of which were sold by auction in 1929 when the estate was broken up. It therefore possesses some *associative historical value*, due to this relationship with the Willis family.

6.19 Sandfield House possesses further significance due to its *group value*, foremost because of its' relationship with the adjacent Sandfield Cottage, The Purlins and End Barn (MME15926), once farm outbuildings for Sandfield House.

6.20 Whilst setting does not contribute to this structure's *associative historical value*, it does provide a contribution to the *historic* and *architectural interest* it possesses, as well as its *illustrative historical, aesthetic* and *communal values.*

Church of St Nicholas (NHLE 1261894)

6.21 The Grade II listed Church is located c. 725m to the west of the study site, fronting the western site of Windy Arbor Road. Set within a c. 1.57ha plot, the church is surrounding on three sides by its associated churchyard, with the southern boundary formed by a single residential dwelling. Primary access to the church is from Windy Arbor Road to the east, though secondary access to the church and wider churchyard is possible from Mire Close to the west.

6.22 The site for the Church of St Nicholas was purchased and donated by Reverend Ellis Ashton, vicar of Huyton. Designed by one of the pre-eminent ecclesiastical architects of the 19th century, George Edmund Street, the foundation stone was laid in 1864 by Daniel Willis Esq of Halsnead Estate, with the church consecrated on 30th July 1868. The church was designed in an Early-English style, built of coursed rubble sandstone with red sandstone dressings and slate roofs. A 3-stage tower is located to the south-west of the nave, with a plain parapet and a flat, capped lead roof. Originally, this tower was designed to include a crenelated parapet and a spire, but due to concerns over mineshafts in the area, and the possible weight of a spire, these elements were never built (Historic England 2022c). An early-1980's extension abuts the southern and eastern sides of the nave and tower respectively.

6.23 Much of the significance of this structure derives from its *illustrative historical* and *aesthetic values*, resulting in it possessing both *design value* and *architectural interest.* The Historic England listing description (Historic England 2022c) notes that this asset is a 'well-designed and imposing Anglican Church' and despite the original designs never being fully realised, the building is still 'an effective, high quality composition highlighting Street's skills.' The listing entry further notes that the interior of the church possess particular special interest. Elaborate, painted reredos were installed c. 1876-77, whilst extensive tile work, including encaustic tiled floors, are present throughout the church. The structure further possesses a number of stained glass windows, including within the Lady Chapel, where the east window is by William Morris, the south windows by Morris & Co, with Morris & Co. further providing the glass for the lancets south of the Edward Burne-Jones rose window, set into the western elevation of the nave. All of these architectural features provide this structure with a great

degree of *evidential value*, in addition to *associate historical value* due to the contributions by leading artists of the period.

6.24 This structure possesses further *associative historical value* due to its relationship with George Edmund Street. Having trained early in his career with prominent architects Owen Browne Carter and George Gilbert Scott, Street is primarily known for his designs in the Victorian Gothic revival style, largely for ecclesiastical structures, though is best known for designing the Royal Courts of Justice on The Strand in London. The church is located almost opposite the western entrance to Halsnead Park, which was owned by the Willis family. In addition to laying the foundation stone for the church, Daniel Willis Esq. also donated the red sandstone for the dressings from his stone quarry.

6.25 Finally, it is considered that this asset possesses *communal value*, which ecclesiastical structures in general possessing a high degree of *spiritual value.* The Incorporated Society for Buildings & Churches donated £250 towards the costs of the church in 1863 upon condition that many seats were reserved for the poor of the parish (Historic England 2022c). In addition to its weekly services, the church runs a number of programs for the wider community, including craft and film clubs.

6.26 Whilst it is considered that setting does not contribute to this assets *evidential, associative historical* or *communal values,* it does contribute to the structure's *illustrative historical*, *aesthetic,* and *design values*, as well as its *architectural interest.*

Non-designated Heritage Assets

Halsnead Park Landscape (MME15147)

6.27 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 parkland were numerous landscape features, including driveways, plantations and water features, including the ornamental lake Big Water to the south-west of the study site, many of which still survive in some form. The part of former parkland within which the study 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 study site, including the curved belt of woodland along the northern and north-eastern boundary of the study site, within which is an L-shaped pond. However, given how little is known of the park's early history, the potential for unknown elements of this early history to survive within the site boundary cannot be discounted. It is therefore considered that should any unknown elements of the early parkland survive below-ground within the study site, they would be of

local significance due to their *historic interest.* They would further possess both *evidential value* and *archaeological interest.*

6.28 As noted above, there are many non-designated elements recorded by the Merseyside HER within the parkland boundary, in addition to a number of landscape features established to create visual interest within the parkland itself. Historically, these 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 shield from sight the more practical (e.g. farm buildings, colliery works west of the park) from its primary building, Halsnead Hall.

6.29 Halsnead Hall (MME6856) was once the focal point of this 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 additionally diminishes the context of the understanding and appreciation of the wider group of landscape features that survive within the former parkland. 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.

6.30 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, and is 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.

6.31 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 parklands original naturalistic design.

6.32 The former Halsnead Park landscape as a whole possess significance, due largely to its *historic interest* resulting from the *group* and *aesthetic values* that it currently 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 of the former parkland, 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 additional diminished the significance the former parkland possesses as a result of its *historic interest, group* and *aesthetic values,* as these changes have effectively eroded the former parkland setting. It is therefore considered that the former Halsnead Park landscape, as it exists today, is of *low significance.*

Potential Sub-Surface Archaeological Remains

6.33 There is no evidence for prehistoric or Roman period activity within the study site. Settlement evidence for all of these archaeological periods lie outside the 1km study area, putting the study site within the hinterland. Consequently, there is a low/nil potential for the presence of remains of these archaeological periods.

6.34 The assessment has identified that the Halsnead Estate likely does have medieval origins, but whether the study site was included within the estate during this period is unknown. However, the potential that medieval agricultural remains, and potentially features associated with this estate, to be present within the study site cannot be discounted. Should such archaeological remains survive remains below-ground within the study site, their significance would be vested in their *historical* and *evidential values*, as well of their *archaeological interest.*

6.35 Halsnead Estate, and the wider landscape of Whiston, were known for their coal extraction, with a number of collieries once located within and adjacent Halsnead Park. Mine workings, as part of Bug Mine, are documented on an 1894 plan as possibly having extended into the western boundary of the study site boundary, with an 'old shaft' also noted c. 130m west of the site. Magnetometry survey (Stephens 2018) carried out within the southern part of the study site and within the parkland to the south of the site identified several small, discrete anomalies ferrous in nature and appear rectangular or rectilinear in form, which have the potential to relate to mining activity. Whilst none of these anomalies extend into the study site itself, the potential that similar remains may survive within un-surveyed areas of the site cannot be discounted. Should such remains be present within the study site, they would be of *local significance*, due to the *historical* and *evidential values*, as well as the *archaeological interest*, they could possess.

6.36 These deposits would make some contribution, though limited, to regional research framework objectives and therefore are likely to be of local significance.

7 IMPACT ASSESSMENT

Proposed Development

7.1 The study site of c. 2.5ha is to be developed for residential development that comprises part of the wider Halsnead Garden Village masterplan.

Previous Impacts

7.2 Whilst no invasive archaeological works have been carried out within the study site, magnetometry survey (SUMO Geophysics Limited 2018) carried out within the southern part of the site indicates a service pipe running through this area, the excavation of which would have likely removed any below-ground remains from within its footprint.

7.3 Historic mapping, aerial imagery, and LiDAR data indicates that the study site was part of an enclosed parkland at Halsnead since at least the late-18th century (and likely earlier) until the early-20th century, when the Halsnead Estate was sold off, and the site was almost entirely included within Halsnead Park Nursery. Evaluation trenching (EME2529) carried out to the east of the study site within part of the former nursery site identified most of the trenches were filled with topsoil dated to the late-19th or 20th century, likely associated with the agricultural activity of the Nursery. Two ditches were unearthed, tentatively identified as either post-medieval field boundaries or features relating to the former nursery complex (NML 2012). It is possible that the study site will be similarly disturbed by modern, agricultural soils, which have the potential to hide any earlier, below-ground remains.

Designated Heritage Assets

7.4 The promotion of the study site for future development will have no direct, physical impact upon any designated heritage assets. The impact to setting of those designated assets that have been identified as potentially sensitive to any future development are discussed below.

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

7.5 The site visits have shown that there is intervisibility between the southern part of the study site and the northern and western elevation of the North East Lodge and the four northernmost listed piers. This intervisibility is also possible from immediately adjacent the gated pier entrance. It should be noted that due to accessibility issues, it was not possible to 'ground-truth' potential visibility from inside the former parkland, adjacent the lodge itself (Plates 13-16).

7.6 Whilst the wide, eastern entrance into Halsnead Park appears to have existed since at least the early-19th century (and possibly earlier), historic mapping shows that this lodge (and the lodge at the western entrance) and associated piers were likely not constructed until the mid-late 19th century. The 1891 OS plan (Figure 5) indicates that originally, the setting of both assets was composed of 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 parkland itself, specifically from along the tree-lined driveway which led to Halsnead Hall (MME6856). The views traveling eastwards along this drive would have highlighted views of the western elevation of the lodge, which possesses a shield with (Willis family?) crest, and the gated eastern 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 parkland, but views of these assets from outside the alignment of the tree-line driveway. This view of both the lodge and adjacent piers, which highlights their *illustrative historical, aesthetic,* and *design values,* as well as their *architectural interest,* does not included the study site within its extent, and it is therefore considered that the proposed development will have *no impact* upon this element of both assets significance. It is also considered that there will be a *no 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 parkland itself.

7.7 As noted within Section 6, both of these 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 parkland that have 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.

7.8 The landscape across the 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. 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 parkland have further diminished the *historic interest* and *group value* these assets possess.

7.9 It is considered that the proposed 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 (MME15147) and boundary walls (MME15681), 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.

Sandfield House (NHLE 1253251)

7.10 The site walkovers have shown that despite the close proximity to the study site, at present there exists no intervisibility with Sandfield House. This is due to an extensive area of woodland present between the two areas (Plates 17-20). Key views of this structure are those which highlight its *illustrative historical* and *aesthetic values,* as well as its *architectural interest.* This is best appreciated from Licker's Lane to the north, with views approaching the House from the east and west show the slightly staggered façade with its former outbuildings to the east, all set within a backdrop of woodland, providing a more enclosed feel to this building group. Historic mapping shows that this structure has been within a wooded setting since at least the early-19th century, which has both provided both a visual and physical separation from the remainder of the parkland estate to the south. The proposed development plan shows that this extant belt of woodland is to be retained, and therefore, there will be *no impact* to the significance this asset derives from these particular heritage values.

Church of St Nicholas (NHLE 1261894)

7.11 Both site walkovers have shown that there is some intervisibility between the study site and the Church of St Nicholas. Specifically, these views are only possible from ground-level within the southern part of the study site and the upper 2-stages of the church tower, with no intervisibility from ground-level adjacent the church and the study site (Plates 21-23).

7.12 When first built, the church was surrounded by a mixture of agricultural fields and colliery workings west of Tarbock Road (Windy Arbor Road). To the east was the emparked Halsnead Park, the park boundary walls and internal vegetation of 'Paradise Covert' restricting views eastwards. Since its construction in the mid-19th century, both the immediate and wider setting of this Grade II listed church have changed significantly, with 20th century suburban expansion infilling many of the former fields and industrial works to the south, west and

north of the church. Residential estates have also been established within the former Halsnead Park after its sale in 1929, in addition to a garden centre complex immediately opposite the church, south of the western access into the parkland.

7.13 Whilst the listing description of the church does not make note of any key views to or from this asset, it is likely that, historically, the key views of the church would have been from Tarbock Road, which would have highlighted the *illustrative historical, aesthetic,* and *design values*, as well as its *architectural interest* of this larger ecclesiastical structure amidst a largely flat landscape interspersed with colliery works (e.g. machinery, structures, spoil heaps). Given the wooded nature of the western boundary of Halsnead Park, both past and present, these views do not include the study site within their vistas. Therefore, it is considered there will be *no impact* to the significance of this asset.

Non-designated Heritage Assets

Halsnead Park Landscape (MME15147)

7.14 This assessment has not identified any known features associated with Halsnead Park (MME15147) within the study site boundary. It is considered that there is low potential that unknown earlier medieval and post-medieval remains associated with the earlier, less-documented history of the Park survive below-ground within the study site. These remains may have been disturbed by later industrial activity (e.g. mine workings) and 20th century agricultural use. Whilst groundworks associated within the construction of any proposed development would have the potential to impact upon archaeological deposits, there is no evidence to suggest the presence of, or potential for, archaeological remains of sufficient importance to preclude or constrain development.

7.15 Surviving elements of the Halsnead Park landscape have been identified within the *Halsnead Garden Village Masterplan Supplementary Planning Document* (KMBC 2017, 42). Whilst no landscape features have been identified within the study site, this document does note the curved belt of woodland and pond along the northern and north-eastern boundary of the study site as the closest surviving historic feature adjacent the study site. Further afield is the former alignment of the eastern drive, the remnants of Fox Clump woodland, c. 145m and c. 230m south of the study site respectively, as well as the curved boundary east of Prince's House Farm, c. 310m west of the study site. Though outside the study site, both the Masterplan SPD and proposed development plan indicate the area of woodland adjacent the site boundary are to be retained. The present trees scattered across the study site are more recent additions, likely late-20th century plantings, as indicated by an aerial photograph from 1962 (Historic England RAF_58_5162_F22_0025), and will be removed ahead of development, though will be replaced with additional planting throughout the development (Plates 12, 24-26).

7.16 The proposed development will have no direct physical impacts upon the former boundary wall to Halsnead Park (MME15147), as proposed access will be located where there are no

upstanding remains of the boundary wall. Much of the upstanding wall north of the study site is concealed behind existing woodland, shielded from view, and therefore, there will be no visual impacts to this asset (Plates 1-3 and 24).

7.17 Church Lodge (MME18748), and the adjacent stone gate piers and flanking walls are located c. 630m west of the study site. The site walkovers have shown that there is no intervisibility between these assets and the study 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 parkland itself (Plate 27).

7.18 Main Drive was one of two primary routes into Halsnead Park, with Church Lodge and its associated piers forming the western entranceway. 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 (Figure 3), extending from Church Lodge in the west to the east/south-east, although it now terminates at the static caravan site, which is sited across the former footprint of Halsnead Hall. Whilst the site visits have shown there is some intervisibility from along the southern extent of this drive with the study 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 (Plates 28-30).

7.19 The site visits have shown that there is some intervisibility between the study 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 (Plate 12). The site visits have shown there is no intervisibility between the study site and the former location of Halsnead Hall (MME6856), due to its location within the centre of a static caravan park.

7.20 Due to the study 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 study site), 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 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 parkland. All of these assets are located to the east, south and west of the study site.

7.21 The proposed development will result in the further suburbanisation of the Halsnead Park landscape, a cumulative impact resulting from the wider Halsnead Garden Village Masterplan. 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 *group value*. However, this impact will be *minor*, as the study site contains no known landscape elements, and due to its location along the northern boundary of the former parkland, is not historically and presently included within any significant views across the parkland.

Potential Sub-Surface Archaeological Remains

7.22 Based on the present evidence, the potential for below-ground non-agricultural archaeological remains is considered to be low for the prehistoric and Roman periods, low-medium for medieval remains, and medium-high for post-medieval remains.

8 CONCLUSIONS

8.1 This historic environment desk-based assessment draws together the available archaeological, historical, topographic and land-use information in order to clarify the heritage significance and archaeological potential of the c. 2.6ha study site, which will redeveloped for residential use as part of the wider Halsnead Garden Village masterplan. The assessment addresses the information requirements set out in the NPPF and provides the proportionate response sought by the NPPF.

8.2 This assessment has identified the potential for below-ground, non-agricultural archaeological remains to be low for the prehistoric and Roman periods.

8.3 The site is located within the former Halsnead Park, part of the wider Halsnead Estate which likely had medieval origins. It is possible that the park itself originated as a smaller, medieval park to the south-west. The current post-medieval parkland boundaries were established in the late-17th century, with the naturalistic landscape and built heritage elements established and developed throughout the late-17th-mid-20th century. It is considered that there is the low-medium potential for medieval remains and the medium-high potential for post-medieval remains to survive below-ground within the study site.

8.4 Historic mapping from 1894 (not illustrated) has indicated that there is the possibility that mine workings extended into the western portion of the study site. Furthermore, magnetometry survey works carried out adjacent the southern boundary of the study site identified possible ferrous anomalies, which have the potential to relate to mining activity. It is therefore considered that there is the medium potential for industrial/mining remains to be found within the study site.

8.5 During the 20th century, the majority of the study site was included within the Halsnead Park Nursery complex, with the site the former location of a number of agricultural/landscape features associated with this business. There is the medium potential that remains associated with this operation will be found within the study site.

8.6 The assessment has shown that there are no archaeological constraints to the promotion and subsequent deliverability of the study site. Any archaeological interest can be safeguarded by an appropriately worded planning condition.

8.7 This report has concluded that the proposed development will not impact upon the significance nor settings of the Grade II Listed Sandfield House or Church of St Nicholas.

8.8 There will be no impact to the significance and setting the Grade II Listed North East Lodge (NHLE 1253429) and Gate Piers beside North East Lodge to Halsnead Park (NHLE 1253429) possesses due to their illustrative historical, aesthetic and design values, as well as their architectural interest, and their group value as a result of their direct relationship with one another. However, there will be 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, specifically the non-designated Halsnead Park and boundary walls.

8.9 The proposed development will result in the further suburbanisation of the Halsnead Park landscape, a cumulative impact resulting from the wider Halsnead Garden Village Masterplan. Whilst this suburbanisation will not impact upon the significance and character of the individual elements of the former parkland landscape, it will have a slight impact upon the significance these assets possess as a result of their *group value*. However, this impact will be *minor*, as the study site contains no known landscape elements, and due to its location along the northern boundary of the former parkland, is not historically and presently included within any significant views across the parkland.

9 REFERENCES

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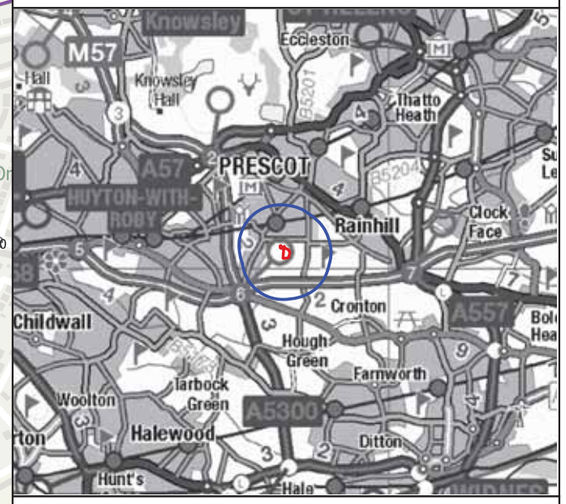
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Figures

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- Site Outline
- 1km Search Area
- Listed Buildings
- MHER monuments point
- MHER monuments line
- MHER monuments poly
- MHER events point
- MHER events poly

N

0 100 200 300 400 500 m

Figure 1. The study site and search area with the location of HER and NHLE records

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- Site Outline
- 1km Search Area
- Civil
- Commercial
- Communication
- Field System
- Industrial
- Recreational and Ornamental
- Residential
- Rough Land
- Water Bodies
- Woodland

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Figure 2. Historic Landscape Characterisation Broad Types

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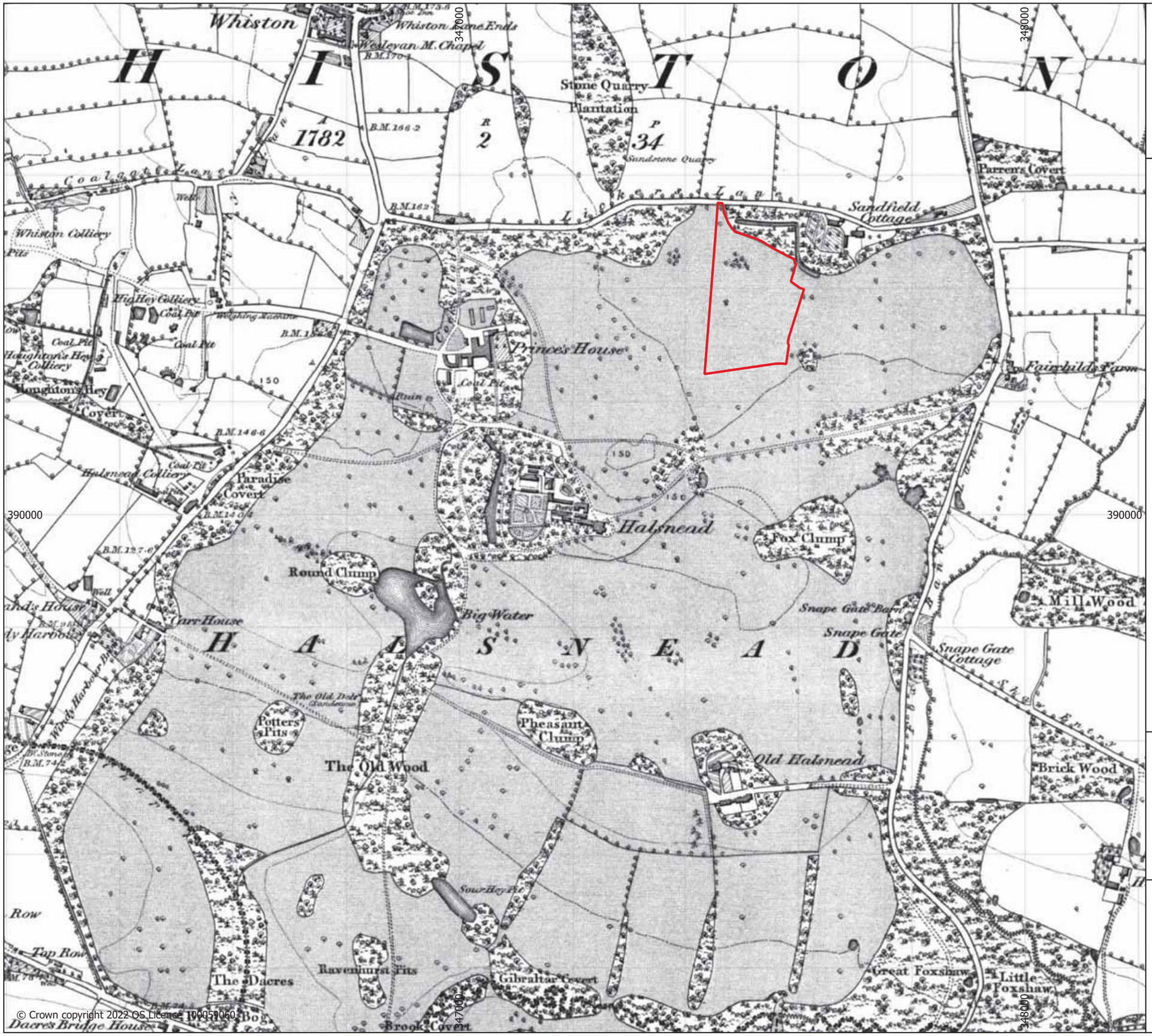
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Figure 3. Extract from the 1842 Tithe map of the Township of Whiston



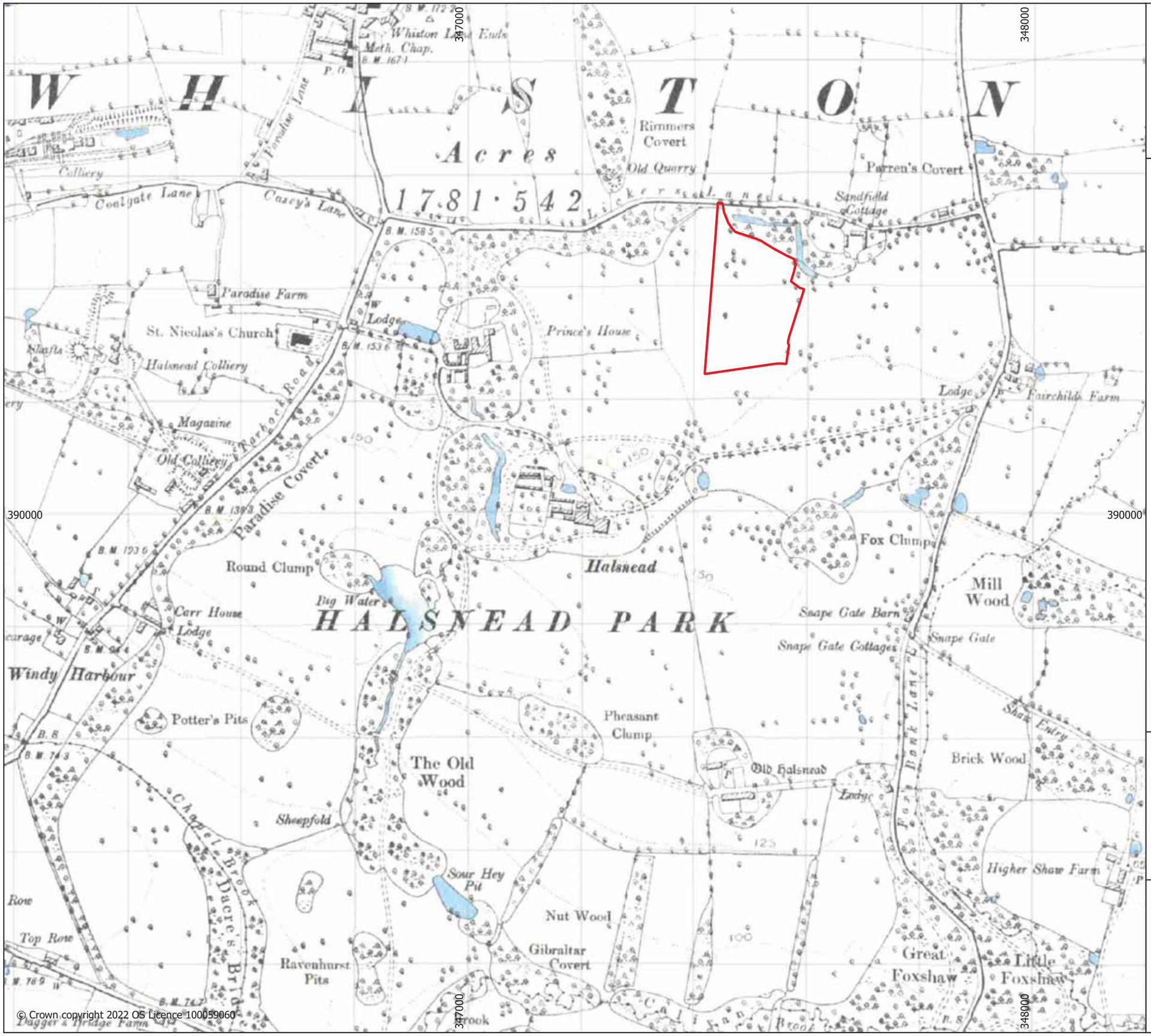
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Figure 4. Extract from the 1850 6 inch Ordnance Survey plan



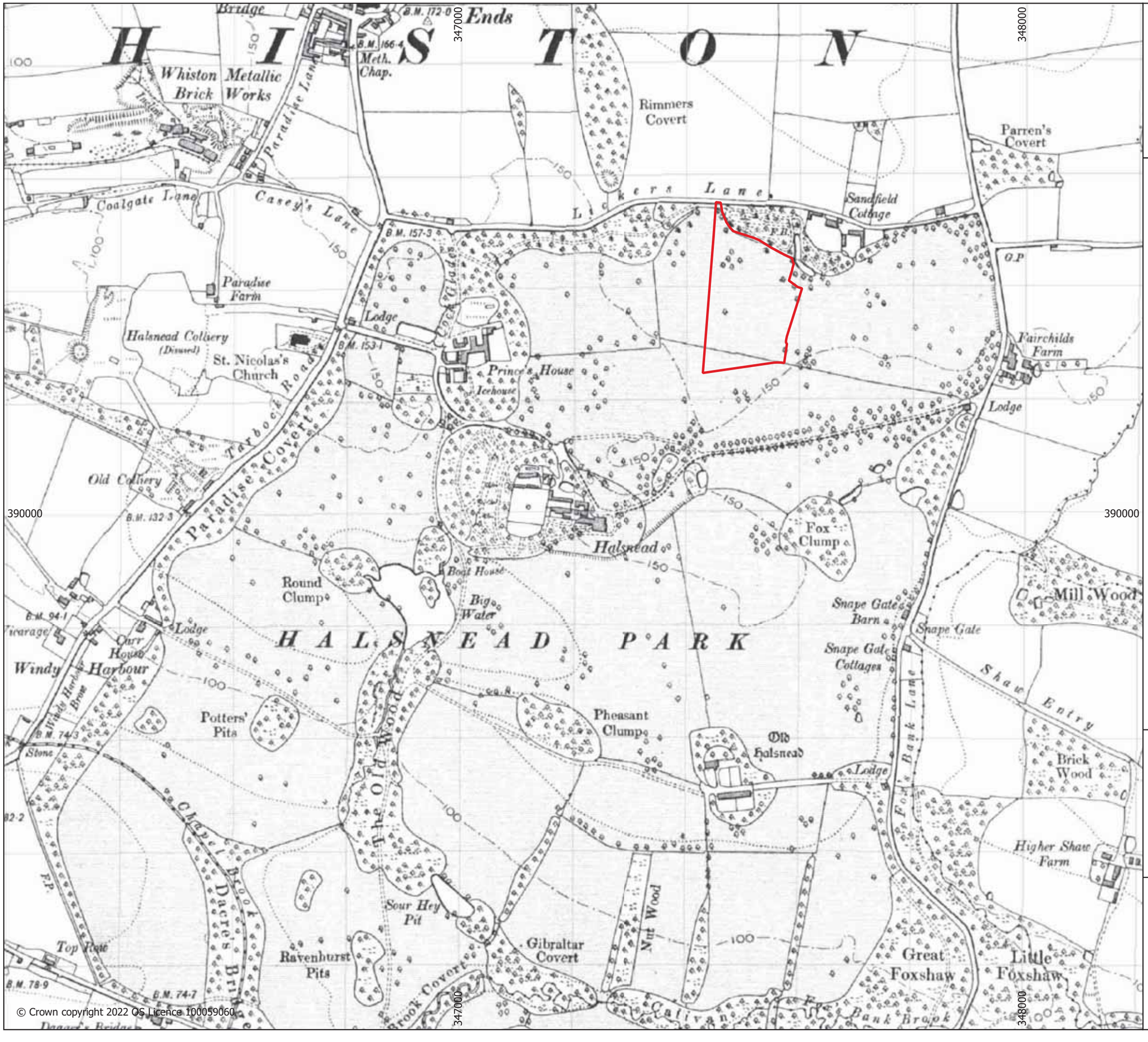
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Figure 5. Extract from the 1891 6 inch Ordnance Survey plan



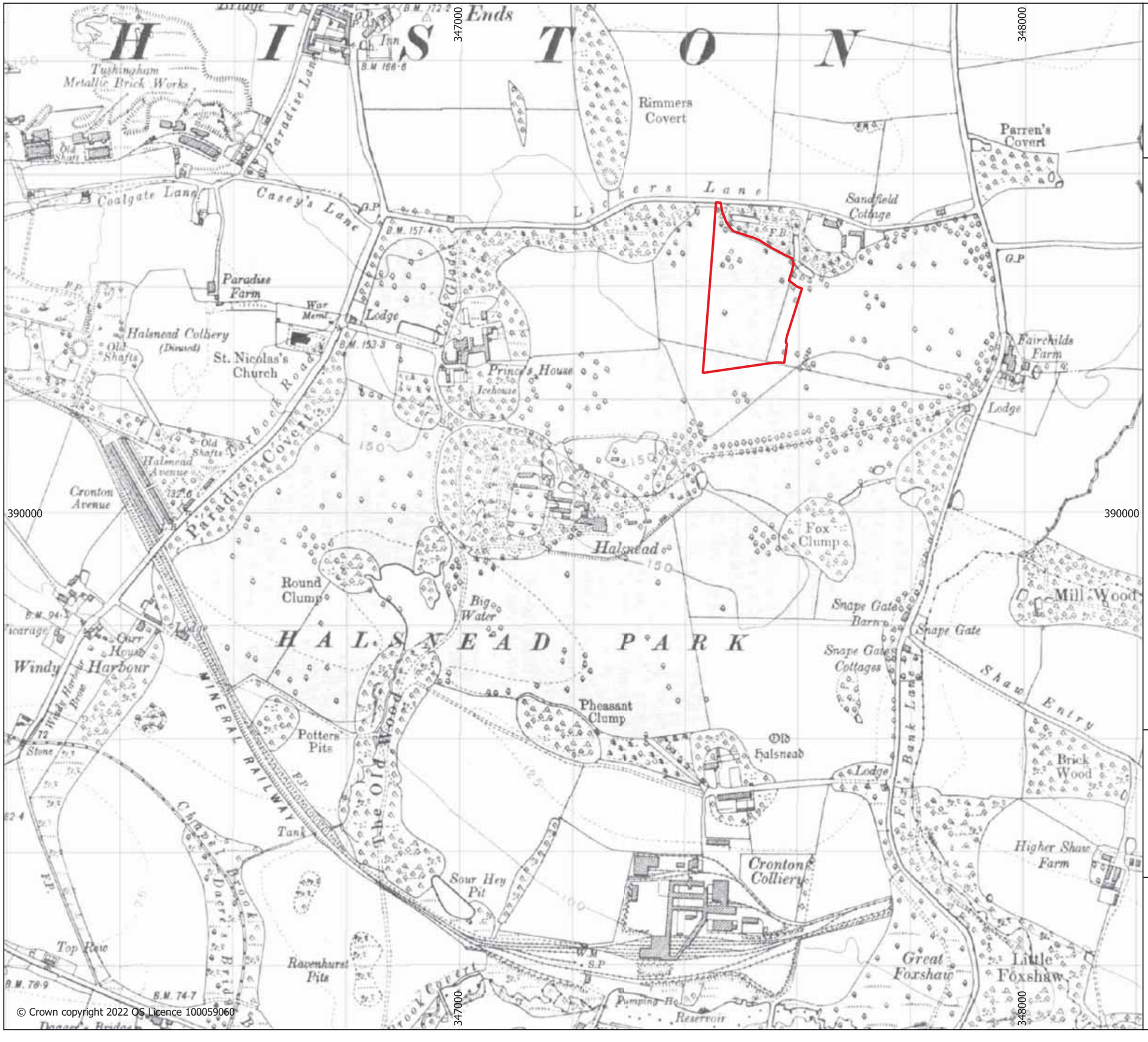
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Figure 6. Extract from the 1906 6 inch Ordnance Survey plan



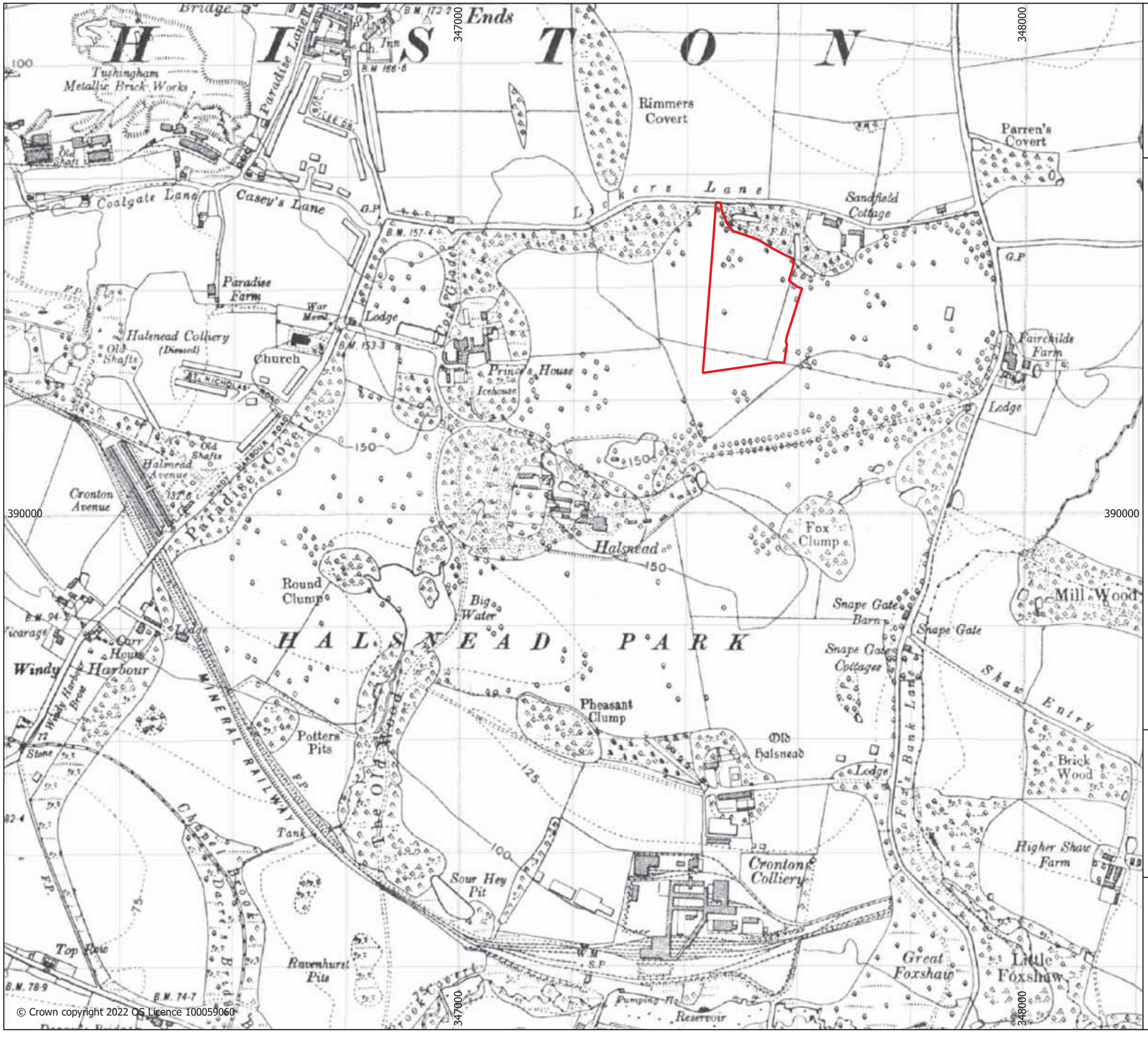
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Figure 7. Extract from the 1925 6 inch Ordnance Survey plan

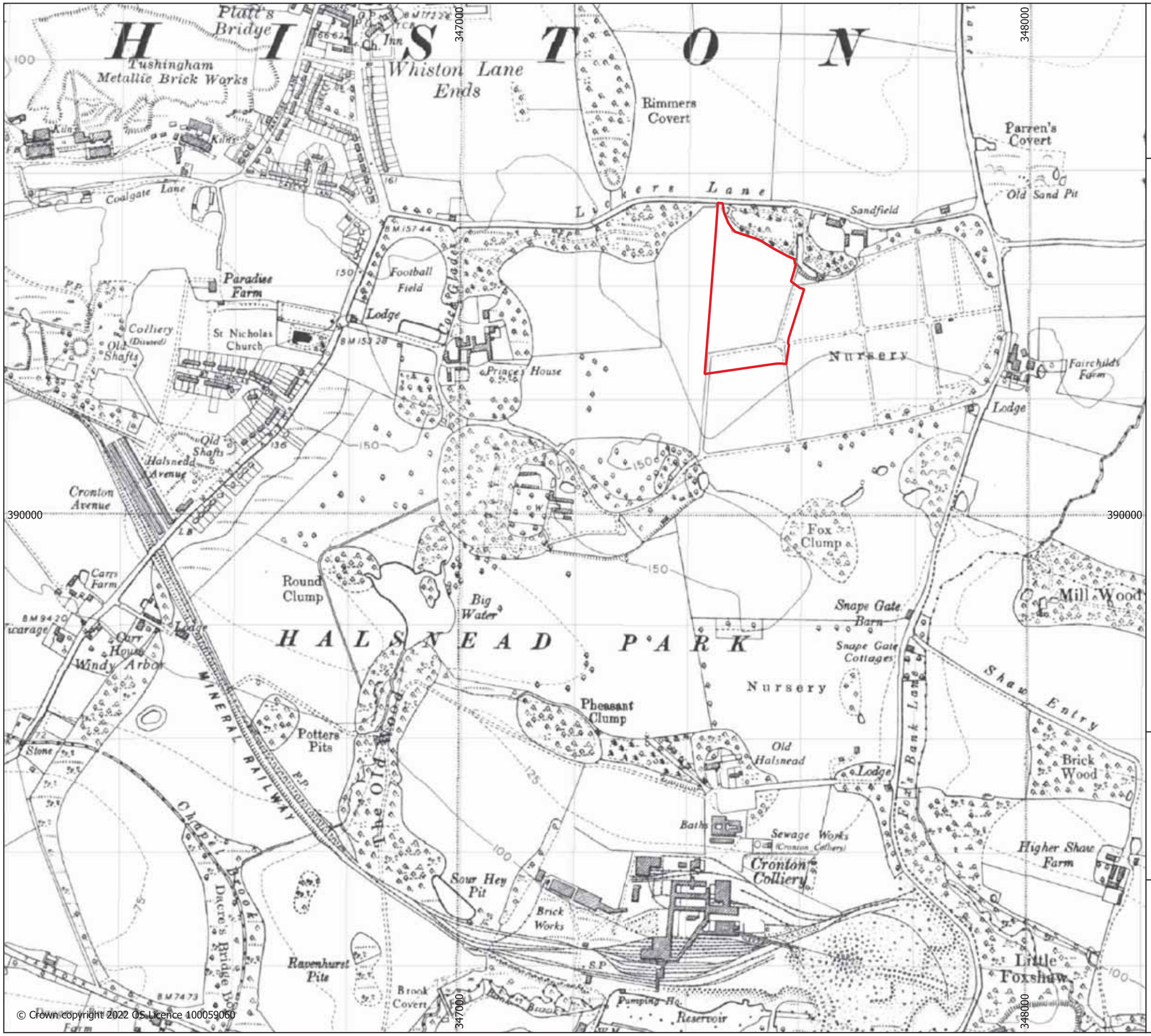


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Figure 8. Extract from the 1938 6 inch Ordnance Survey plan



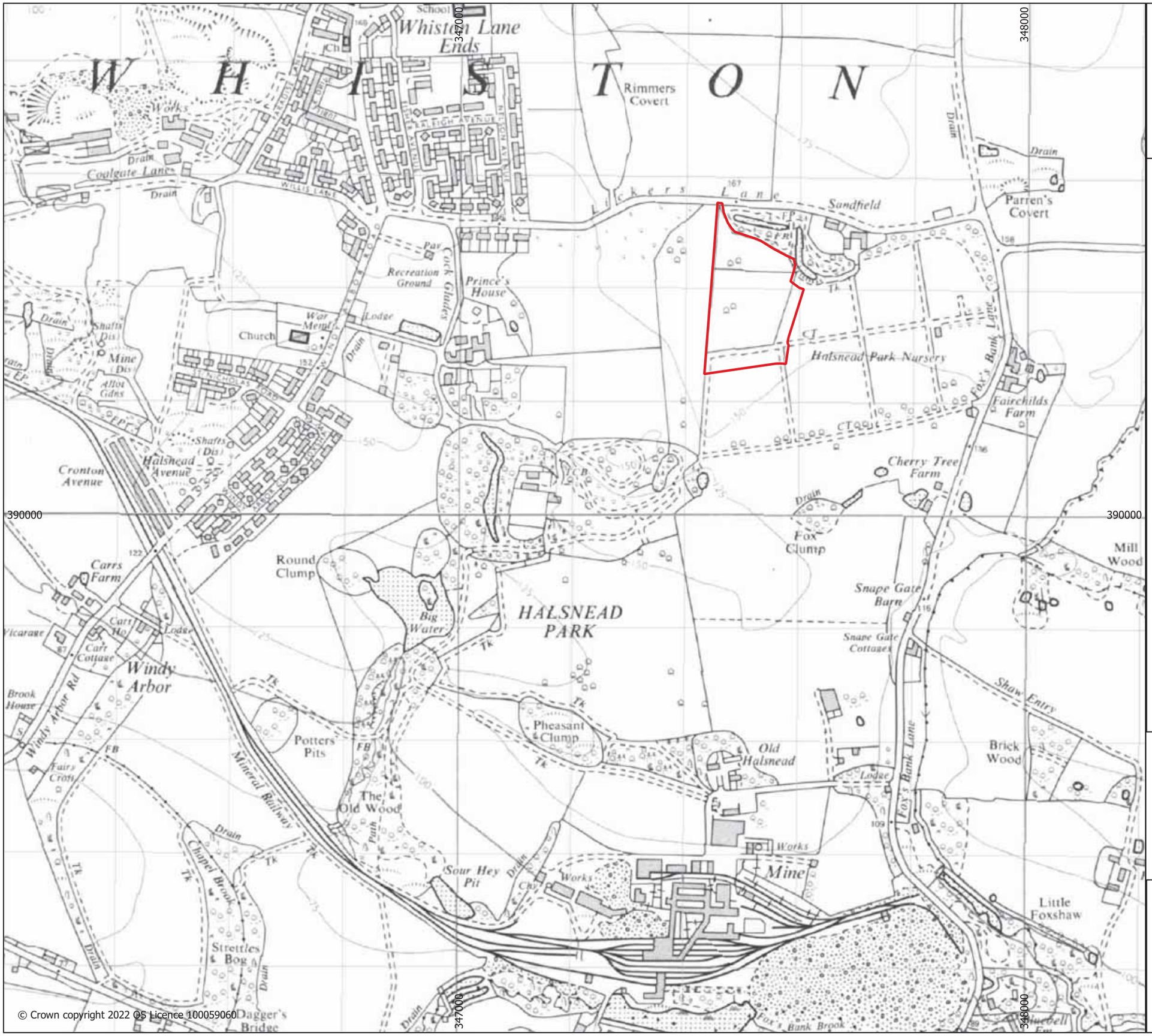
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Figure 9. Extract from the 1947 6 inch Ordnance Survey plan



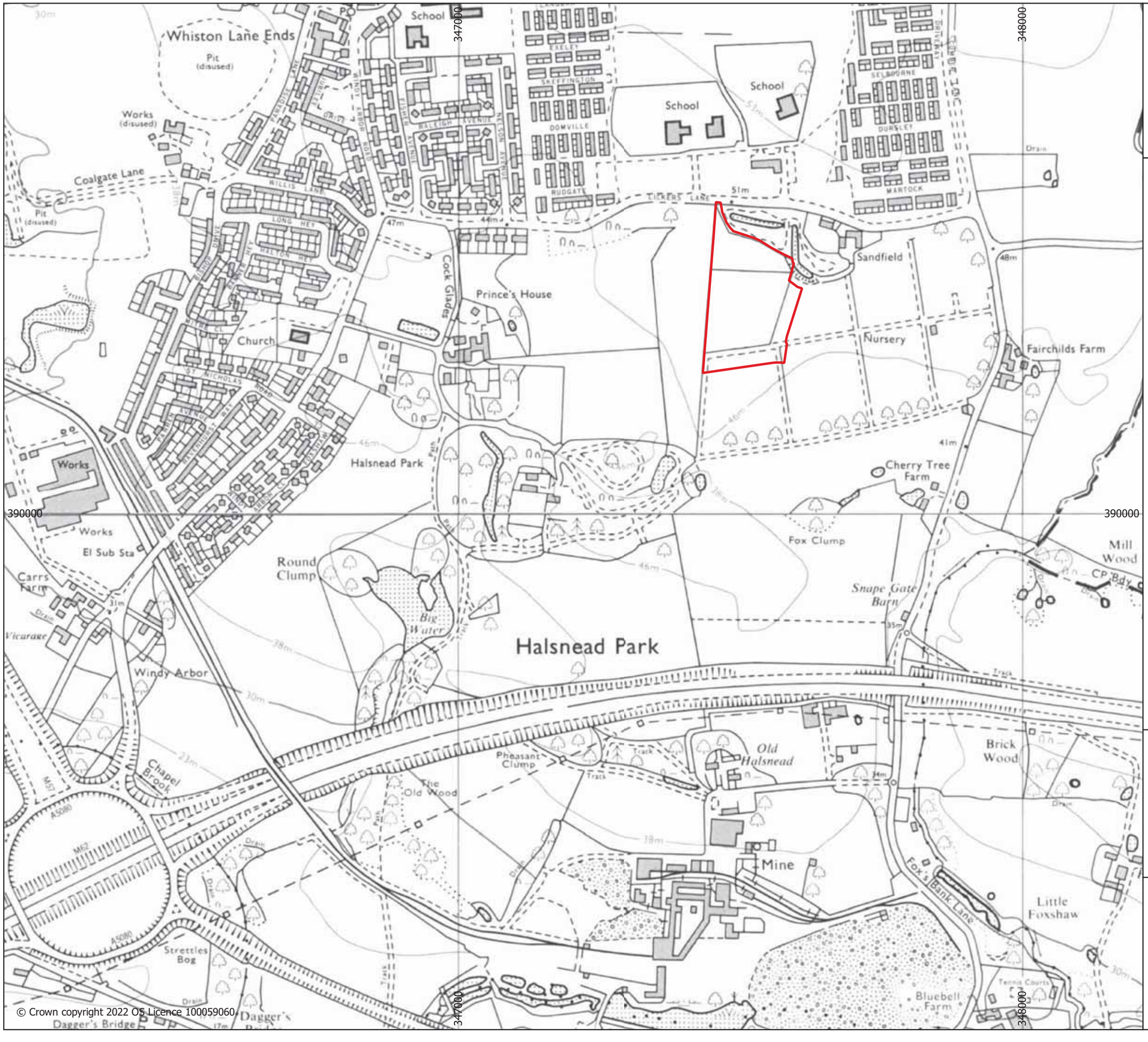
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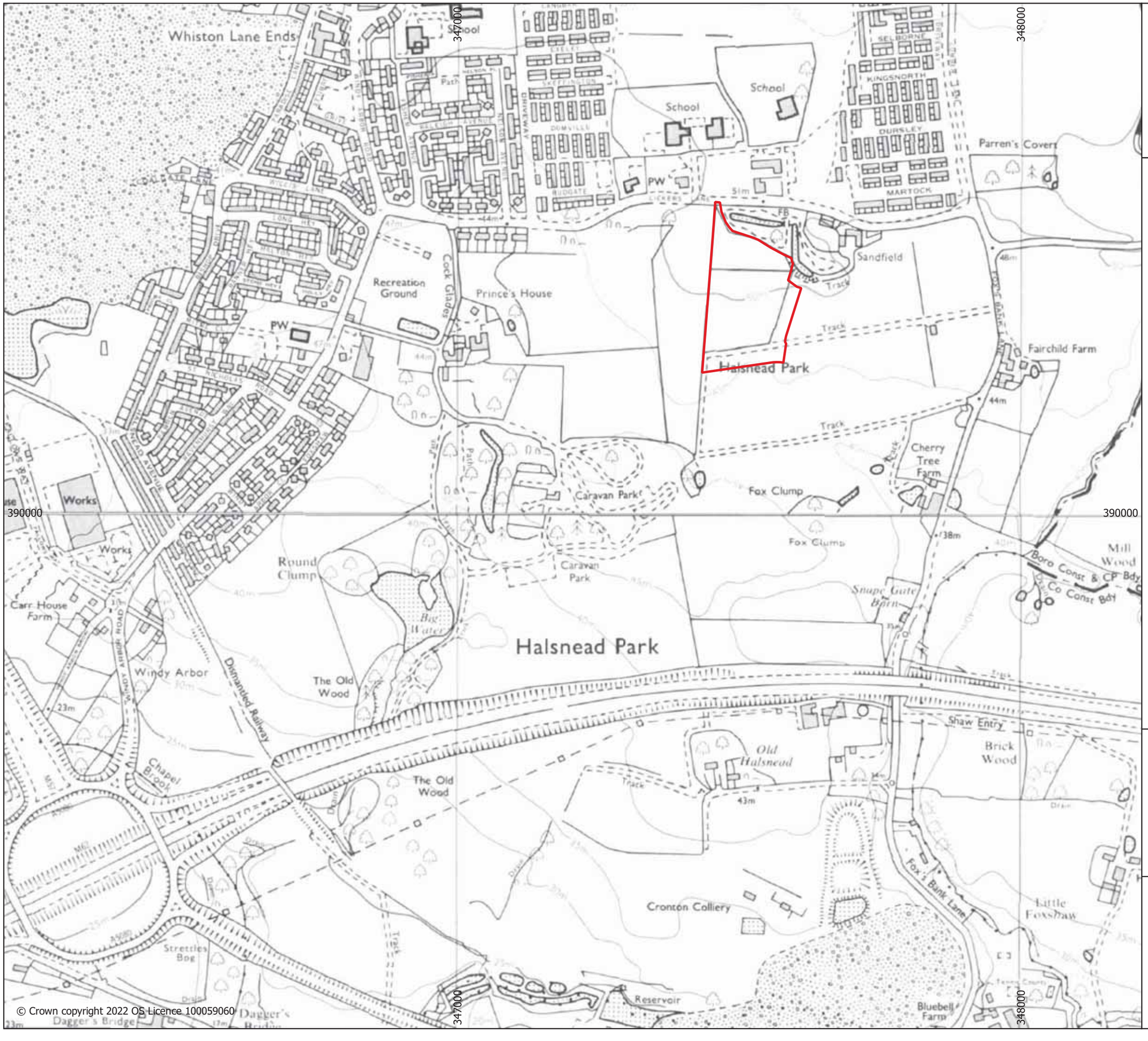
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Figure 10. Extract from the 1966-67 6 inch Ordnance Survey plan



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Figure 11. Extract from the 1977-78 6 inch Ordnance Survey plan



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Figure 12. Extract from the 1989-90 6 inch Ordnance Survey plan



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Figure 13. Aerial view of the study site (Google Earth 2022)

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Figure 14. Extract from the 2019 Environment Agency LiDAR Data (DTM 1m) shown with principal component analysis

Plates



Plate 1. View facing east along Licker's Lane of the boundary wall and gated entrance into the study site



Plate 2. View facing west along Licker's Lane showing replaced section of boundary wall and woodland along the northern boundary of the study site



Plate 3. Detailed view facing south of the gated pedestrian entrance into the study site. The sections of boundary wall on either site are not included within the site boundary



Plate 4. General view facing south from within the woodland immediately within the pedestrian entrance into the study site



Plate 5. General view within woodland showing the density of the foliage



Plate 6. View facing south through the woodland into the centre of the study site



Plate 7. View of scrub at the northern end of the study site



Plate 8. View facing west from the eastern boundary of the study site



Plate 9. General view facing east across the study site



Plate 10. General view facing south across the study site



Plate 11. General view facing south-west across the study site towards the static caravan site across the former Halsnead Hall



Plate 12. General view facing west across the study site with the rear of the former Prince's House Farm buildings in the background, behind the curved boundary (red arrow)



Plate 13. View facing south-west of the eastern entrance to Halsnead Park, with the Grade II listed Lodge behind the curved boundary wall and the adjacent Gate Piers



Plate 14. View west of four of the Grade II listed Gate Piers flanking the main entrance gates into Halsnead Park



Plate 15. View facing north along Fox's Bank Lane of three additional Piers along the eastern entrance to Halsnead Park (red arrows)



Plate 16. View facing south-east from within the study site towards the Grade II listed Lodge and adjacent Gate Piers



Plate 17. View facing south to the Grade II listed Sandfield House



Plate 18. View facing south-east to Sandfield Cottage, The Purlins and End Barn adjacent Sandfield House. Note the missing section of Halsnead Park boundary wall



Plate 19. View facing south-west to the northern elevation of Sandfield House. Note the extensive vegetation present to the south of the house



Plate 20. General view within the woodland south of Sandfield House and north/north-east of the study site, which forms part of the Nursery grounds



Plate 21. View to west of the eastern and southern elevations of the Church of St Nicholas from within the churchyard



Plate 22. View facing east from adjacent the Church of St Nicholas towards Halsnead Park. Note the extensive vegetation along the eastern boundary of the churchyard at Windy Arbor Road



Plate 23. View to west from within the study site showing the upper two-stages of the tower of the Church of St Nicholas



Plate 24. View facing north within the study site of the curved belt of woodland along the northern and north-eastern boundary of the study site



Plate 25. General view within the woodland adjacent the study site of the pond within



Plate 26. View facing south of the remains of Fox Clump south of the study site



Plate 27. View facing east of Church Lodge and adjacent stone Piers and flanking walls (MME18747) at the junction of Windy Arbor Road and Main Drive



Plate 28. View facing east from Main Drive leading to the northernmost part of the Prince's House Farm complex towards the study site



Plate 29. View of the entrance into the static caravan site at the end of Main Drive



Plate 30. View from Main Drive towards the study site

Appendix 1: Gazetteer of heritage and archaeological assets

The following table provides details of all heritage assets and archaeological events recorded on Historic England's National Heritage List for England (NHLE) and the Merseyside HER within 1km of the study site. Their locations are marked on Figure 1.

NHLE Ref.	HER Ref.	Name	Description	Designation	NGR	Period
NHLE Records						
1253249	DME100 MME6862	North East Lodge to Halsnead Park	Georgian. Ashlar, slate roof, single storey, square plan with pyramid roof.	LB II	SJ 47898 90187	Post-medieval
1253250	DME102 MME6853	Barn at Snape Gate	Barn of probable 18th century date. It is a high building on the roadside and is of coursed stone rubble and a stone roof. The side facing the road has a cart entrance with a catslide roof.	LB II	SJ 47793 89821	Post-medieval
1253251	DME103 MME6858	Sandfield House	House of brick with a stone roof and moudled eaves.	LB II	SJ 47663 90515	Post-medieval
1253345	DME2306 MME7138	Dean's Farmhouse	Farmhouse which dates to the 18th century, although possibly earlier. It has a stone base with a brick superstructure.	LB II	SJ 48538 90372	Post-medieval
1253429	DME106 MME6861	Gate Piers beside North East Lodge to Halsnead Park	Four rustricated gate piers which are square with a cornice and ball.	LB II	SJ 47903 90204	19th century
1261787	DME116 MME6852	Old Halsnead	House of stuccoed stone with a stone roof with a centre chimnet.	LB II	SJ 47454 89555	Post-medieval
1261893	DME2325 MME13978	Range of Adjoining Farm Buildings in L-Plan (rear of Dean's Farmhouse)	A range including a barn, shippons, stavles and pigeon cotes of sandstone.	LB II	SJ 48495 90354	19th century
1261894	DME121 MME10891	Church of St Nicholas	Anglian church in the Early English style. It is of coursed rubble sandstone with red sandstone dressings and a slate roof.	LB II	SJ 46719 90313	19th century

NHLE Ref.	HER Ref.	Name	Description	Designation	NGR	Period
1392301	DME3162 MME13157	Ropers Bridge	A road bridge of coursed squared blocks of red sandstone with decorative tooling finishes and ashlar dressings.	LB II	SJ 46938 91050	19th century

HER Ref.	Name	Description	NGR	Period
HER 'monument' Records				
MME6295	Site of Firgrove Cottages, Greene's Road	Former site of Figrove Cottages.	SJ 4656 9097	19th century
MME6296	Noodles Nursery, No. 2 Greenes Road	Location of a former school building.	SJ 46836 90905	19th century
MME6297	Site of a Wesleyan Methodist Chapel, Windy Arbor Road, Whiston Lane Ends	Former site of a Wesleyan Methodist Chapel.	SJ 46802 90834	19th century
MME6298	Site of a building, Main Drive, Halsnead Park	Former site of a building.	SJ 4694 9020	19th century
MME6303	Site of Hig Hey Colliery, Bishop Drive	Former site of Hig Hey Colliery.	SJ 4649 9032	19th century
MME6305	Site of a weighing machine, Banner Hey	Former site of a weighing machine.	SJ 4657 9037	19th century
MME6306	Site of Halsnead Colliery, Windy Arbour Road	Former site of Halsnead Colliery.	SJ 4652 9008	19th century
MME6309	Site of the Engine Inn public house	Former site of the Engine Inn public house.	SJ 4650 9101	Post-medieval
MME6855	Site of Snape Gate Cottages, Foxes Bank Lane	Former site of Snape Gate Cottages.	SJ 4779 8976	Post-medieval
MME6856	Site of Halsnead, Halsnead Park	Former site of Halsnead, Halsnead Park, Whiston, a 17th century house, formerly known as Red Hall.	SJ 4724 8997	Post-medieval

HER Ref.	Name	Description	NGR	Period
MME6857	Barn and Outbuildings at Prince's House Farm, Cock Glades	Location of a barn and outbuildings.	SJ 47040 90295	Post-medieval
MME6859	Meadowbrook, Fox's Bank Lane	Site of a farm building, now demolished, was formed part of the barn at Fairchild's Farm.	SJ 47977 90256	Post-medieval
MME6860	Site of Higher Side, Cumber Lane	Former site of a house.	SJ 47859 90938	Post-medieval
MME6865	Site of a coal pit, Main Drive, Halsnead Park	Former site of a coal pit.	SJ 4700 9022	19th century
MME6866	Neolithic Polished Stone Axe, No. 157 Dragon Lane	Find spot of a polished stone axe.	SJ 4726 9129	Neolithic
MME6868	Site of Roper's Farm, Dragon Lane	Site of a former farm marked on historic mapping.	SJ 4703 9112	Post-medieval
MME6869	Location of Whiston Cross, Dragon Lane, Whiston Cross	Former location of Whiston Cross, a supposedly medieval monument.	SJ 4709 9125	Medieval
MME6870	Site of Cumber Lane Farm, Cumber Road	Former site of a house marked on historic mapping.	SJ 4787 9131	Post-medieval
MME6875	Location of stocks, Dragon Lane, Whiston Cross	Former location of stocks shown on historic mapping.	SJ 47104 91250	19th century
MME6876	Site of Pinfold House, Dragon Lane, Whiston Cross	Former site of pinfold house.	SJ 4706 9120	Post-medieval
MME6877	Site of Stank Colliery, Maple Close	Former site of Stank Colliery.	SJ 4701 9143	19th century
MME7129	Medieval and Post Medieval Pottery, North of Higher Shaw Farm	Find spot of pottery sherds identified during field walking.	SJ 4819 8959	Medieval - Post-medieval
MME7135	Enclosure cropmark, south of Blundells Lane	Location of a rectangular enclosure cropmark which is visible on aerial photography.	SJ 4840 9046	Unknown
MME7137	Prospect House, Blundells Lane	Location of a largely modern building which incorporates a 19th century probable outbuilding.	SJ 48564 90592	19th century - Modern

HER Ref.	Name	Description	NGR	Period
MME7141	No. 102 Blundells Lane	Lcoation of a single storey sandstone cottage with stone lintels and a slate roof.	SJ 48403 90581	19th century
MME7145	Nos. 101 and 103 Blundells Lane	Location of a building shown on historic mapping.	SJ 48316 90517	Post-medieval
MME7149	Possible cropmark, west of Deans House Farm	Location of a possible cropmark site.	SJ 4830 9032	Unknown
MME7175	Possible cropmark site, west of Stoney Lane	Location of a possible cropmark site which is visible on aerial photography.	SJ 4826 9112	Unknown
MME9292	Liverpool and Manchester Railway	Route of the Liverpool and Manchester railway whichopened in 1830.	SJ 48742 92694	19th century
MME10027	Route of the Willis Branch of Liverpool and Manchester Railway, to Halsnead Colliery	Former route of a branch of railway line which ran to Halsnead Colliery and opened in 1833.	SJ 4581 9041	19th century
MME10028	Site of Cronton Colliery, Halsnead Park	Former site of Cronton Colliery which opened in 1913, closing in 1984.	SJ 4742 8932	Modern
MME10037	Site of Tushingham's Brickworks, Stadt Moers Country Park	The former site of a brickworks.	SJ 4653 9067	19th century
MME13083	Site of Prince's House, Cock Glades	Former site of a house, shown on historic mapping.	SJ 47053 90328	Post-medieval
MME13104	Nos. 160-164 Windy Arbour Road	Location of a house.	SJ 46522 90016	19th century
MME13152	No. 211 Dragon Lane, Whiston Lane Ends	Location of a house built in 1812.	SJ 46873 90884	19th century
MME13163	Site of Paradise Farm, Banner Hey	Former location of a farm.	SJ 4656 9040	Post-medieval
MME13217	Site of a house and barn, Greenes Lane	Former location of a house and barn.	SJ 4671 9088	Post-medieval
MME13218	Post medieval pottery and clay pipes, Dragon Lane	Find spot of pottery sherds and clay pipes.	SJ 470 911	Post-medieval

HER Ref.	Name	Description	NGR	Period
MME13386	Two flint flakes, Dragon Lane	Find spot of flint flakes.	SJ 470 911	Unknown
MME14760	Site of a barn, Deans House Farm, Cronton Lane	Former location of a barn.	SJ 48563 90370	Post-medieval
MME15147	Halsnead Park	Site of a landscape park.	SJ 4710 8970	Post-medieval - 19th century
MME15148	Possible location of a mill, Mill Wood, Cronton and Rainhill Boundary	Possible former site of a mill indicated by place names on historic mapping.	SJ 4813 8986	Unknown
MME15267	Site of a house, Coalgate Lane	Former site of a house shown on historic mapping.	SJ 46528 90600	Post-medieval
MME15268	Site of Worrill's buildings, Paradise Lane	Former site of a house shown on historic mapping.	SJ 46660 90694	Post-medieval
MME15681	Halsnead Park wall	Part of a park wall associated with Halsnead Park.	SJ 47134 89701	Post-medieval - 19th century
MME15781	Site of an icehouse, Main Drive	Former site of an icehouse.	SJ 47009 90212	19th century
MME15822	18th or 19th century ditch, Lickers Lane	Site of ditches containing coal, brick and pottery identified during archaeological evaluation.	SJ 47744 90444	19th century
MME15823	Medieval pottery, Lickers Lane	Find spot of pottery.	SJ 47747 90446	Medieval
MME15926	Sandfield Cottage, The Purlins and End Barn, Lickers Lane	Location of a cottage which has been extended and subdivided.	SJ 47700 90496	19th century - Modern
MME16079	Shaw, a medieval curvilinear enclosure	Location of a medieval estate represented by a continuous curvilinear enclosure.	SJ 48246 89477	Medieval
MME16658	Site of Prescot Colliery, Dragon Lane	Former site of a colliery.	SJ 46881 91081	19th century
MME17970	Edward VIII Pillar Box, Windy Abor Road	Location of a pillar box.	SJ 46494 89984	Modern

HER Ref.	Name	Description	NGR	Period
MME18263	Whiston	Location of an early medieval settlement.	SJ 46818 90883	Early medieval
MME18748	Church Lodge, Windy Arbor Road	Location of a gate lodge to Halsnead.	SJ 46812 90341	19th century
MME18955	Railway Bridge, Cumber Lane	Location of a railway bridge.	SJ 47873 91190	19th century
MME19921	Possible cropmarks, east of Foxes Bank Lane	Location of possible linear cropmarks.	SJ 47876 89814	Unknown
MME20271	Site of Prospect Cottage, Blundells Lane	Former site of a cottage shown on historic mapping.	SJ 48558 90585	Post-medieval
MME20272	Site of Wood Cottage, Blundells Lane	Former site of a cottage shown on historic mapping.	SJ 48458 90608	Post-medieval
MME20520	Site of Whiston Colliery gas works	Former site of a gas works associated with a colliery.	SJ 46408 90653	19th century
MME20860	War memorial, St Nicholas' churchyard, Windy Arbor Road	Location of a war memorial.	SJ 46758 90312	Modern
MME20871	Possible medieval ditch, Halsnead Park	Location of a possible ditch identified during archaeological evaluation.	SJ 46566 89796	Medieval
MME20872	Undated ditch, Halsnead Park	Location of a ditch identified during archaeological evaluation.	SJ 46760 89800	Unknown
MME20890	Site of an engine, Whiston Inclined Plane, Liverpool and Manchester Railway	The former site of an engine located along the Whiston Inclined Plan.	SJ 46609 90993	19th century
MME20891	Finger post, Whiston Lane Ends	Location of a cast iron finger post.	SJ 46830 90890	19th century
MME20892	Site of a Wesleyan Methodist Association Chapel, Whiston Lane Ends	Former site of a Methodist chapel.	SJ 46818 90910	19th century
MME20893	Site of the George and Dragon public house, Greene's Road, Whiston Lane Ends	Former site of a public house.	SJ 46802 90902	19th century

HER Ref.	Name	Description	NGR	Period
MME20894	Site of the Horse Shoe Inn public house, Dragon Lane, Whiston Lane Ends	Former site of a public house.	SJ 46823 90891	19th century
MME20895	Site of Fairchilds Farm, Fox's Bank Lane	Former site of a farm.	SJ 47965 90246	Post-medieval
MME20897	Site of a house, Cumber Lane	Former site of a house.	SJ 47855 91342	Post-medieval
MME20898	Site of a house, Cumber Lane	Former site of a house.	SJ 47852 91244	19th century
MME20899	Location of a pinfold, Whiston Cross	Former location of a pinfold.	SJ 47067 91212	Post-medieval - 19th century
MME20905	Site of a house, Windy Arbor Road, Whiston Lane Ends	Former site of a house.	SJ 46828 90850	Post-medieval
MME20906	Site of a house, Dragon Lane, Whiston Lane Ends	Former site of a house.	SJ 46835 90872	Post-medieval
MME20907	Site of a house, Dragon Lane	Former site of a house.	SJ 46904 90937	Post-medieval
MME20908	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47081 91190	Post-medieval
MME20909	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47098 91214	Post-medieval
MME20910	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47135 91223	Post-medieval
MME20911	Site of a group of houses, Dragon Lane, Whiston Cross	Former site of a group of houses.	SJ 47166 91241	Post-medieval
MME20912	Site of a building, Cross Lane, Whiston Cross	Former site of a building.	SJ 47035 91229	19th century
MME20913	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47209 91218	19th century

HER Ref.	Name	Description	NGR	Period
MME20914	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47258 91288	Post-medieval
MME20915	Site of a house, Dragon Lane, Whiston Cross	Former site of a house.	SJ 47284 91384	Post-medieval
MME20919	Site of a house, Lickers Lane	Former site of a house.	SJ 46983 90524	Post-medieval
MME20920	Site of a house, Windy Arbor Road	Former site of a house.	SJ 46829 90506	Post-medieval
MME20921	Site of a house, Willis Lane	Former site of a house.	SJ 46818 90540	Post-medieval
MME20922	Site of a house, Blundells Lane	Former site of a house.	SJ 48049 90474	Post-medieval
MME20923	Location of a building, Windy Arbor Road	Former location of a building.	SJ 46863 90485	Post-medieval

HER Ref.	Record Type	Organisation	NGR	Year
HER 'event' Records				
EME1423	Field Walking to North of Higher Shaw Farm, Cronton	Liverpool Museum	SJ 4820 8960	1982
EME1938	Field Walking Survey at Former Site of Roper's Farm, Dragon Lane, Whiston	Liverpool Museum	SJ 4704 9110	1986
EME2379	Desk-based assessment of the former site of Cronton Colliery, Halsnead Park, Whiston	Oxford Archaeology North	SJ 47335 89317	2003
EME2384	Evaluation at Junction 6 of the M62, Whiston and Tarbock	National Museums Liverpool Field Archaeology Unit	SJ 46415 89256	2005

HER Ref.	Record Type	Organisation	NGR	Year
EME2520	Desk-based assessment of Halsnead Park, Whiston	Mott MacDonald	SJ 47291 89842	2016-17
EME2527	Magnetometry survey of land at Lickers Lane, Whiston	Stratascan Ltd.	SJ 47777 90489	2013
EME2528	Resistivity survey of land at Lickers Lane, Whiston	Stratascan Ltd.	SJ 47778 90489	2013
EME2529	Evaluation of land at Knowsley Cemetery, south of Lickers Lane, Whiston	National Museums Liverpool Field Archaeology Unit	SJ 47755 90452	2012
EME2950	Desk-based assessment of Halsnead Park, Whiston	L-P: Archaeology	SJ 47073 90324	2018
EME2953	Magnetometry survey of Halsnead Park, Whiston	Sumo Geophysics	SJ 47454 90016	2018
EME2956	Magnetometry survey of land at Knowsley cemetery, south of Lickers Lane, Whiston	Stratascan Ltd.	SJ 47752 90447	2012
EME2957	Resistivity survey of land at Knowsley cemetery, south of Lickers Lane, Whiston	Stratascan Ltd.	SJ 47755 90447	2012
EME3019	Desk-based assessment of land east of Windy Arbour Road, Halsnead Park, Whiston	WYG Environment Planning Transport Limited	SJ 46706 89952	2017
EME3020	Magnetometry survey of land east of Windy Arbour Road, Halsnead Park, Whiston	Magnitude Surveys	SJ 46703 89897	2019
EME3025	Magnetometry survey of Symmetry Park, Halsnead Park, Whiston	Magnitude Surveys	SJ 47172 89470	2019
EME3062	Magnetometry survey of land at Lickers Lane, Whiston	Archaeological Survey West	SJ 47256 90391	2018
EME3083	Evaluation at Symmetry Park, Tarbock	Salford Archaeology	SJ 47398 89259	2020
EME3090	Desk-based assessment of Halsnead Park, land west of Fox's Bank Lane, Whiston	CgMS Consulting	SJ 47655 89978	2018-19

HER Ref.	Record Type	Organisation	NGR	Year
EME3227	Evaluation of land east of Windy Arbor Road, Halsnead Park, Whiston	Wardell Armstrong	SJ 46652 89806	2021

Norwich:

Brettingham House
98 Pottergate
Norwich
Norfolk
NR2 1EQ

01603 631 319

Chelmsford:

The Aquarium
101 Lower Anchor Street
Chelmsford
Essex
CM2 0AU

01245 929 074

London:

70 Cowcross Street
London
EC1M 6EL

020 3011 0820

Cambridge:

50-60 Station Road
Cambridge
Cambridgeshire
CB1 2JH

01223 776 740

York:

Stanley Harrison House
The Chocolate Works
Bishopthorpe Road
York
Y023 1DE

01904 803 800

Manchester:

1 St Peter's Square
Manchester
Greater Manchester
M2 3DE

0161 711 1740

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APPENDIX 10.1
AIR QUALITY ASSESSMENT INPUT DATA

Air Quality Environmental Impact Assessment

Appendix 10.1 - Assessment Input Data

Land at Lickers Lane, Whiston



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1.1 Introduction

1.1.1 The Development has the potential to cause air quality impacts as a result of exhaust emissions associated with vehicles travelling to and from the site. In order to assess nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}) and particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$) concentrations at sensitive locations, detailed dispersion modelling was undertaken in accordance with the following methodology.

1.2 Dispersion Model

1.2.1 Dispersion modelling was undertaken using the ADMS-Roads dispersion model (version 5.0.1.3). ADMS-Roads is developed by Cambridge Environmental Research Consultants (CERC) and is routinely used throughout the world for the prediction of pollutant dispersion from road sources. Modelling predictions from this software package are accepted within the UK by the Environment Agency and Department for Environment, Food and Rural Affairs (DEFRA).

1.2.2 The model requires input data that details the following parameters:

- Assessment area;
- Traffic flow data;
- Vehicle emission factors;
- Spatial co-ordinates of emissions;
- Street width;
- Meteorological data;
- Roughness length (z_0); and,
- Monin-Obukhov length.

1.2.3 These are detailed in the following Sections.

1.3 Assessment Area

1.3.1 The assessment area was defined based on the Site location and anticipated vehicle trip distribution from the Development. Ambient concentrations were predicted over National Grid Reference (NGR): 346370, 389570 to 348070, 391270. One Cartesian grid was used

within the model to produce data suitable for contour plotting using the Surfer software package.

1.3.2 Reference should be made to Figure 10.10 in Appendix 10.2 for a map of the assessment area.

1.4 Traffic Flow Data

1.4.1 Traffic data for use in the assessment, including 24-hour Annual Average Daily Traffic (AADT) flows and fleet composition as Heavy Duty Vehicle (HDV) proportion, was provided by Eddisons, the Transport Consultants for the project.

1.4.2 Traffic data for the M62, M57 and A5080 was not available from Eddisons as the links were outside the scope of the Transport Assessment. Data was therefore supplemented with information from an Air Quality Assessment undertaken by Redmore Environmental (reference: 2590-1r1)[1] for a proposed storage and distribution development comprising four warehouses and associated infrastructure on land at Cronton Colliery.

1.4.3 A summary of the traffic flow data is provided in Table A10.1.1. Road widths were estimated from aerial photography and UK highway design standards.

Table A10.1.1 Traffic Data

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Average Vehicle Speed (km/h)	Road Width (m)
		Verif.	2025 DM	2025 DS			
L1	A4080 Cronton Road, East of Fox's Bank Lane	8,821	9,736	9,987	1.21	80	7.0
L2	A4080 Cronton Road, Between Site Access and Fox's Bank Lane	9,407	10,532	10,782	1.13	80	7.0
L3	A4080 Cronton Road, Between Site Access and Tarbock Island	9,407	12,652	12,902	1.13	95	7.0
L4	A5300 Knowsley Expressway, South of Northbound (NB) Slip Road	55,943	60,429	60,680	10.26	95	19.2

[1] Cronton Colliery, Air Quality Assessment 2590-1r1, Redmore Environmental, 2021.

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Average Vehicle Speed (km/h)	Road Width (m)
		Verif.	2025 DM	2025 DS			
L5	A5300 Knowsley Expressway, Between Slip Roads	55,943	60,162	60,287	10.26	95	24.9
L6	A5300 Knowsley Expressway/M57, Over Tarbock Island	40,170	43,014	43,014	16.98	95	20.9
L7	M57, Between Slip Roads	73,159	78,709	78,960	13.84	95	28.9
L8	M57, North of Southbound (SB) Slip Road	73,159	79,049	79,300	13.84	95	26.0
L9	M62 to A5300/M57	17,061	18,269	18,269	9.66	80	7.2
L10	M57 On-slip, NB	12,907	14,191	14,316	3.69	80	4.2
L11	M57 Off-slip, SB	10,704	11,802	11,927	4.57	45	7.5
L12	Tarbock Island	12,546	14,723	15,474	4.63	35	10.4
L13	A5300 Knowsley Expressway, Off-slip, NB	14,130	15,399	15,524	2.60	45	6.4
L14	A5300 Knowsley Expressway, On-slip, NB	11,020	12,058	12,183	8.01	80	7.0
L15	M62, West of On and Off Slip Roads	75,426	81,308	81,559	4.21	95	25.6
L16	M62, West of Tarbock Island	62,413	66,832	66,832	8.14	95	22.7
L17	M62, Below Tarbock Island	62,413	66,832	66,832	8.14	95	26.4
L18	M62, East of Tarbock Island	100,055	107,757	108,007	10.07	95	34.6
L19	M62, East of On and Off Slip Roads	100,055	107,757	108,007	10.07	95	26.3
L20	A5300 to M62	17,061	18,269	18,269	9.66	80	4.5
L21	M62, On-slip, Westbound (WB)	16,191	17,630	17,755	3.90	80	4.0
L22	M62, Off-slip, Eastbound (EB)	11,445	12,505	12,630	2.48	45	6.2
L23	M62, On-slip, EB	11,954	13,109	13,234	8.73	80	4.0
L24	M62, Off-slip, WB	11,065	12,157	12,282	10.24	45	7.1
L25	Windy Arbor Road	12,295	16,135	17,636	3.20	45	7.8

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Average Vehicle Speed (km/h)	Road Width (m)
		Verif.	2025 DM	2025 DS			
L26	Windy Arbor Road, NB off Roundabout	6,148	8,068	8,818	3.20	35	4.4
L27	Windy Arbor Road, SB on Roundabout	6,148	8,068	8,818	3.20	25	7.2
L28	A5080 Cronton Road, NB off Roundabout	8,444	9,109	9,235	4.70	35	4.3
L29	A5080 Cronton Road, SB on Roundabout	8,444	9,109	9,235	4.70	25	7.0
L30	A5080 Cronton Road, West of Tarbock Island	16,888	18,218	18,469	2.35	60	12.1
L31	A5080 Cronton Road, East of Whitefield Lane	16,888	18,218	18,469	2.35	60	7.3
L32	A5080 Cronton Road, East of Whitefield Lane, Junction	16,888	18,218	18,469	2.35	15	9.5
L33	A5080 Cronton Road, West of Whitefield Lane, Junction	12,042	12,967	13,217	2.09	15	6.9
L34	A5080 Cronton Road, West of Whitefield Lane	12,042	12,967	13,217	2.09	50	6.3
L35	Whitefield Lane, Junction	11,890	12,794	12,794	2.12	15	7.0
L36	Whitefield Lane	11,890	12,794	12,794	2.12	60	8.1
L37	Whitefield Lane	11,890	12,794	12,794	2.12	80	6.8
L38	Fox's Bank Lane, south of site access	6,029	7,287	7,287	0.60	45	7.0
L39	Fox's Bank Lane, north of site access	6,029	8,469	8,469	0.60	45	7.0
L40	Cumber Lane approach to Lickers Lane	9,077	10,697	10,697	2.20	45	8.5
L41	Lickers Lane approach to Cumber Lane/ Fox's Bank Lane Slow Phase (SP)	8,893	11,083	11,083	2.20	35	7.8
L42	Lickers Lane east of site access	8,893	11,083	11,083	2.20	45	7.3
L43	Lickers Lane west of site access	8,893	11,083	13,631	2.30	45	7.5

Link		24-hour AADT Flow			HDV Prop. of Fleet (%)	Average Vehicle Speed (km/h)	Road Width (m)
		Verif.	2025 DM	2025 DS			
L44	Lickers Lane west of site access SP	8,893	11,083	13,631	2.30	35	8.8
L45	Windy Arbor Road north of Lickers Lane	10,969	14,656	16,042	4.00	45	8.2
L46	Windy Arbor Road approach to Greene's Road/Dragon Lane SP	10,969	14,656	16,042	4.00	35	11.1
L47	Greene's Road SP	10,767	11,529	12,222	1.51	35	9.2
L48	Pottery Lane	10,767	11,529	12,222	1.51	45	7.4
L49	Dragon Lane SP	10,767	11,529	12,222	1.51	35	7.8
L50	Dragon Lane	10,767	11,529	12,222	1.51	45	6.9
L51	Windy Arbor Road north of site access	12,295	16,135	17,623	3.20	45	8.1

1.4.4 Reference should be made to Figure 10.10 in Appendix 10.2 for a graphical representation of the road link locations.

1.5 Emission Factors

1.5.1 Emission factors for each link were calculated using the relevant traffic flows and the Emissions Factor Toolkit (version 11.0). This has been produced by DEFRA and incorporates COPERT 5.3 vehicle emission factors and fleet information.

1.5.2 There is current uncertainty over NO_2 concentrations within the UK, with the implementation of new vehicle emission standards not resulting in the previously expected reduction in roadside levels. Therefore, 2019 emission factors were utilised in preference to the Development opening year in order to provide robust model outputs. As predictions for 2019 were verified, it is considered the results are a robust indication of worst case concentrations for the future year.

1.6 Meteorological Data

1.6.1 Meteorological data used in the assessment was taken from Liverpool Airport meteorological station over the period 1st January 2019 to 31st December 2019 (inclusive). Liverpool Airport is located at NGR: 343488, 381791, which is approximately 8.1km south-west of the Site. It is anticipated that conditions would be reasonably similar over a distance of this magnitude. The data was therefore considered suitable for an assessment of this nature.

1.6.2 All meteorological records used in the assessment were provided by Atmospheric Dispersion Modelling (ADM) Ltd, which is an established distributor of data within the UK. Reference should be made to Figure 10.2 in for a wind rose of the utilised meteorological data.

1.7 Roughness Length

1.7.1 The z_0 is a modelling parameter applied to allow consideration of surface height roughness elements. A z_0 of 0.5m was used to describe the modelling extents. This is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'parkland, open suburbia'.

1.7.2 A z_0 of 0.1m was used to describe the meteorological site. This is considered appropriate for the morphology of the area and is suggested within ADMS-Roads as being suitable for 'root crops'.

1.8 Monin-Obukhov Length

1.8.1 The Monin-Obukhov length provides a measure of the stability of the atmosphere. A minimum Monin-Obukhov length of 30m was used to describe the modelling extents and meteorological site. This value is considered appropriate for the nature of both areas and is suggested within ADMS-Roads as being suitable for 'cities and large towns'.

1.9 Background Concentrations

1.9.1 Annual mean NO_2, PM_{10} and $PM_{2.5}$ background concentrations were taken from the DEFRA mapping study for the grid square containing the H12 - outside 12 Windy Arbor Brow monitoring position, NGR: 346500, 389500. These are shown in Table A10.1.2.

Table A10.1.2 Background Pollutant Concentration

Pollutant	Predicted 2019 Background Concentration (µg/m^3)
NO_2	23.73
PM_{10}	14.89
$PM_{2.5}$	9.29

1.9.2 The values shown in Table A10.1.2 were chosen to represent concentrations throughout the dispersion modelling extents without the contribution from road vehicles as they were higher than the DEFRA background for the grid square containing the Site, as shown in Table 10.16 Chapter 10 - Air Quality.

1.9.3 Similarly to emission factors, background concentrations from 2019 were utilised in preference to the opening year. This provided a robust assessment and is likely to overestimate pollutant concentrations during the operation of the Development.

1.10 NO_x to NO_2 Conversion

1.10.1 Predicted annual mean oxides of nitrogen (NO_x) concentrations were converted to NO_2 concentrations using the spreadsheet (version 8.1) provided by DEFRA, which is the method detailed within DEFRA guidance[2].

1.11 Verification

1.11.1 The predicted results from a dispersion model may differ from measured concentrations for a large number of reasons, including:

- Estimates of background concentrations;
- Uncertainties in source activity data such as traffic flows and emission factors;
- Variations in meteorological conditions;
- Overall model limitations; and,
- Uncertainties associated with monitoring data, including locations.

[2] Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

1.11.2 Model verification is the process by which these and other uncertainties are investigated and where possible minimised. In reality, the differences between modelled and monitored results are likely to be a combination of all of these aspects.

1.11.3 For the purpose of the assessment, model verification was undertaken for 2019 using traffic data, meteorological data and monitoring results from this year. The choice of 2019 as the verification year aligns with the IAQM position statement 'Use of 2020 and 2021 Monitoring Datasets'[3], which states:

> "If you are carrying out an air quality study that includes validation against monitoring data, use 2019 monitoring data as the last typical year"

1.11.4 KMBC undertook monitoring of NO_2 concentrations at eight locations within the vicinity of roads included within the model during 2019. Review of the results indicated that the Huyton automatic station is co-located with diffusion tube H1. The result from the continuous analyser was therefore utilised as the most accurate record of pollutant levels at this location.

1.11.5 The results were obtained and the road contributions to total NO_x concentrations calculated following the methodology contained within DEFRA guidance[4]. The monitored annual mean NO_2 concentrations and calculated road NO_x concentrations are summarised in Table A10.1.3.

Table A10.1.3 NO_X Verification - Monitoring Results

Monitoring Location		Monitored NO_2 Concentration ($\mu g/m^3$)	Calculated Road NO_x Concentration ($\mu g/m^3$)
Huyton	Cronton Road	37.6	28.00
H2	Outside 2 Whitefield Lane	40.8	34.98
H3	Outside 1 Whitefield Lane	48.0	51.46
H4	Opposite Smithford Walk	31.4	15.05
H5	Sevenoak Grove	27.4	7.08
H6	Wilson Road Junction	32.1	16.48

[3] Use of 2020 and 2021 Monitoring Datasets, IAQM, 2021.

[4] Local Air Quality Management Technical Guidance (TG16), DEFRA, 2021.

Monitoring Location		Monitored NO_2 Concentration ($\mu g/m^3$)	Calculated Road NO_x Concentration ($\mu g/m^3$)
H7	Tarbock Island	37.2	27.14
H12	Halsnead development	32.8	17.91

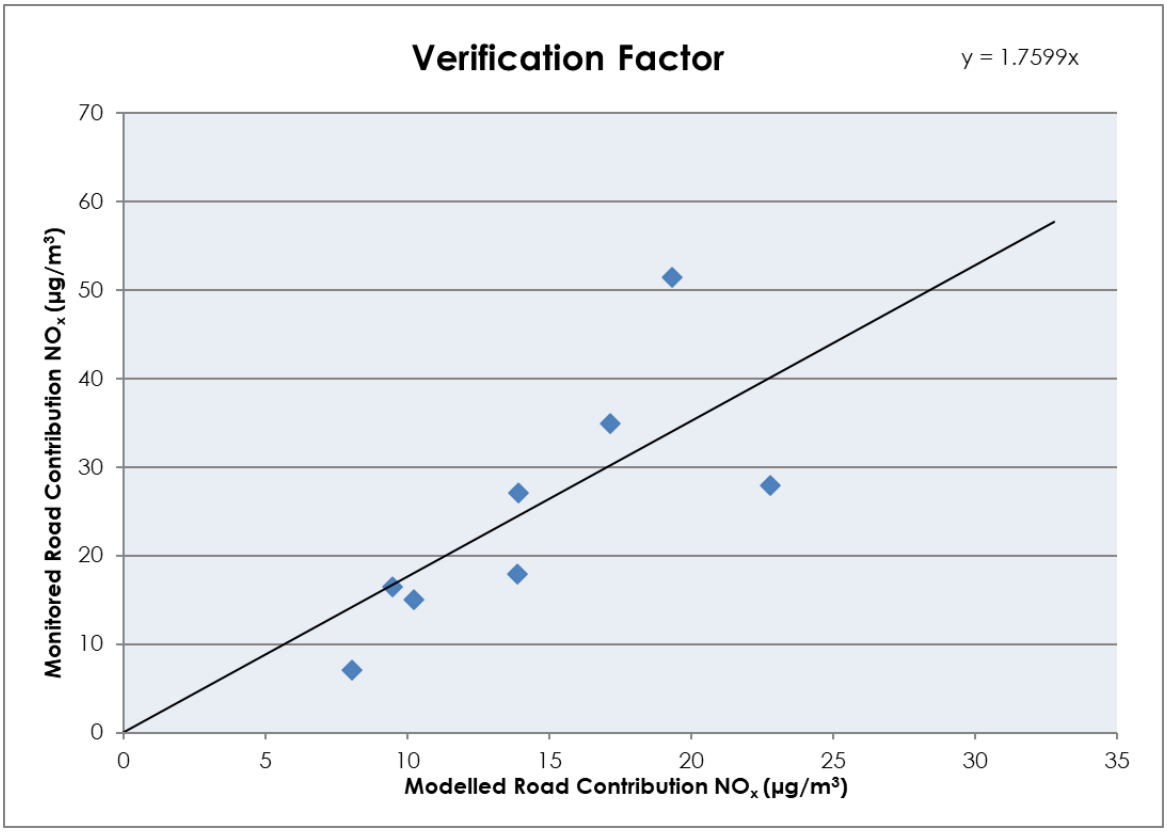
1.11.6 The annual mean road NO_x concentrations predicted from the dispersion model and the 2019 road NO_x concentrations calculated from the monitoring results are summarised in Table A10.1.4.

Table A10.1.4 NO_X Verification - Modelling Results

Monitoring Location		Calculated Road NO_x Concentration ($\mu g/m^3$)	Modelled Road NO_x Concentration ($\mu g/m^3$)
Huyton	Cronton Road	28.00	22.79
H2	Outside 2 Whitefield Lane	34.98	17.14
H3	Outside 1 Whitefield Lane	51.46	19.34
H4	Opposite Smithford Walk	15.05	10.26
H5	Sevenoak Grove	7.08	8.05
H6	Wilson Road Junction	16.48	9.49
H7	Tarbock Island	27.14	13.92
H12	Halsnead development	17.91	13.88

1.11.7 The monitored and modelled road NO_x concentrations were graphed and the equation of the trendline based on linear progression through zero calculated. This indicated that a verification factor of 1.7599 was required to be applied to all road NO_x modelling results, as shown in Graph A10.1.1.

Graph A10.1.1 NO_x Verification Factor



1.11.8 KMBC undertook monitoring of PM_{10} concentrations at one location within the vicinity of roads included within the model during 2019. The monitored annual mean PM_{10} concentration and modelled PM_{10} concentration is shown in Table A10.1.5.

Table A10.1.5 PM_{10} Verification - Modelling Result

Monitoring Location		Monitored PM_{10} Concentration (µg/m³)	Modelled Road PM_{10} Concentration (µg/m³)
Huyton	Cronton Road	22.9	16.5

1.11.9 The monitored and modelled PM_{10} concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.3843 was required to be applied to all PM_{10} modelling results.

1.11.10 KMBC undertook monitoring of $PM_{2.5}$ concentrations at one location within the vicinity of roads included within the model during 2019. The monitored annual mean $PM_{2.5}$ concentration and modelled $PM_{2.5}$ concentration is shown in Table A10.1.6.

Table A10.1.6 $PM_{2.5}$ Verification - Modelling Result

Monitoring Location		Monitored $PM_{2.5}$ Concentration ($\mu g/m^3$)	Modelled Road $PM_{2.5}$ Concentration ($\mu g/m^3$)
Huyton	Cronton Road	10.8	10.3

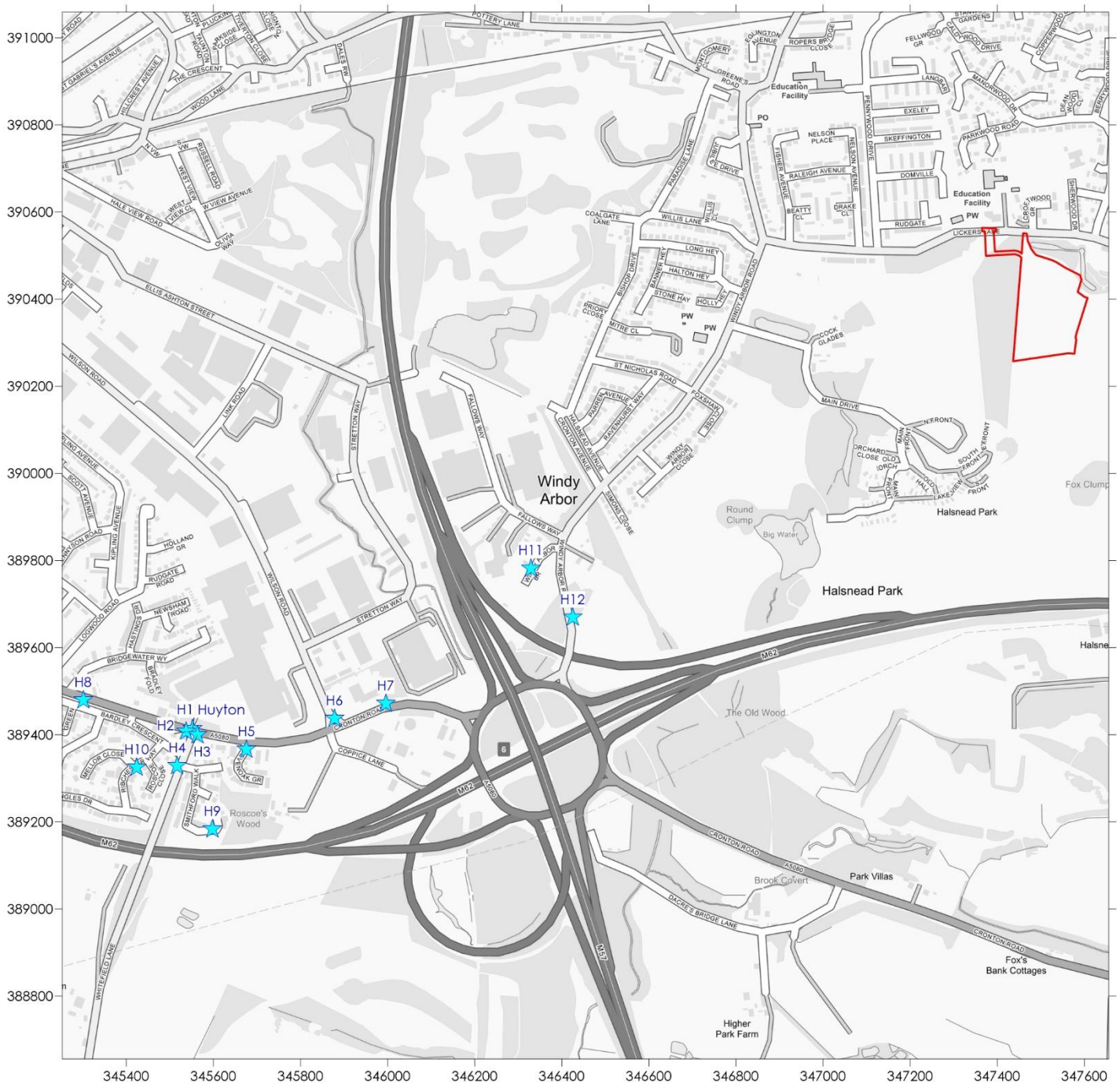
1.11.11 The monitored and modelled $PM_{2.5}$ concentrations were compared to calculate the associated ratio. This indicated a verification factor of 1.0484 was required to be applied to all $PM_{2.5}$ modelling results.

APPENDIX 10.2
AIR QUALITY FIGURES

Air Quality Environmental Impact Assessment

Appendix 10.2 - Figures

Land at Lickers Lane, Whiston



Legend

Site Boundary

Monitor

Title

Figure 10.1 - Monitoring Locations

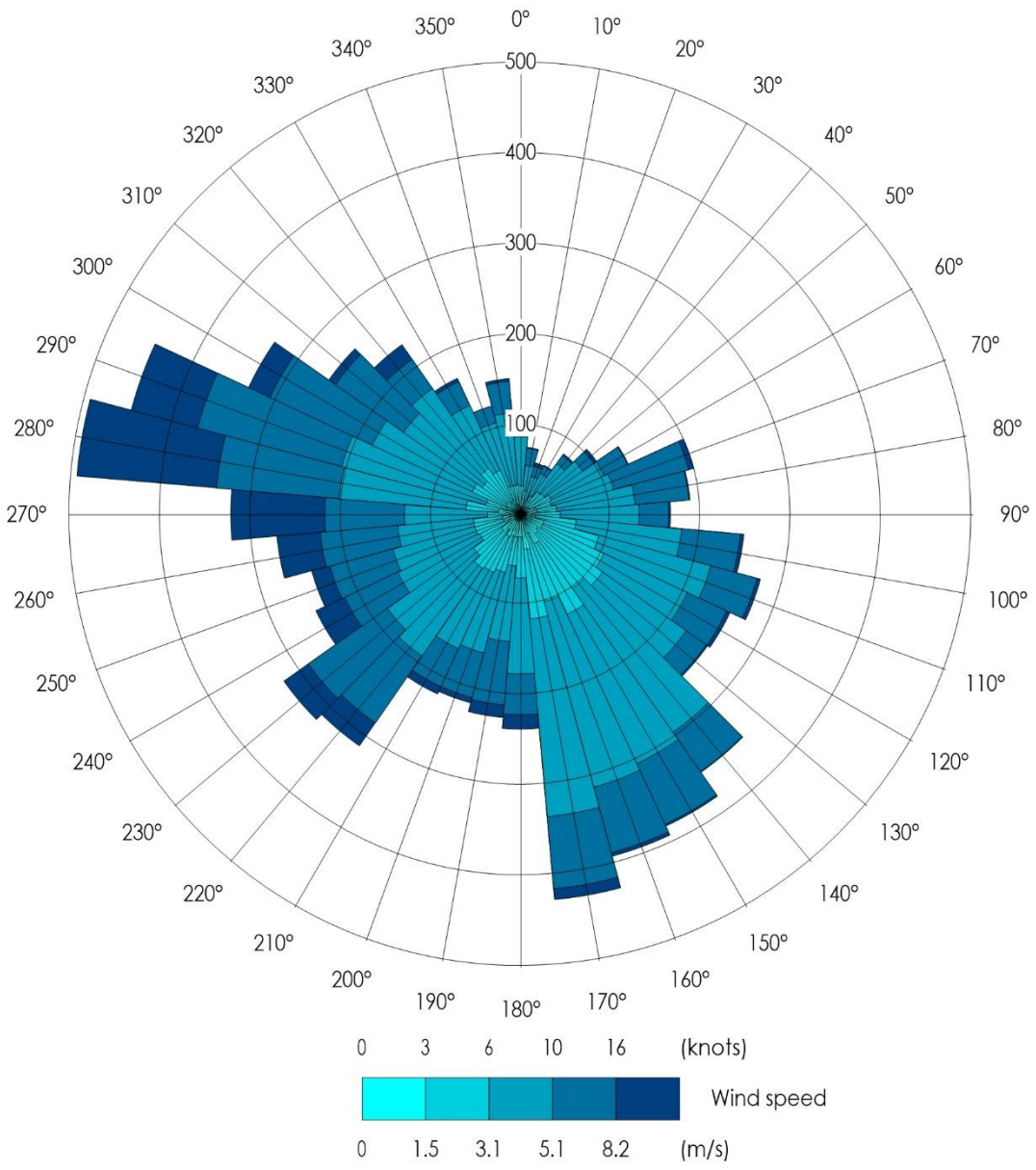
Project

Land at Lickers Lane, Whiston

Contains Ordnance Survey Data
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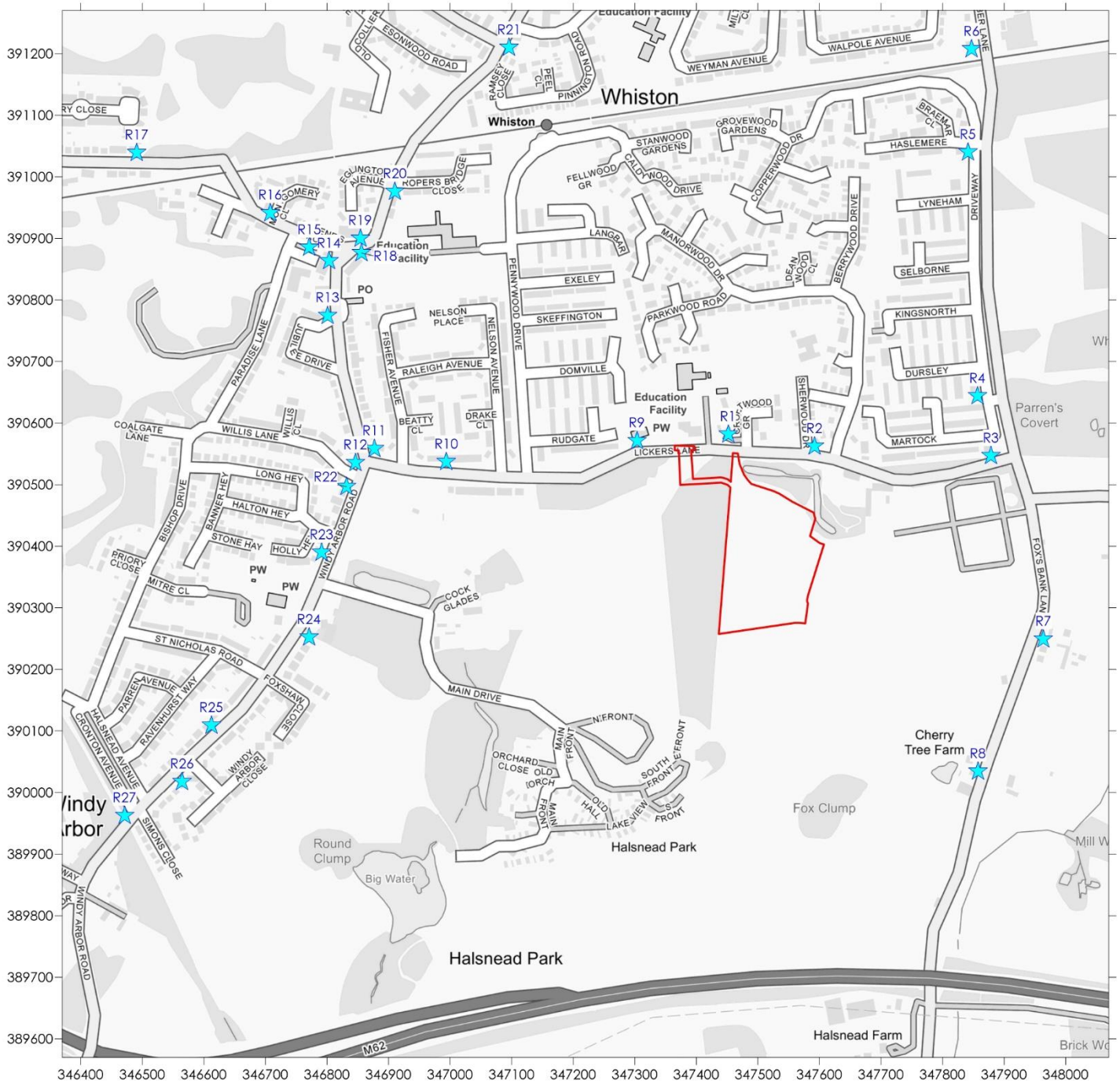
Legend

Title
Figure 10.2 - Wind Rose of 2019 Liverpool Airport Meteorological Data

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Land at Lickers Lane, Whiston

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Legend

Site Boundary

Receptor

Title

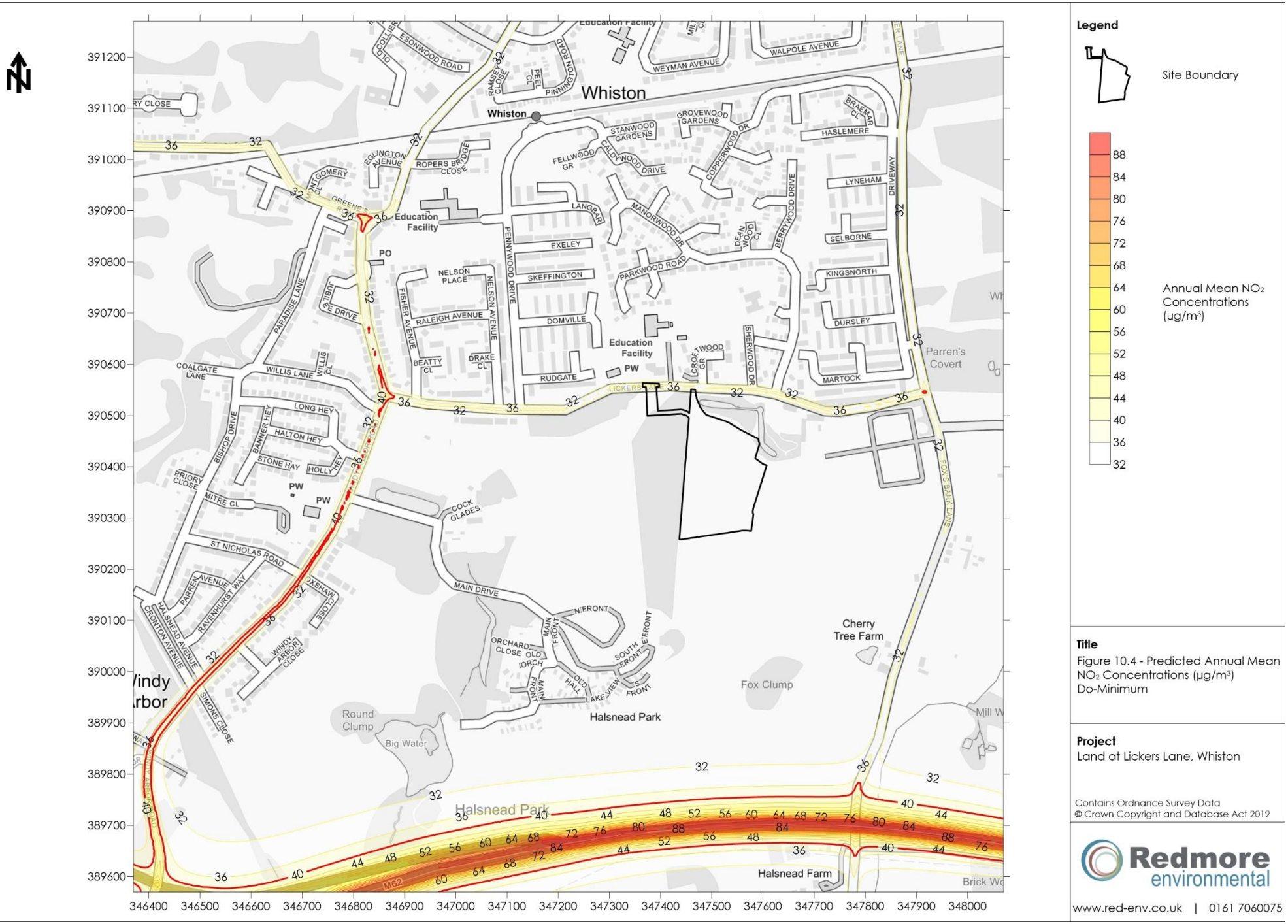
Figure 10.3 - Road Vehicle Exhaust Emissions Sensitive Receptor Locations

Project

Land at Lickers Lane, Whiston

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Legend

Site Boundary

Annual Mean NO_2 Concentrations ($\mu g/m^3$)

88
84
80
76
72
68
64
60
56
52
48
44
40
36
32

Title

Figure 10.4 - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$) Do-Minimum

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Legend

Site Boundary

Annual Mean NO_2 Concentrations ($\mu g/m^3$)

88
84
80
76
72
68
64
60
56
52
48
44
40
36
32

Title

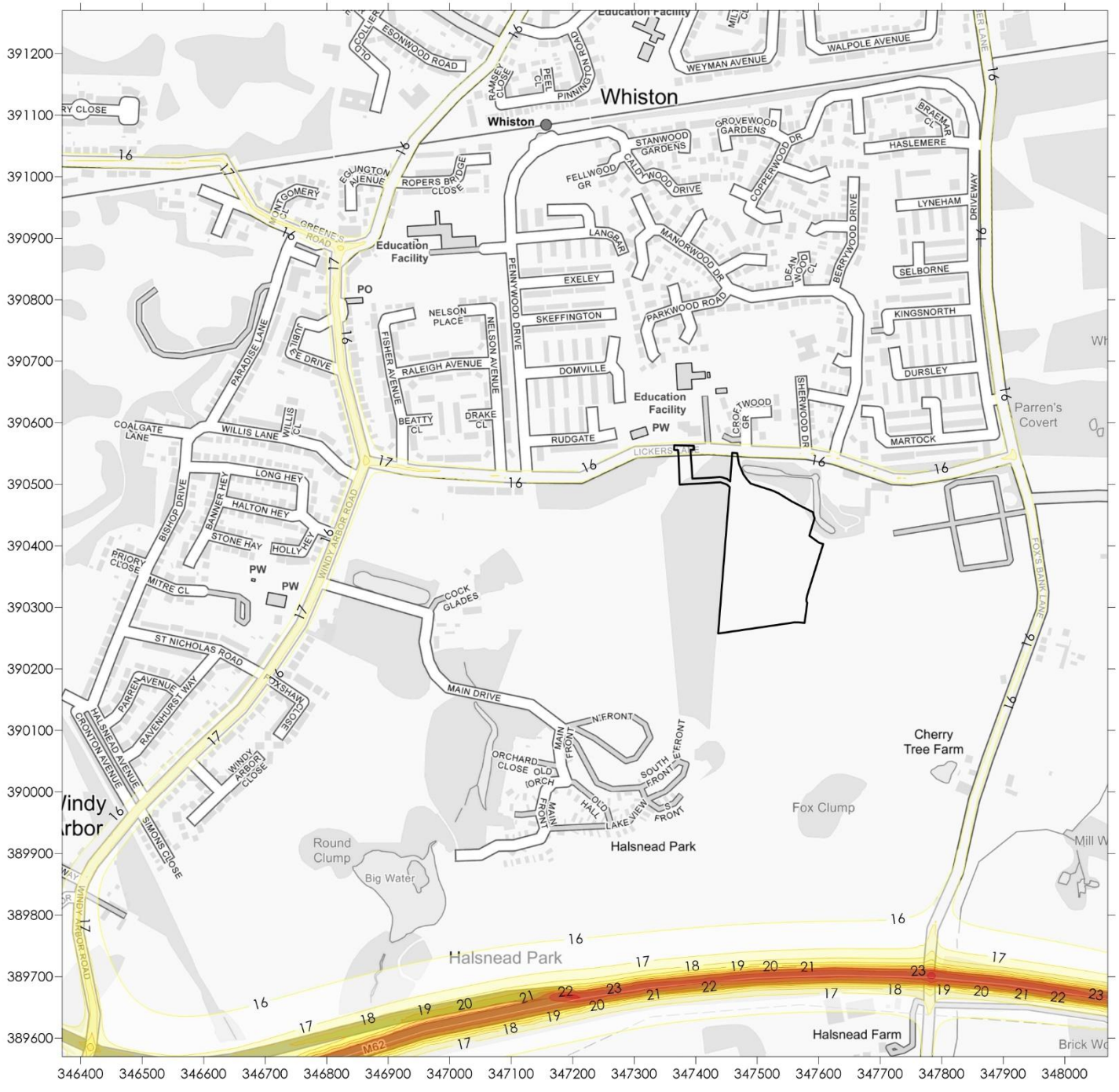
Figure 10.5 - Predicted Annual Mean NO_2 Concentrations ($\mu g/m^3$) Do-Something

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Legend

Site Boundary

Annual Mean PM_{10} Concentrations ($\mu g/m^3$)

24
23
22
21
20
19
18
17
16

Title

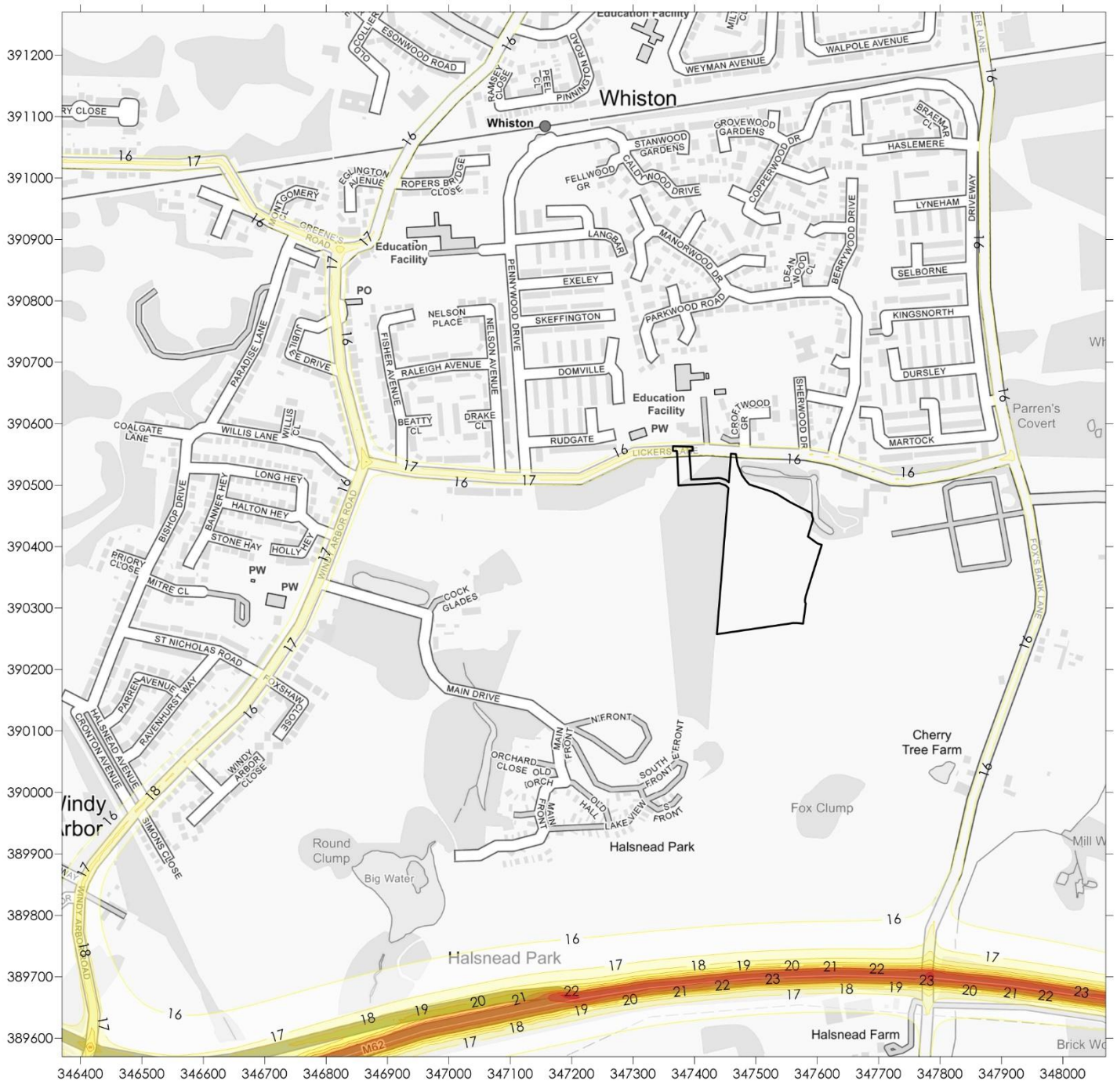
Figure 10.6 - Predicted Annual Mean PM_{10} Concentrations ($\mu g/m^3$) Do-Minimum

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Legend

Site Boundary

Annual Mean PM_{10} Concentrations ($\mu g/m^3$)

Title

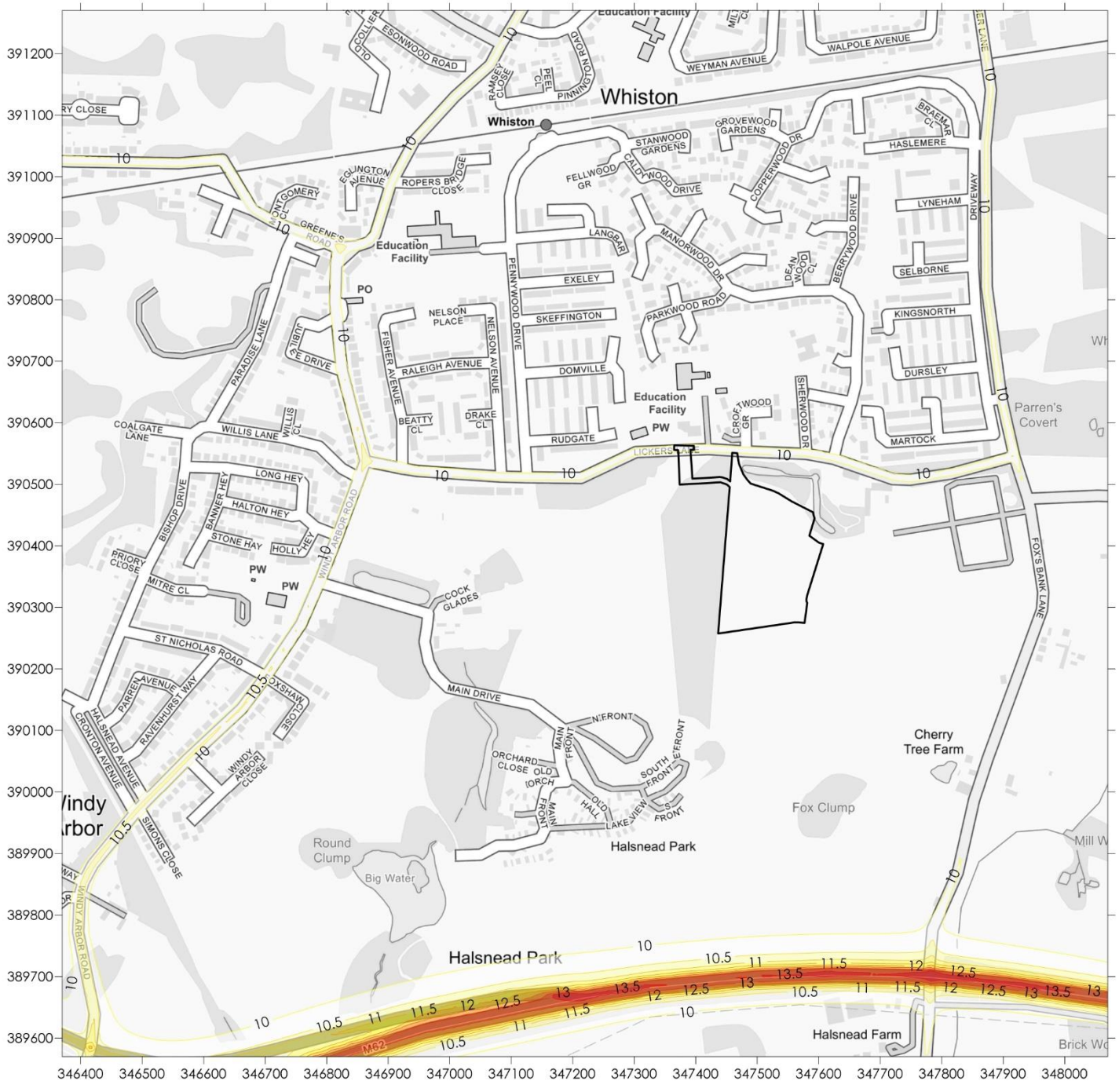
Figure 10.7 - Predicted Annual Mean PM_{10} Concentrations ($\mu g/m^3$) Do-Something

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Legend

Site Boundary

Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$)

13.5
13
12.5
12
11.5
11
10.5
10

Title

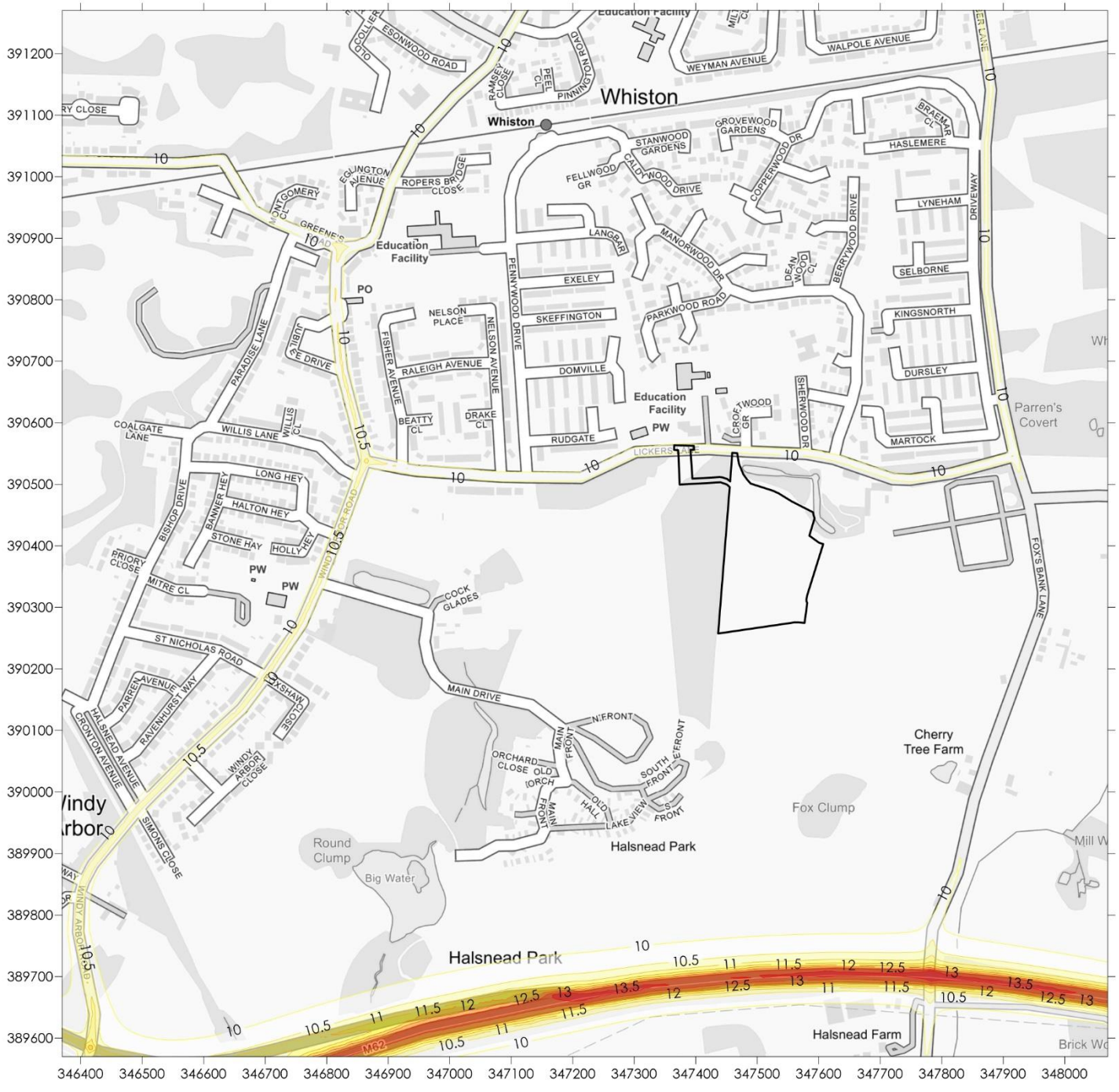
Figure 10.8 - Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$) Do-Minimum

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Legend

Site Boundary

Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$)

- 13.5
- 13
- 12.5
- 12
- 11.5
- 11
- 10.5
- 10

Title

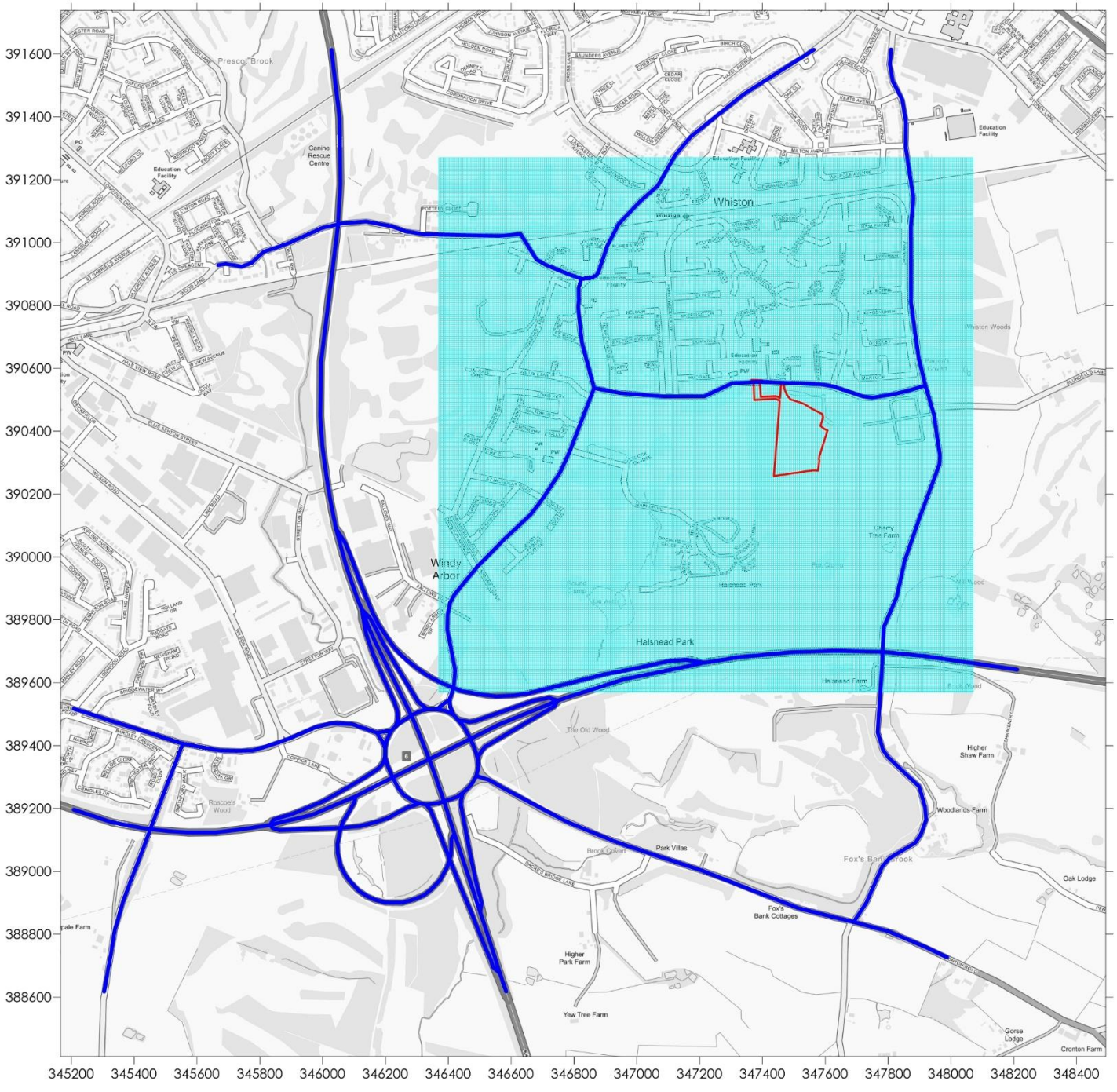
Figure 10.9 - Predicted Annual Mean $PM_{2.5}$ Concentrations ($\mu g/m^3$) Do-Something

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Legend

Site Boundary

Road Link

Output Grid

Title

Figure 10.10 - ADMS-Roads Inputs

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APPENDIX 10.3
AIR QUALITY ABBREVIATIONS AND GLOSSARY

Air Quality Environmental Impact Assessment

Appendix 10.3 - Abbreviations and Glossary

Land at Lickers Lane, Whiston



Abbreviations

AADT - Annual Average Daily Traffic
ADM - Atmospheric Dispersion Modelling
AQLV - Air Quality Limit Value
AQMA - Air Quality Management Area
AQO - Air Quality Objective
AQS - Air Quality Strategy
AURN - Automatic Urban and Rural Network
CEMP - Construction Environmental Management Plan
CERC - Cambridge Environmental Research Consultants
DEFRA - Department for Environment, Food and Rural Affairs
DM - Do-Minimum
DMP - Dust Management Plan
DMRB - Design Manual for Roads and Bridges
DS - Do-Something
EB - Eastbound
EIA - Environmental Impact Assessment
ES - Environmental Statement
HDV - Heavy Duty Vehicle
IAQM - Institute of Air Quality Management
KMBC - Knowsley Metropolitan Borough Council
LA - Local Authority
LAQM - Local Air Quality Management
NB - Northbound
NGR - National Grid Reference
NO_2 - Nitrogen Dioxide
NO_x - Oxides of Nitrogen
NPPF - National Planning Policy Framework
NPPG - National Planning Practice Guidance
PM_{10} - Particulate matter with an aerodynamic diameter of less than 10µm
$PM_{2.5}$ - Particulate matter with an aerodynamic diameter of less than 2.5µm
SB - Southbound
SP - Slow Phase
UDP - Unitary Development Plan
WB - Westbound
Z_0 - Roughness Length

Glossary

Air Quality Limit Value - Legally binding parameters defined in air quality legislation that must not be exceeded. Limit values are set for individual pollutants and are a combination of a concentration value, an averaging time over which it is measured, the number of exceedences allowed per year, and a date by which it must be achieved.

Air Quality Management Area - An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives.

Air Quality Objective - The name given to the maximum ambient pollutant concentration that is not to be exceeded either without exception or within a permitted number of exceedences over a specified timescale for a pollutant outlined in the nation Air Quality Strategy.

Air Quality Strategy - A national government document which contains standards, objectives and measures for improving ambient air quality.

Annual Average Daily Traffic - The number of traffic movements on a given road in a 24-hour period as an average across one year.

Background Concentration - The pollutant concentration assumed to represent baseline concentrations in the atmosphere across the modelled area.

Diffusion Tube Monitoring - A passive, periodic monitoring method. The tubes contain a substance which absorb the pollutant of interest at a known rate and from the period exposed and subsequent analysis an ambient pollutant concentration can be calculated.

Do-Minimum - The scenario representing predicted traffic flows in the future year inclusive of committed developments should the proposals not be completed.

Do-Something - The scenario representing predicted traffic flows in the future year inclusive of committed developments should the proposals be completed.

Dust - Dust is a generic term covering particles of different compositions, shapes and sizes. These can have different impacts and effects:

- Those particles up to 10µm (micrometres) in diameter (known as PM_{10}) remain suspended in air for long periods and because they are fine enough to be breathed in and can, potentially, cause health effects.
- The particles that are larger (and maybe visible to the naked eye) are not thought to cause health effects to the same extent, but can cause disamenity through soiling and staining when they deposit onto window ledges, cars, laundry and plants etc.

Dust Management Plan - A document that describes the site specific methods to be used to control dust emissions.

Heavy Duty Vehicle - Vehicles with a gross weight of greater than 3.5 tonnes.

Roughness Length - A measure of the surface roughness of the area.

Trackout - The transport of dust and dirt from the construction/demolition site onto the public road network, where it may be deposited and then re-suspended by vehicles using the network. This arises when HDVs leave the construction/demolition site with dusty materials, which may then spill onto the road, and/or when HDVs transfer dust and dirt onto the road having travelled over muddy ground on site.

APPENDIX 10.4
CORRESPONDENCE

Air Quality Environmental Impact Assessment

Appendix 10.4 - Correspondence

Land at Lickers Lane, Whiston



Emily Macey

From: Bradshawe, Helen <Helen.Bradshawe@knowsley.gov.uk>
Sent: 31 May 2022 14:18
To: Olly Hanlon
Cc: Gaskell, Ian
Subject: RE: External Mail: Air Quality Assessment Methodology - Lickers Lane, Whiston

The area of Cronton Road / Whitefield Lane is an area we are concerned in relation to Air Pollution, and there are a number of developments within the vicinity of Lickers Lane including developments on Cronton Lane. It would be advisable to look at the planning portal.

Helen Bradshawe
Environmental Protection Officer
Environmental Health and Consumer Protection

Telephone: 0151 443 4742
Mobile: 07717888524

Knowsley Council, Huyton Municipal - Second Floor, Archway Road, Huyton, Knowsley, L36 9YU

From: Olly Hanlon <olly.hanlon@red-env.co.uk>
Sent: 31 May 2022 14:14
To: Bradshawe, Helen <Helen.Bradshawe@knowsley.gov.uk>
Cc: Gaskell, Ian <ian.gaskell@knowsley.gov.uk>
Subject: RE: External Mail: Air Quality Assessment Methodology - Lickers Lane, Whiston

Good afternoon Helen,

Many thanks for getting back to me so quickly. Your comments are noted.

Re committed developments – are there any of particular concern that you wish for us to include within our assessment?

Best wishes,

Olly Hanlon

Senior Air Quality Consultant
Redmore Environmental Ltd

0161 706 0075 | 07704663274 | olly.hanlon@red-env.co.uk | www.red-env.co.uk

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From: Bradshawe, Helen <Helen.Bradshawe@knowsley.gov.uk>
Sent: 31 May 2022 13:49
To: Olly Hanlon <olly.hanlon@red-env.co.uk>
Cc: Gaskell, Ian <ian.gaskell@knowsley.gov.uk>
Subject: RE: External Mail: Air Quality Assessment Methodology - Lickers Lane, Whiston

Olly,

Thank you for the query in relation to the Air Quality methodology, this is acceptable. I would ensure that the most up to date data is used within the assessment and ensure that other proposed developments within the area which have received planning permission (may not be developed as yet) are also taken into consideration when completing the assessment.

I have attached the approved ASR for 2021 and the data for the ASR 2022 for the area. This data is currently being assessed for the report.

Kind Regards

Helen Bradshawe
Environmental Protection Officer
Environmental Health and Consumer Protection

Telephone: 0151 443 4742
Mobile: 07717888524

Knowsley Council, Huyton Municipal - Second Floor, Archway Road, Huyton, Knowsley, L36 9YU

From: Olly Hanlon <olly.hanlon@red-env.co.uk>
Sent: 27 May 2022 13:46
To: Environmental Health <Environmental.Health@knowsley.gov.uk>
Subject: External Mail: Air Quality Assessment Methodology - Lickers Lane, Whiston

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Good afternoon Ian,

We have recently been instructed to undertake an Air Quality Assessment in support of a residential development on land off Licker's Lane, Whiston. I attach a site plan for your reference. I am writing to ask if you would kindly review our proposed methodology and let me know if you have any comments or anything else you'd like us to consider. In addition, if you could please send through your most recent Annual Status Report it would be most appreciated.

The scheme has the potential to cause air quality impacts as a result of fugitive dust emissions during construction and road vehicle exhaust emissions during operation. An Air Quality Assessment is therefore required in order to define baseline conditions, provide consideration of air quality impacts associated with the development and identify any mitigation necessary to reduce effects to an acceptable level.

Outline Approach

Baseline

Baseline air quality conditions in the vicinity of the site will be defined based on recent monitoring results and information from the Department for the Environment, Food and Rural Affairs (DEFRA) Air Quality Resource. Sensitive locations that could be affected by the proposals will also be identified, as well as any relevant planning policies or guidance.

Construction Phase Assessment

During the construction of the proposed development there is the potential for air quality impacts as a result of fugitive dust emissions from earthworks, construction and trackout activities. It is proposed to assess these in accordance with the Institute of Air Quality Management (IAQM) guidance 'Assessment of Dust from Demolition and Construction V1.1'.

Operational Phase Assessment

During the operation of the development there is the potential for air quality impacts as a result of additional road vehicle exhaust emissions associated with residents travelling to and from the site. It is proposed to assess these through detailed dispersion modelling using ADMS-Roads in order to fully quantify levels of nitrogen dioxide (NO_2), particulate matter with an aerodynamic diameter of less than 10µm (PM_{10}) and particulate matter with an aerodynamic diameter of less than 2.5µm ($PM_{2.5}$) at sensitive locations both with and without the development in place.

The assessment will be undertaken using 1-year of meteorological data and the modelled results verified using local monitoring data. Impacts will be predicted at sensitive receptor locations and also displayed graphically throughout the assessment extents using contour plots.

Predicted pollutant concentrations will be compared against the Air Quality Objectives and Air Quality Target Value, as defined in the UK Air Quality Strategy and associated regulations. The significance of potential impacts will also be determined based on the predicted magnitude of change in pollutant concentrations and the criteria provided within the IAQM document 'Land-Use Planning & Development Control: Planning for Air Quality'.

Mitigation

If required following assessment of potential impacts, suitable mitigation measures will be identified in order to reduce air quality effects to an acceptable level.

Best wishes,

Olly Hanlon

Senior Air Quality Consultant
Redmore Environmental Ltd

0161 706 0075 | 07704663274 | olly.hanlon@red-env.co.uk | www.red-env.co.uk

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Proposed Residential Development

Halsnead Garden Village | Lickers Lane | Knowsley

VISTRY PARTNERSHIPS

Transport Assessment

September 2022

CROFT

Eddisons

TRANSPORT PLANNING & DESIGN

Incorporating Croft Transport Planning & Design

REPORT

Document:	Transport Assessment
Project:	Proposed Residential Development, Halsnead Garden Village, Lickers Lane, Knowsley
Client:	Vistry Partnerships
Job Number:	3463
File Origin:	Z:\projects\3463 Licker's Lane, Halsnead (Vistry)\Docs\Reports\3463.TA.02.docx

Document Checking:

Primary Author	MTC	**Initialled:**
Contributor	GM	**Initialled:**
Review By	PJW	**Initialled:**

Issue	Date	Status	Checked for Issue
1	16-09-22	Final	
2			
3			
4			

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CROFT

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1 INTRODUCTION

1.1 Preamble

1.1.1 Croft have been instructed by Vistry Partnerships to advise on the traffic and transport issues relating to a planning application for approximately 120 dwellings on a parcel of land which forms part of the Halsnead Garden Village site in Knowsley.

1.1.2 The report provides information on the traffic and transport planning aspects of the development proposals to assist the local planning authority in the positive determination of the forthcoming planning application.

1.2 Format of Report

1.2.1 Following this introduction, Section 2 of the report will detail the existing site conditions and describe the adjacent highway network, while Section 3 will set out the development proposals.

1.2.2 Section 4 will briefly consider relevant national and local policy, while Section 5 will consider the accessibility of the site by non-car modes, including walking, cycling and public transport.

1.2.3 Section 6 will consider the trip generation and traffic impact assessment of the local highway network and Section 7 will outline the proposed Residential Travel Plan.

1.2.4 Lastly, Section 8 will draw together the report's findings and conclusions.

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2 EXISTING CONDITIONS

2.1 Introduction

2.1.1 This section will detail the existing site and surroundings and provide details about the existing highway network.

2.2 Sustainable Urban Extension

2.2.1 The site forms part of the South of Whiston Sustainable Urban Extension (SUE). The SUE was originally designated as Green Belt land.

2.2.2 However, on adoption of the Local Plan Core Strategy (2016) it was allocated for development.

2.2.3 The Local Plan Core Strategy (SUE2) identifies the largest SUE locations as needing additional planning guidance and the site under consideration in this report forms part of the largest and most complex SUE. The Local Plan identifies that this SUE has the capacity to accommodate upwards of 1,500 new homes, at least 22.5 hectares of employment land, and a new country park.

2.3 Existing Site

2.3.1 The location of the site in relation to the surrounding area is presented in **Plan 1**.

2.3.2 It should be noted that the application site lies directly to the east of the Area A site, which is being developed by others and has been subject to its own planning application (App Ref no. 20/00399/OUT).

2.3.3 For context, the neighbouring (Area A) site is shown in **Figure 2.1** below:

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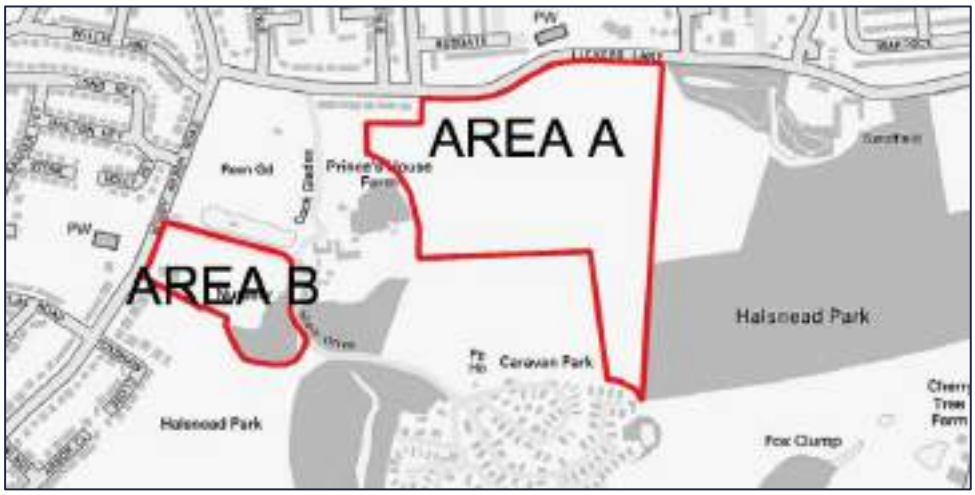


Figure 2.1 - Adjacent Site

2.3.4 The site is situated in Whiston around a kilometre to the south of the town centre. The adjacent site (to the west) forms two parts of the site known as 'Land South of Whiston' which together with the site known as 'Land South of M62' is being promoted by Knowsley Council via the Local Plan process as the Halsnead Masterplan.

2.3.5 The other application comprises two separate site areas, with a larger site area located to the immediate south of Lickers Lane (Area A) and a smaller site area (Area B) located to the immediate east of Windy Arbor Road. The Area A site is defined by existing field boundaries to the south, east and west with hedgerows and woodland interspersed along the eastern and western boundary of the site. Lickers Lane forms the northern boundary of the site. The Area B site is bound by Main Drive to the north and east, by undeveloped land and a play area accessed from Foxshaw Close to the south, and by Windy Arbor Road which forms the western boundary of the site.

2.3.6 This application site is bounded by the Area A site to the west and a wooded area to the north. Halsnead Park binds the site to the south and east.

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2.3.7 For context, it is noted that vehicular access into Area A site is currently undertaken via an informal gated access off Lickers Lane to the western end of the adopted Lickers Lane site frontage. The Area B site is currently accessed via Main Drive.

2.4 Local Highway Network

2.4.1 Lickers Lane runs in an approximate east to west alignment along the northern boundary of Site area A and is subject to a 30-mph speed limit. To the east of Site area A, Lickers Lane forms the minor arm of a priority-controlled junction with Fox's Bank Lane. To the west of the Site area it forms the minor arm of a priority-controlled junction with Windy Arbor Road.

2.4.2 In the vicinity of the Site area A, Lickers Lane has a carriageway width of approximately 7.3 metres, is street lit, and has a pedestrian footway on its northern side.

2.4.3 To the east of the Site area A, 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.

2.4.4 To the west of the Site area B, 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.

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2.4.5 Windy Arbour Road is subject to a 30mph speed limit, is street lit, and provides footways of at least 2m in width in the vicinity of the Site area B.

2.4.6 To the south of the Site area B, Windy Arbor Road forms the north-eastern arm of the M62 junction 6 grade separated roundabout, known as Tarbock Island. Highways England (HE) have recently carried out widening works to upgrade the footway/cycleway to a minimum of 2m at the Tarbock Island gyratory serving the M62 and M57.

2.4.7 This scheme will reduce north-south severance for active modes between the Land South of Whiston and Land South of the M62 development sites and connect planned residential development with planned employment. National Highways (NH) are also investigating the feasibility of reopening the former mineral line bridge to the east of Tarbock island, which would provide a direct connection between the two wider masterplan sites for sustainable modes.

2.5 Baseline Transport Data

2.5.1 The application site is undeveloped and apart from any associated agricultural traffic does not generate any traffic movements onto the local highway network.

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3 DEVELOPMENT PROPOSALS

3.1 Introduction

3.1.1 The following paragraphs will describe the development proposals and report on proposed access arrangements and car parking.

3.2 Proposed Development

3.2.1 The applicant is seeking outline planning permission to develop the site for up to 120 residential dwellings, with associated car parking and landscaping.

3.2.2 The proposed internal site layout is provided at **Plan 2**.

3.2.3 The introduction of a 20mph zone within the residential development will be considered to promote walking and cycling and create a pedestrian friendly environment. This will often negate the need for segregated cycle facilities within residential areas.

3.2.4 Car parking across the site will comply with the Councils' current car parking standards.

3.3 Vehicular Access

3.3.1 The site will be accessed through the adjacent (Site A) site, located immediately to the west, which is proposed to take access from Lickers Lane.

3.3.2 The proposed Lickers Lane site access (being pursued by others through a separate planning application) is presented in **Plan 3**.

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3.3.3 The proposed access arrangement contains the following parameters:

- Single lane exit from the site.
- Eastbound running lane of 3.65m width.
- Westbound running land of 3.5m width.
- 12m junction radii.
- Formal pedestrian crossing facilities across all arms.

3.3.4 The proposed site access has been designed to meet with all relevant highway design guidance and is understood to have previously been considered acceptable by Knowsley Council to cater for the wider Halsnead Masterplan and its associated traffic generation.

3.4 Servicing

3.4.1 The internal layout will be designed to facilitate such vehicles and allow them to enter the site, turn around and exit in a forward gear.

3.4.2 Furthermore, any effects during the construction period will be minimised through best practice measures and a Construction Environmental Management Plan [CEMP] will be prepared by the developer and agreed with the Local Planning Authority.

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4 PLANNING POLICY

4.1 Introduction

4.1.1 This section of the TA reviews the relevant national transport planning policy and guidance documents in the context of the proposed development.

4.1.2 It will focus on the National Planning Policy Framework (NPPF), current version dated July 2021. It will also refer to National Planning Practice Guidance.

4.1.3 Local planning policy is taken from The Third Transport Plan for Merseyside and the Knowsley Local Plan Adopted Core Strategy.

4.2 National Planning Policy

National Planning Policy Framework (NPPF)

4.2.1 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.

4.2.2 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)

4.2.3 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:

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- appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;
- safe and suitable access to the site can be achieved for all users;
- the design of streets, parking areas, other transport elements and the content of associated standards reflects current national guidance, including the National Design Guide and the National Model Design Code 46; and
- any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree or development.

4.2.4 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.*'

4.2.5 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.

4.2.6 It is demonstrated in the subsequent sections of this TA 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.

4.2.7 Furthermore, the report also demonstrates that the proposals will not have a material impact on the adjoining highway network.

4.2.8 It is therefore clear from the NPPF that development:

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- 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.
- 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.

4.2.9 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.

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4.2.10 The location of the proposed development close to a number of local amenities (as described in Section 5 of this TA), in accordance with the guidance contained within paragraph 20, 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'.*

4.2.11 It is therefore concluded 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 Streets, it is considered that the proposed development accords with the aims and objectives of the Framework.

4.2.12 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'.*

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4.2.13 In order to satisfy this policy requirement, this TA is accompanied by a Travel Plan Framework which provides commitment to produce a full Travel Plan upon completion of the development.

National Planning Practice Guidance

4.2.14 The National Planning Practice Guidance (NPPG) web-based resource was published in March 2014 by the Department for Communities and Local Government, now MHCLG. This resource collates relevant planning practice guidance and provides links between the NPPF and relevant legislation and guidance.

4.2.15 In terms of transportation, the guidance on 'Travel Plans, Transport Assessments and Statements in Decision-Taking' is relevant to the proposals.

4.2.16 It essentially replaces the DFT's 'Guidance on Transport Assessment' (2007) and states in Paragraph 005 that:

'Transport Assessments and Transport Statements primarily focus on evaluating the potential transport impacts of a development proposal. (They may consider those impacts net of any reductions likely to arise from the implementation of a Travel Plan, though producing a Travel Plan is not always required). The Transport Assessment or Transport Statement may propose mitigation measures where these are necessary to avoid unacceptable or "severe" impacts. Travel Plans can play an effective role in taking forward those mitigation measures which relate to on-going occupation and operation of the development.'

'Transport Assessments and Statements can be used to establish whether the residual transport impacts of a proposed development are likely to be "severe", which may be grounds for refusal, in accordance with the National Planning Policy Framework'.

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4.2.17 Paragraph 014 provides guidance on establishing the need and scope of a Transport Assessment or Statements.

4.2.18 It states that *'The need for, scale, scope and level of detail required of a Transport Assessment or Statement should be established as early in the development management process as possible as this may positively influence the overall nature or the detailed design of the development.'*

4.2.19 Paragraph 014 goes on to state that the key issues to consider at the start of preparing a Transport Assessment are as follows:

- The planning context of the development proposal;
- Appropriate study parameters (i.e. area, scope and duration of study);
- Assessment of public transport capacity, walking / cycling capacity and road network capacity;
- Road trip generation and trip distribution methodologies and/or assumptions about the development proposal;
- Measures to promote sustainable travel;
- Safety implications of development; and
- Mitigation measures (where applicable) – including scope and implementation strategy.

4.2.20 Regarding treatment of cumulative impact of development, the NPPG also states in Paragraph 014 that:

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'It is important to give appropriate consideration to the cumulative impacts arising from other committed development (i.e. development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next three years').

At the decision-taking stage this may require the developer to carry out an assessment of the impact of those adopted Local Plan allocations which have the potential to impact on the same sections of transport network as well as other relevant local sites benefitting from as yet unimplemented planning approval.'

4.2.21 The scope for preparing this TA is in line with current guidance and conforms to the principles outlined in the NPPG.

4.2.22 The applicant is committed to delivering a sustainable development and will ensure that all residents are made aware of the Travel Plan measures to inform them of their travel choices and opportunities to travel by non-car modes.

4.2.23 The principles of the NPPG in relation to Travel Plans states that;

'Travel Plans are long-term management strategies for integrating proposals for sustainable travel into the planning process. They are based on evidence of the anticipated transport impacts of development and set measures to promote and encourage sustainable travel (such as promoting walking and cycling)'. (Paragraph 003)

'Travel Plans should where possible, be considered in parallel to development proposals and readily integrated into the design and occupation of the new site rather than retrofitted after occupation'. (Paragraph 003)

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'The primary purpose of a Travel Plan is to identify opportunities for the effective promotion and delivery of sustainable transport initiatives e.g. walking, cycling, public transport and telecommuting, in connection with both proposed and existing developments and through this to thereby reduce the demand for travel by less sustainable modes.' (paragraph 005).

4.2.24 On the basis of the above, the provision of the Travel Plan will encourage modal shift from private car use to sustainable transport modes. It will contain information to encourage walking, cycling and public transport, thereby meeting the principals set out above.

4.3 National Planning Practice Guidance

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4.3.10 On the basis of the above, the provision of the Travel Plan will encourage modal shift from private car use to sustainable transport modes. It will contain information to encourage walking, cycling and public transport, thereby meeting the principals set out above.

4.4 Local Planning Policy

The Third Local Transport Plan for Merseyside (2011)

4.4.1 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. 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 (2011)

4.4.2 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.

4.4.3 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.*

4.4.4 This document will demonstrate how the proposals meet with the criteria of this policy.

4.4.5 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)

4.4.6 Saved Policies are also detailed in the Knowsley Replacement Unitary Development Plan (UDP). The saved UDP polices have been influential in relation to the development of the Core Strategy and include the following in respect to transport.

4.4.7 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. Similarly, Policy T9 relates to the requirement for Travel Plans for major traffic generating developments or those likely to exacerbate existing traffic problems.

4.4.8 This document will confirm that the proposals meet with the criteria of these policies.

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4.5 Adopted Halsnead Garden Village Masterplan

4.5.1 Knowsley Council has adopted the Halsnead Garden Village Masterplan Supplementary Planning Document (SPD) following Cabinet approval in June 2017.

4.5.2 The Masterplan is a clear statement of the council's ambitions for Knowsley's largest development site. It sets out the vision and objectives for a vibrant, new settlement, including a new residential community, a large employment area, a new country park, a new primary school, and early years provision and other new or improved outdoor community facilities.

4.5.3 It is understood that when complete, the development will provide the following;

- Approximately 1,600 new homes
- Employment land of at least 22.5 hectares
- Approximately 33 hectares of green space
- Enhancements to Lickers Lane playing fields
- A new country park
- A new primary school and Early Years provision forming a community hub
- Access for vehicles, pedestrians and cyclists
- The development of this site could create more than 900 new permanent jobs.

4.5.4 In order to support the development a series of off-site highways improvements to the road network are proposed, which will be funded by the Liverpool City Region Strategic Investment Fund (LCRSIF), rather than by developer contributions.

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4.5.5 It is understood that the current planned works include modifications to the following junctions, as detailed further in Section 6.

- Windy Arbor Road/Lickers Lane Junction
- Lickers Lane/Fox's Bank Lane
- Windy Arbor Road/Dragon Lane
- Stoney Lane/Dragon Lane/Meadway
- Stoney Lane/Cumber Lane
- Cronton Road/Fox's Bank Lane
- Requisite improvements to M62 Junction 6 (Tarbock Island).
- Former Mineral Railway.

4.6 Planning Policy Summary

4.6.1 Reference to national guidance contained within NPPF has helped to establish that the site is well related to the surrounding area and will contribute towards the creation of a sustainable development. The NPPF seeks to ensure access to all road users including pedestrians and cyclists, as well as delivering a scheme, which allows the promotion of travel by public transport to result in an encompassing strategy to provide a high-quality development whilst not compromising a high level of sustainability.

4.6.2 One of the key aims of local policy is to focus on safe and convenient highways access and the accessibility of a site by modes other than the private car to ensure that new development is located where a range of transport modes can access it.

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4.6.3 The site is ideally located to assist in delivering these aims and aspirations and has potential, through the implementation of the site Travel Plan to deliver a highly sustainable development in transport terms.

4.6.4 Reference has also been made to the Halsnead Garden Village Masterplan Supplementary Planning Document (SPD) which is now adopted and shows that the development proposals comply with the main aspirations of the Masterplan and show that the proposals will assist in delivering a highly sustainable development.

4.6.5 It can therefore be concluded that the development proposals fully conform to the main aims and aspirations of the wider and economic objectives of national and local policy.

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5 ACCESSIBILITY BY NON CAR MODES

5.1 Introduction

5.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

5.1.2 New proposals should attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

5.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- Accessibility on foot;
- Accessibility by cycle;
- Accessibility by bus; and
- Accessibility by rail.

5.2 Accessibility on Foot

5.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life.

5.2.2 This philosophy clearly encourages the opportunity to walk whatever the journey purpose and helps to create more active streets and a more vibrant neighbourhood.

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5.2.3 The internal site layout will facilitate pedestrian linkages through the adjacent site (Site A) to the existing footways that are provided along Lickers Lane.

5.2.4 These footways provide links to a comprehensive network of routes within the local area, supplemented by a number of controlled crossing points which facilitate access to the nearby day to day amenities within the area. As part of development proposals, numerous pedestrian links are provided to the wider Whiston SUE, as per the wider site Masterplan.

5.2.5 The CIHT document 'Planning for Walking' from 2015 states, in paragraph 2.1, that in 2012 that 79% of all journeys made in the UK of less than a mile (1.6 kilometres) are carried out on foot.

5.2.6 Within the Institution of Highways and Transportation (IHT) document, entitled "Guidelines for Providing for Journeys on Foot", Table 2.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in **Table 5.1**.

Suggested Preferred Maximum Walk		
Town Centre	**Commuting/School**	**Elsewhere**
800m	2,000m	1,200m

Table 5.1 – IHT 'Providing for Journeys on Foot' Walk Distances

5.2.7 Reference to the 2,000 metres walk distance is also made in the now superseded Planning Policy Guidance (PPG) Note 13 which advised that 'walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2km'.

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5.2.8 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000-metre distance in paragraph 4.4.1. This states that 'walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km'. **Table 5.2** below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 5.2 – Manual for Streets Walk Distances

5.2.9 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in **Table 5.3**.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 5.3 – DfE Walk Distances to Schools

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5.2.10 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, and confirms that the 85th percentile walk distance for:

- All journey purposes – 1,930 metres;
- Commuting – 2, 400 metres;
- Shopping – 1,600 metres;
- Education – 3,200 or 4,800 metres; and
- Personal business – 1,600 metres.

5.2.11 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. **Table 5.4** below summarises the various 85th percentile walk distances suggested as guidelines in the WYG Study.

85th Percentile Walk Distances					Overall Recommended Preferred Max
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200/4,800m	1,600m	1,950m

Table 5.4 – WYG Report/NTS Data Walk Distances

5.2.12 In summary, it is considered that the distance of 1,950 metres, or around 2 kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to primary school is up to 3.2 kilometres.

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5.2.13 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death'.

5.2.14 A 20-minute walk equates to a walking distance of around 1,600 metres.

5.2.15 In light of the above review, a pedestrian catchment of 2 kilometres from the centre of the site, using all available pedestrian routes, has been provided in **Plan 4** and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

5.2.16 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in Plan 4.

5.2.17 The 2,000-metre pedestrian catchment illustrates that parts of Whiston and Halsnead Park can be accessed, such as, Lickers Lane Local Shop, St Leo's South Mead Catholic Primary and Nursery School, Costcutter, Tesco Express, Brunch at No. 10, Halsnead Primary School, Whiston Woods, Mp Food, News and Wine Store, Springfield Natural Play Centre, and Rowlands Pharmacy.

5.2.18 **Table 5.5** below, shows the walking distance from the centre of the site to the local amenities in the vicinity of the site. The table also confirms whether the amenity is within the 'preferred maximum' walk distances using the above guideline criteria.

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Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
Lickers Lane Local Shop	45m	1,600m	**YES**
St. Leo's South Mead Catholic Primary and Nursery School	145m	3,200m	**YES**
Springfield Natural Play Centre	220m	1,600m	**YES**
Southmead Children's Centre	225m	1,600m	**YES**
Whiston Woods	590m	1,600m	**YES**
Whiston Juniors Football Club	660m	1,600m	**YES**
Halsnead Primary School	720m	3,200m	**YES**
Whitestone Millennium Green	785m	1,600m	**YES**
Costcutter	875m	1,600m	**YES**
Mp Food, News and wine store	920m	1,600m	**YES**
Tesco Express	935m	1,600m	**YES**
Brunch at no. 10	1,015m	1,600m	**YES**
Halsnead Park	1,070m	1,600m	**YES**
Best One Mini Supermarket	1,280m	1,600m	**YES**
The Carrs Hotel	1,480m	1,600m	**YES**
Rowlands Pharmacy	1,580m	1,600m	**YES**

Table 5.5 - Distance from Site to Local Facilities

5.2.19 As can be seen in the above table, the site is located within proximity to a number of local amenities including primary services as well as leisure facilities.

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5.2.20 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest food store and nearest primary school, are within the 800 metres 'comfortable walk' from the site as contained within MfS guidance.

5.2.21 It is therefore considered that the existing and proposed pedestrian infrastructure will facilitate safe and direct pedestrian linkages between the site and local destinations.

5.3 Access by Cycle

5.3.1 An alternative mode of travel to the site could be achieved by bicycle. A distance of 5 kilometres 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 12 kilometres per hour and would encompass parts of Prescot, Rainhill, Halewood and Huyton.

5.3.2 National cycle route 56 runs close to the north western edge of the site through Stadt Moers Park providing connectivity and a traffic free route north and south around the Whiston area.

5.3.3 The site can therefore be considered as being accessible by cycle.

5.4 Access by Bus

5.4.1 An effective public transport system is essential in providing good accessibility for large parts of the population to opportunities for work, education, shopping, leisure and healthcare in the town and beyond.

5.4.2 The nearest bus stops to the site are located approximately 40 metres to the north on Lickers Lane. All the nearest bus stops to the site are shown on Plan 4.

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5.4.3 A summary of the services available from the nearest bus stops from the development site is provided in **Table 5.6** below.

Servic No	Route	Monday – Friday (per hour)				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
239	Broadgreen Hospital – Huyton – Whiston - Prescot	1	2	1	0	1	0
248	Huyton - Whiston - Prescot	1	0	0	1	9 services	1 service every hour
99	Whiston – Prescot Circular	1	1	0	0	1	0

Table 5.6 - Existing Bus Services

5.4.4 As can be seen from Table 5.6, the nearest bus stops to the site provides various services throughout the day to destinations such as Widnes, Liverpool, Runcorn, Warrington and local centres in Knowsley.

5.4.5 The above services operate from around 6:00am to around 23:00pm, making travel by public transport a real alternative to travelling by car for commuting trips.

5.4.6 In order to demonstrate the level of accessibility, some example journey times by bus are presented below **Table 5.7** below.

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Destination	Duration
Huyton	16 minutes
Prescot	12 minutes
Whiston	5 minutes

Table 5.7 - Example Bus Journey Times from the Site

5.4.7 The above table demonstrates that Huyton is an approximate 16-minute bus journey from the site and Prescot is a 12-minute bus journey.

5.4.8 It is therefore concluded that employment, health and retail centres are highly accessible by bus from the proposed development site.

5.5 Accessibility by Rail

5.5.1 Whiston train station is the most accessible station to the site. It can be accessed via a short 11 minute walk as the station is around 965 metres from the centre of the site.

5.5.2 This train station is managed by Northern and offers three services per hour to Liverpool Lime Street and two services per hour to St Helens Junction. Liverpool Lime Street is around a 20 minutes journey and St Helens is only 9 minute journey from Whiston.

5.6 Accessibility Summary

5.6.1 The proposals have been considered in terms of accessibility by non-car modes, so that sustainable travel can be encouraged.

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5.6.2 The above section has demonstrated that the development can be accessed by a variety of travel modes, and as such would accord with local and national planning policy guidance.

5.6.3 The following conclusions can be drawn from this section of the report:

- It has been demonstrated that there are numerous amenities within a short walk of the development.
- Pedestrian and cycle access to the site can be considered as being good with extensive existing infrastructure located in the vicinity.
- The services from the bus stops on Lickers Lane which connect the site with retail, employment and leisure facilities in Widnes, Liverpool, Runcorn, Warrington and local centres in Knowsley. It can therefore be concluded that the proposed development can be accessed by bus.
- The site is accessible via rail with Whiston railway station located within 2 kilometres of the site.

5.6.4 In light of the above, it is considered the site is highly accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

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6 TRAFFIC IMPACT ANALYSIS

6.1 Introduction

6.1.1 Having established that the development site is highly accessible by modes of transport other than the private car and would be in general accordance with land use and transport policies, the following section considers the traffic impact of the development proposals on the local highway network.

6.2 SUE Off-Site Highway Works

6.2.1 The scale of the wider Halsnead Masterplan development proposed will necessitate various off-site highway works together with transport and junction improvements to facilitate access and egress to the wider development site, mitigate local traffic impacts, facilitate links through to existing facilities, and encourage sustainable transport.

6.2.2 A summary of these requirements is set out below and has been established by Knowsley Council.

- Windy Arbor Road/Lickers Lane Junction – widening to the north and south to facilitate a two-lane approach on Lickers Lane, a separate right turning lane on the Windy Arbor Road northbound approach, introduction of controlled pedestrian crossing facilities across two arms of the junction and relocation of nearby bus stop.

- Lickers Lane/Fox's Bank Lane – the introduction of traffic signals to allow the controlled movement of traffic out of Lickers Lane, and also the controlled movement of pedestrians over all arms of the junction.

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- Windy Arbor Road/Dragon Lane - Windy Arbor Road approach to Dragon Lane widened to allow for a two-lane approach.

- Stoney Lane/Dragon Lane/Meadway – improved designation of the right turn lane from Dragon Lane to Stoney Lane and improved through alignment on Dragon Lane.

- Stoney Lane/Cumber Lane - Provision of traffic signals and controlled pedestrian crossing facilities on all arms of the junction.

- Cronton Road/Fox's Bank Lane – Realignment of Prescot Road to the south to opposite Fox's Bank Lane to provide a crossroads arrangement and widening of Cronton Road to enable the provision of right turn pockets for vehicles turning to the north and south. Relocation of the existing bus stops to the west of the junction into new laybys. Advanced cycle stop lines with lead-in lanes are to be provided on Cronton Road.

6.2.3 The need for improvements at these locations was mainly identified through a traffic modelling approach which identified where existing junctions would be pushed close to capacity or over capacity on account of the wider Halsnead Masterplan development. Improved pedestrian and cycle facilities were also incorporated, where possible, into the designs. When reviewing the highway improvements, it will be important that the improvements do not detract from pedestrian or cycle requirements at the junctions and the need for more road capacity at junctions do not come at the cost of other road users.

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6.2.4 These works are to be funded by the wider Halsnead Masterplan sites and this particular application site will contribute in proportion to its number of residential units.

6.2.5 In addition, there are major improvements proposed to the following locations:

- Improvements to M62 Junction 6 (Tarbock Island).
- Blundell's Lane.
- Former Mineral Railway.

6.2.6 It is understood that these schemes are already committed and will proceed without funding from the sites on the Halsnead Masterplan.

6.3 Scope of Traffic Impact Assessment

6.3.1 The wider traffic impact has previously been addressed through detailed modelling work relating to the adopted Masterplan SPD. The study concluded that all associated traffic could be adequately accommodated, through the implementation of the package of improvements listed in paragraph 6.2.2.

6.3.2 In order to establish current levels of traffic, traffic counts were undertaken by KMBC on Wednesday 10th October 2018. The counts were undertaken between 0730hrs and 0930hrs in the morning and between 1630hrs and 1830hrs in the evening. The raw traffic data is provided within **Appendix 1**.

6.3.3 The peak period flows have been identified as 0800 to 0900 hours and 1630 to 1730 hours for the AM and PM peak periods respectively. The 2018 surveyed flows for the peak hours converted into Passenger Car Units (PCU's) are shown in **Figures 1** and **2**.

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6.4 Factored Traffic Flows

6.4.1 The future year traffic flows have been derived from the surveyed flows using 'TEMPRO Adjusted NTM' growth factors for Knowsley MSOA 013.

6.4.2 The resultant factored traffic flows for 2030 are shown below:

6.4.3 The resultant growth factors are shown below:

- 2018 to 2030 AM Peak - 1.1398
- 2018 to 2030 PM Peak - 1.1327

6.4.4 The resultant 2030 factored traffic flows are shown in **Figures 3** and **4** for the AM and PM peak periods.

6.5 Committed Development

6.5.1 As requested by KMBC, the Former Prysmian Site (App Ref: 15/00022/OUT) and the Beason 62 development site (App Ref: 17/00301/HYB) have been considered as a committed development, although it is noted that these sites are forecast to have a minimal impact on Windy Arbor Road. The flows for the Prysmian Site are contained in **Figures 5** and **6** whilst the flows for the Beacon 62 site are contained in **Figures 7** and **8** for the AM and PM peak periods respectively. The potential future consent for the changes to the Beacon 62 planning application, as detailed in KMBC's comments, is likely to consist of primarily pass-by trips and, as such, it is not considered that these changes will have a material impact on the assessments contained within this report.

6.5.2 The traffic associated with the wider planned developments on Windy Arbor Road (App Ref: 18/00283/HYB) and Fox's Bank Road have been considered within this assessment, so the assessments can be considered to be robust.

6.5.3 These sites are considered 'planned development' as they have not yet achieved planning consent, however, in order to provide a robust assessment of the likely interim period, these planned developments have been considered as committed development flows. The flows for the above sites and total committed developments are shown in **Figures 9** to **12**.

6.6 Base Flows

6.6.1 To establish the 2030 Base flows, the committed development flows shown in Figures 5 to 12 have been added to the factored 2030 flows shown in Figures 3 and 4. The resulting 2030 Base flows are presented in **Figures 13** and **14**.

6.7 Trip Distribution

6.7.1 The directional distribution of the traffic associated with the proposals has been assigned to the local highway network in line with the observed vehicle movements, which is considered to present a suitable approach. The proposed distribution is provided in **Figures 15** and **16**.

6.8 Proposed Development Traffic

6.8.1 As previously stated, it is proposed to develop the site for approximately 120 dwellings.

6.8.2 In order to establish the number of trips which the proposed 120 residential dwellings are forecast to generate, the latest TRICS database has been used for the 'private housing' range of sites based on the following parameters:

- Residential, privately owned houses;
- Range between 50 and 400 dwellings;

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- Surveys from 2012; and
- Greater London and Eire sites excluded.

6.8.3 The TRICS output is contained within **Appendix 2**. The peak hour trip rates and forecast trip generation based on 120 units are shown within **Table 6.1**.

Peak Period	Trip Rate (per unit)		Number of Trips	
	Arr	Dep	Arr	Dep
AM Peak Hour	0.126	0.376	15	45
PM Peak Hour	0.352	0.155	42	19

Table 6.1 - Forecast Trip Generation of Proposed Residential Development (120 Dwellings)

6.8.4 As demonstrated above, the residential development is forecast to generate a two-way total of approximately 60 trips in the AM peak hour and 61 trips in the PM peak hour.

6.8.5 The resultant proposed development flows (which includes the adjacent site traffic) are shown in **Figures 17** and **18** for the AM and PM peak periods respectively.

6.9 Assessment Flows

6.9.1 In order to calculate the 2030 'With Development' flows, the development flows contained within Figures 17 and 18 have been added to the 2030 base flows contained within Figures 13 and 14. The resulting 2030 'With Development' Flows are presented in **Figures 19** and **20** respectively for the AM and PM peak hours.

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6.10 Capacity Assessments

Site Access/Lickers Lane junction

6.10.1 In order to assess the operation of the proposed Site Access/Lickers Lane junction, the LINSIG 3 program was utilised. The proposed layout of the junction is displayed in Plan 3.

6.10.2 The results for the 'With Development' flow scenario for 2030 are summarised within **Table 6.1** with the full results contained within **Appendix 3**.

Arm	2030 With Development			
	AM		PM	
	DOS	Max Q	DOS	Max Q
Lickers Lane (E) Ahead Right	53.4%	6.7	69.8%	9.7
Lickers Lane (W) Ahead Left	58.3%	7.8	41.5%	5.0
Site Access Left Right	53.1%	2.4	22.2%	0.9

Table 6.1 - Summary of LINSIG Results for Site Access/Lickers Lane

6.10.3 As can be seen above, the results show that the Lickers Lane site access junction will be operating with reserve capacity in the 2030 'With Development' flow scenarios in both peak hours.

6.10.4 The proposed signal junction (proposed as part the neighbouring application – Site A) has also previously been considered acceptable by Knowsley Council to cater for the wider Halsnead Masterplan and its associated traffic generation.

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6.10.5 The above demonstrates that the proposed site access is suitable in terms of its geometric layout and design and will provide a safe point of access into the site.

6.11 Capacity Assessments Summary

6.11.1 This section of the report has considered the impact of the proposal in traffic terms.

6.11.2 The above assessment has demonstrated that the impact of the proposals will not give rise to any particular highway capacity issues.

6.11.3 Knowsley Council have established various off-site highway works to mitigate the impact of the wider Halsnead Masterplan development. It is therefore considered that the predicted level of traffic can be accommodated on the local highway network.

6.11.4 On that basis, it can be assumed that the impact of the proposals on the local highway network could not be considered to be severe.

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7 PROMOTING SMARTER CHOICES VIA TRAVEL PLANS

7.1 Introduction

7.1.1 In order to manage the travel by residents at the new development, the applicant wishes to offer a Travel Plan to encourage travel to the site by non-car modes.

7.2 Travel Planning Guidance

7.2.1 The preparation and adoption of a Travel Plan is an important element of managing the demand for travel to all modern developments. The Department for Transport (DfT) have produced guidance on the preparation of Travel Plans. The document, entitled *'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'* was published in August 2009.

7.2.2 The guidance explains how "we often need to meet the demands of population and economic growth whilst simultaneously reducing our impact on the environment" and identifies that "The benefits of increases in sustainable travel, in particular cycling and walking, can extend beyond reduction in CO_2 emissions and climate impacts, and include tackling congestion, tackling obesity and health issues, reducing social exclusion and improving quality of life".

7.2.3 The document sets out an overview of the process and delivery of Travel Plans and states that "*A Travel Plan is a long-term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action and is articulated in a document that is regularly reviewed.*"

7.2.4 The Guidance states that "*Travel Plans should involve the development of agreed explicit outcomes linked to an appropriate package of measures aimed at encouraging more sustainable travel, with an emphasis on reducing single occupancy car use…"* and;

"A Travel Plan should seek to establish clear outcomes to be achieved in relation to access and set out all the measures to be implemented in detail, including an action plan, timescales, targets and responsibilities for implementation, monitoring and review".

7.2.5 It is made clear in the document that Travel Plans should focus on achieving the lowest practical level of single occupancy vehicle trips to or from a site and widening the use of other travel modes and assist in the wider aims of encouraging sustainable travel, improving health, reducing congestion, energy consumption and pollution. The Travel Plan, it advises "*needs to address all the journeys that may be made to and from a site"*.

7.2.6 The guidance also specifies that "*It is important to note that Travel Planning should be developed as one of the means of delivering an area's sustainable transport strategy. Travel Planning should feature in the policy framework and implementation programmes of Regional Spatial Strategies and Local Development Frameworks*".

7.2.7 Further guidance relating specifically to residential Travel Plans is presented in the DfT document entitled "*Making Residential Travel Plans Work"* published in June 2007.

7.2.8 The document states that:

"Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas".

7.2.9 A Residential Travel Plan is a package of measures designed to reduce car use originating from new housing by supporting alternative forms of transport and reducing the need to travel in the first place.

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7.2.10 They are an important tool to help deliver accessible, sustainable communities and offer clear benefits to all the parties involved – public, private and the community. They involve meeting the access needs of residents in a new way and require partnerships between developers, local authorities, local communities and new residents.

7.2.11 The value of Travel Plans in reducing car use to workplaces and schools is widely recognised and many local authorities and developers have experience in their design and implementation.

7.2.12 However, until recently, little attention has been given to tackling the origins of journeys from people's homes. Now, forward-thinking developers and local authorities are developing packages of smarter choices to both reduce the traffic generated by new housing developments and increasing the travel choices available to residents. These smarter choices are being set out in Residential Travel Plans.

7.3 Residential Travel Plan

7.3.1 The objective of a Residential Travel Plan is the delivery of the objectives of the NPPF, i.e. to encourage residents to travel to work by bus, on foot and by bicycle.

7.3.2 The Residential Travel Plan outlines physical and management measures that are designed to achieve this objective.

7.3.3 However, the principle measure will consist of a Residents Travel Information Pack containing relevant material to promote non-car modes of travel and the provision of certain physical measures.

7.3.4 The Travel Pack will contain information to inform residents of the existing long-term strategy for reducing the dependence of residents and visitors on travel by private car.

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7.3.5 The site has been demonstrated to benefit from excellent non-car accessibility and it should, therefore, be expected that the adoption of a Travel Plan would be particularly effective.

7.3.6 A Residential Travel Plan has been prepared and is enclosed as **Appendix 4**.

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8 CONCLUSIONS

8.1.1 Croft have been instructed by Vistry Partnerships to advise on the traffic and transportation issues relating to a proposed residential development on a parcel of land within the Halsnead Garden Village in Knowsley.

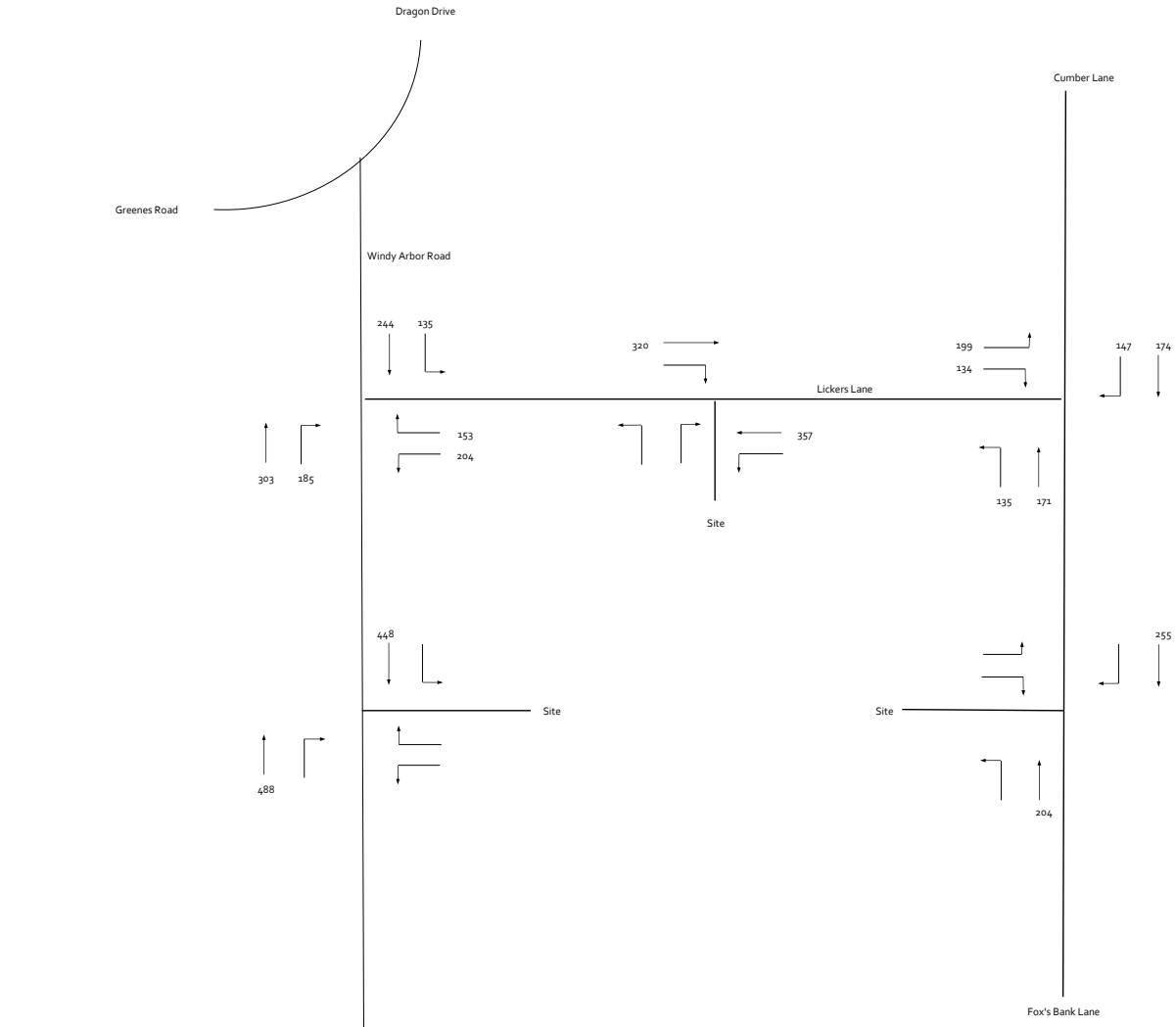
8.1.2 The following conclusions can be drawn with regard to the proposed development:

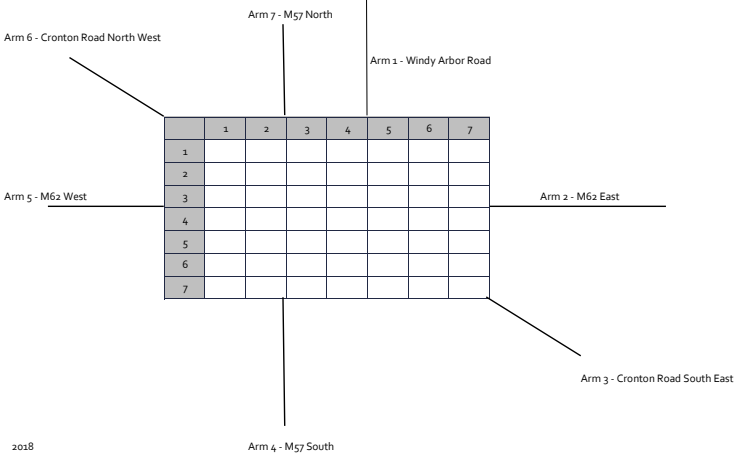
- The proposed development will be accessed by a safe and efficient vehicular access arrangement via the adjacent development site.
- The existing and proposed pedestrian infrastructure will enable safe pedestrian movement between the development site and local services.
- The site is also accessible by public transport with bus stops within walking distance of the site, offering direct services to a range of destinations including Liverpool and St Helens.
- The site is located close to Whiston railway station which provides further opportunities for travel to and from the site by public transport.
- The traffic impact assessments undertaken have shown that the proposals will not have a material impact or give rise to any highways related issues. It can therefore be concluded that the proposed development would be able to be accommodated onto the local highway network.
- The proposals will contribute to a series of off-site highways works relating to the release of the wider Halsnead Masterplan site.
- The provision of a Residential Travel Plan will assist in reducing impact and help to create a wider choice of travel to residents and visitors.

8.1.3 In conclusion, the proposals will provide a sustainable development in transport terms and planning permission should be granted in accordance with the National Planning Policy Framework.

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FIGURES





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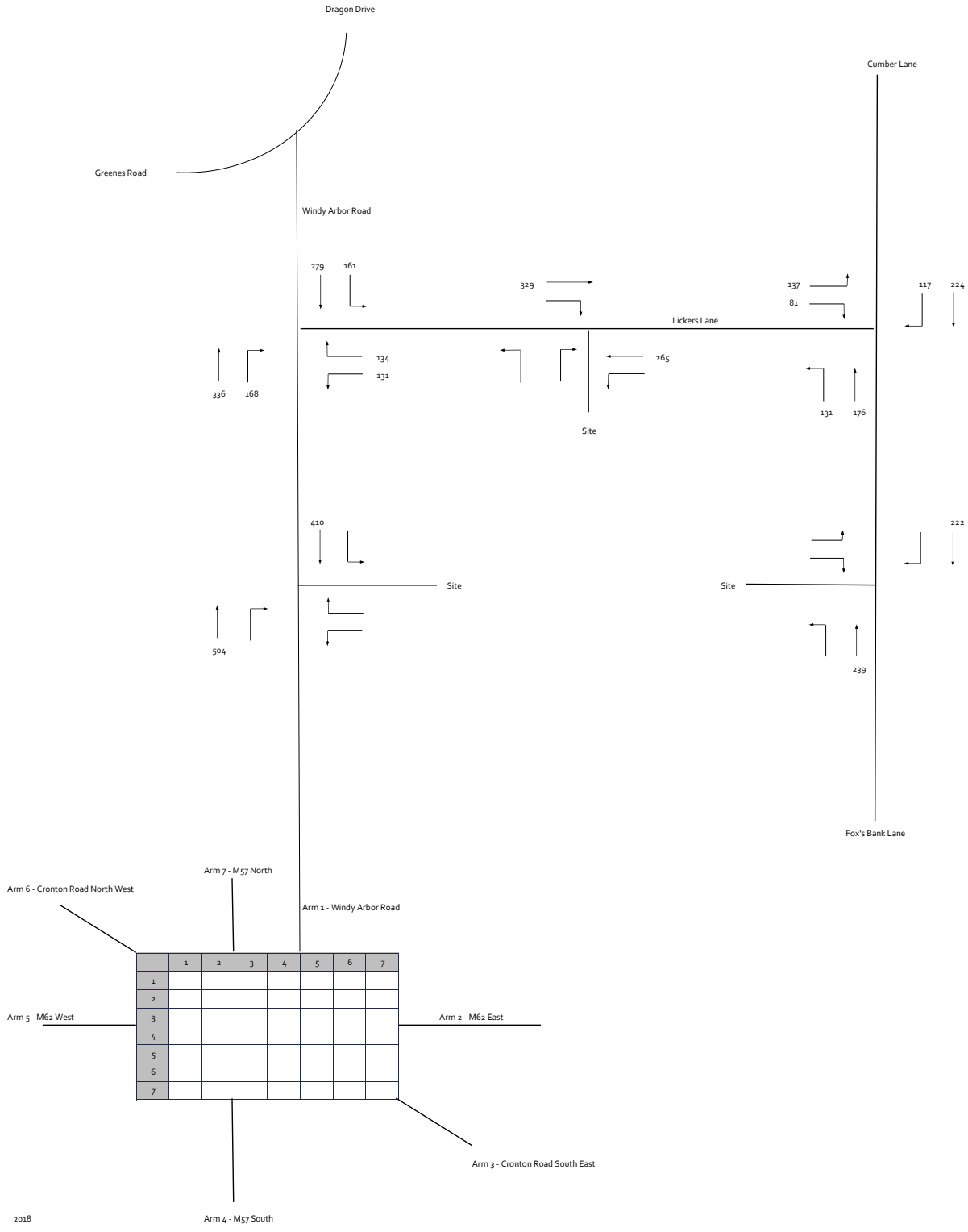
2018

Flows in PCUs

Figure 1 - 2018 Surveyed Flows - AM Peak (0800 to 0900)

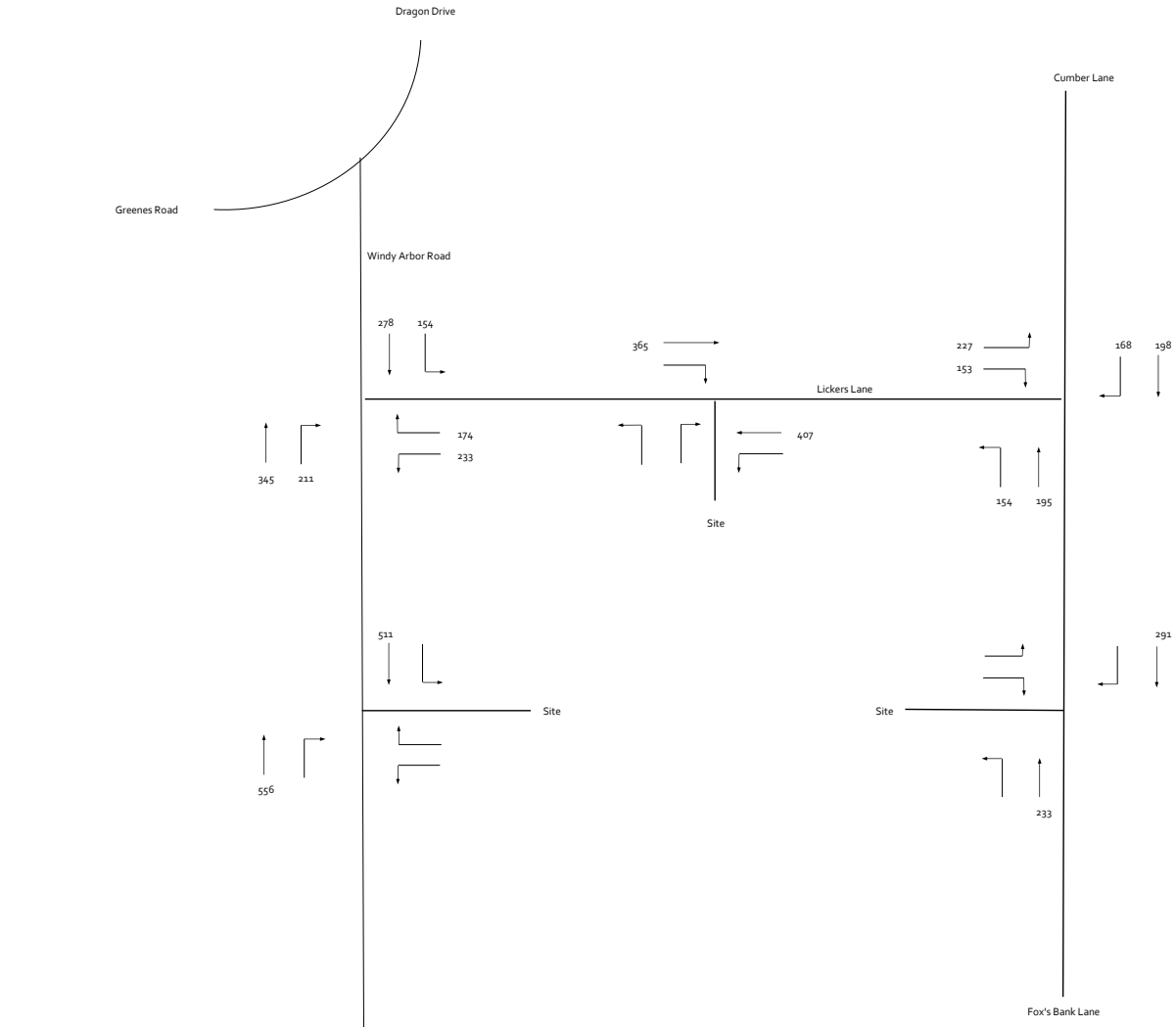
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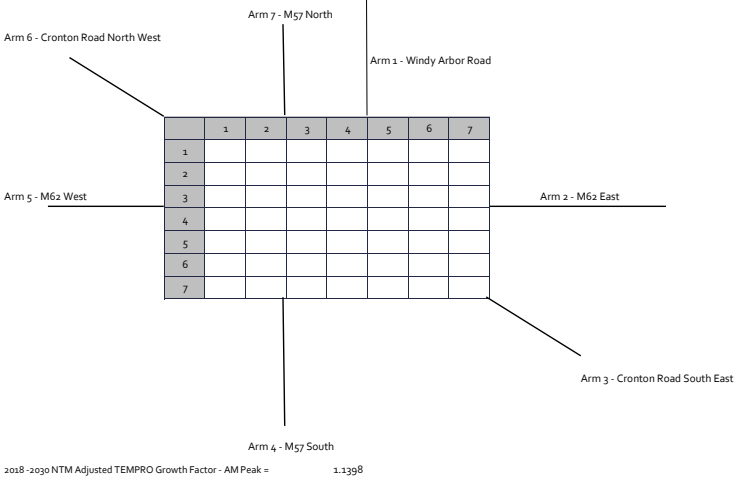
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Figure 2 - 2018 Surveyed Flows - PM Peak (1630 to 1730)





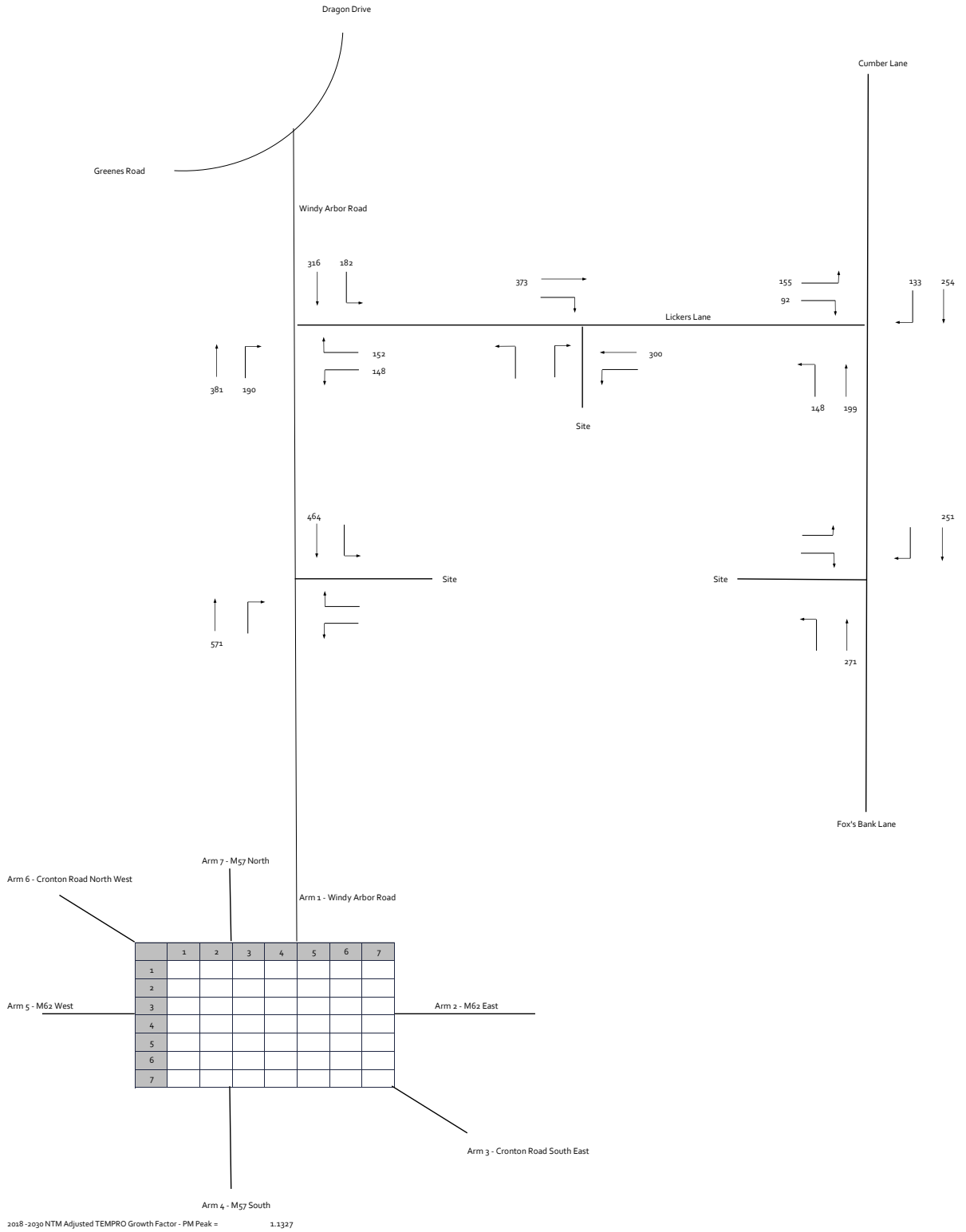
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2018 -2030 NTM Adjusted TEMPRO Growth Factor - AM Peak = 1.1398

Figure 3 - 2030 Growthed Flows - AM Peak

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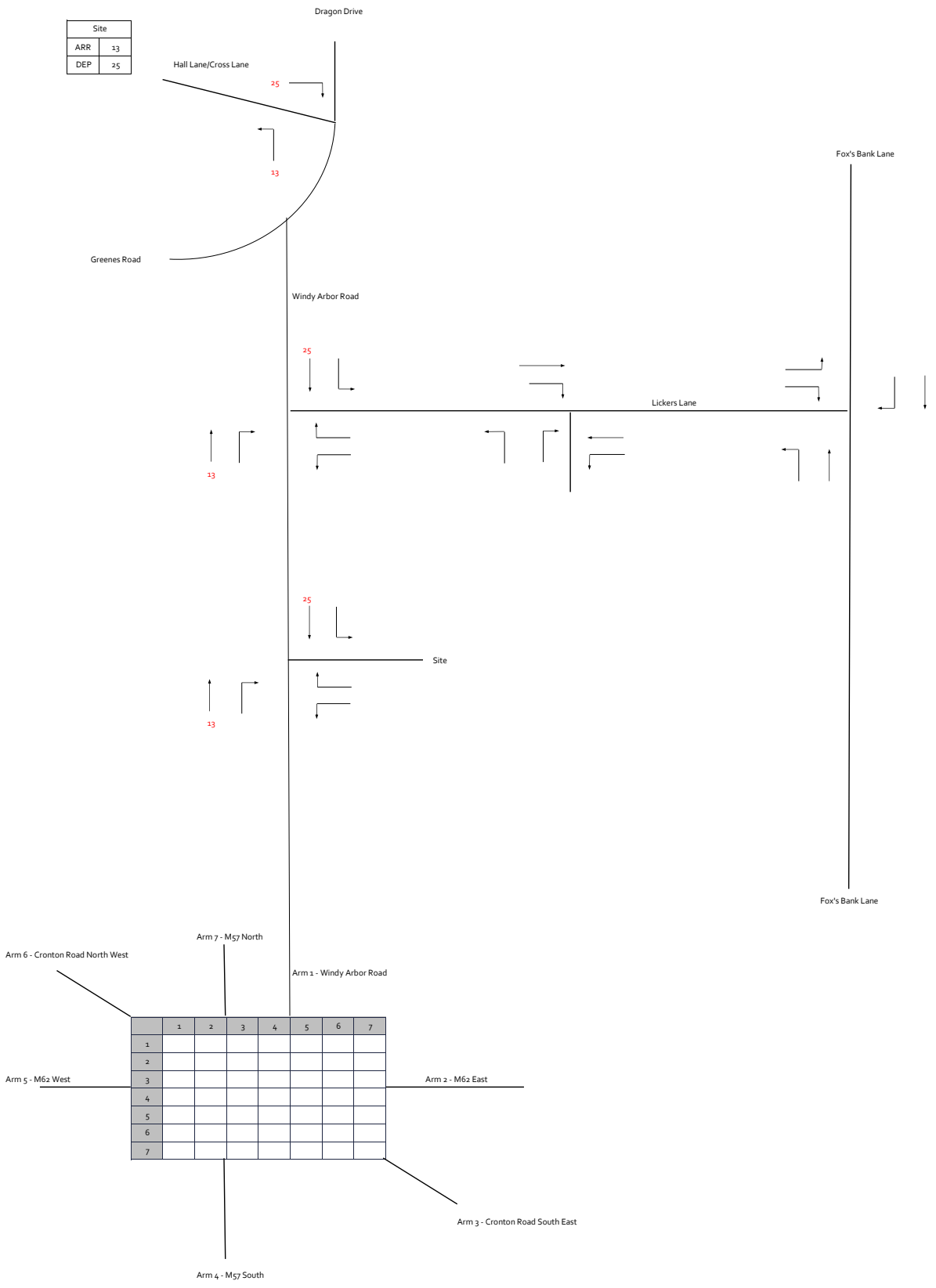
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2018 -2030 NTM Adjusted TEMPRO Growth Factor - PM Peak = 1.1327

Figure 4 - 2030 Growthed Flows - PM Peak

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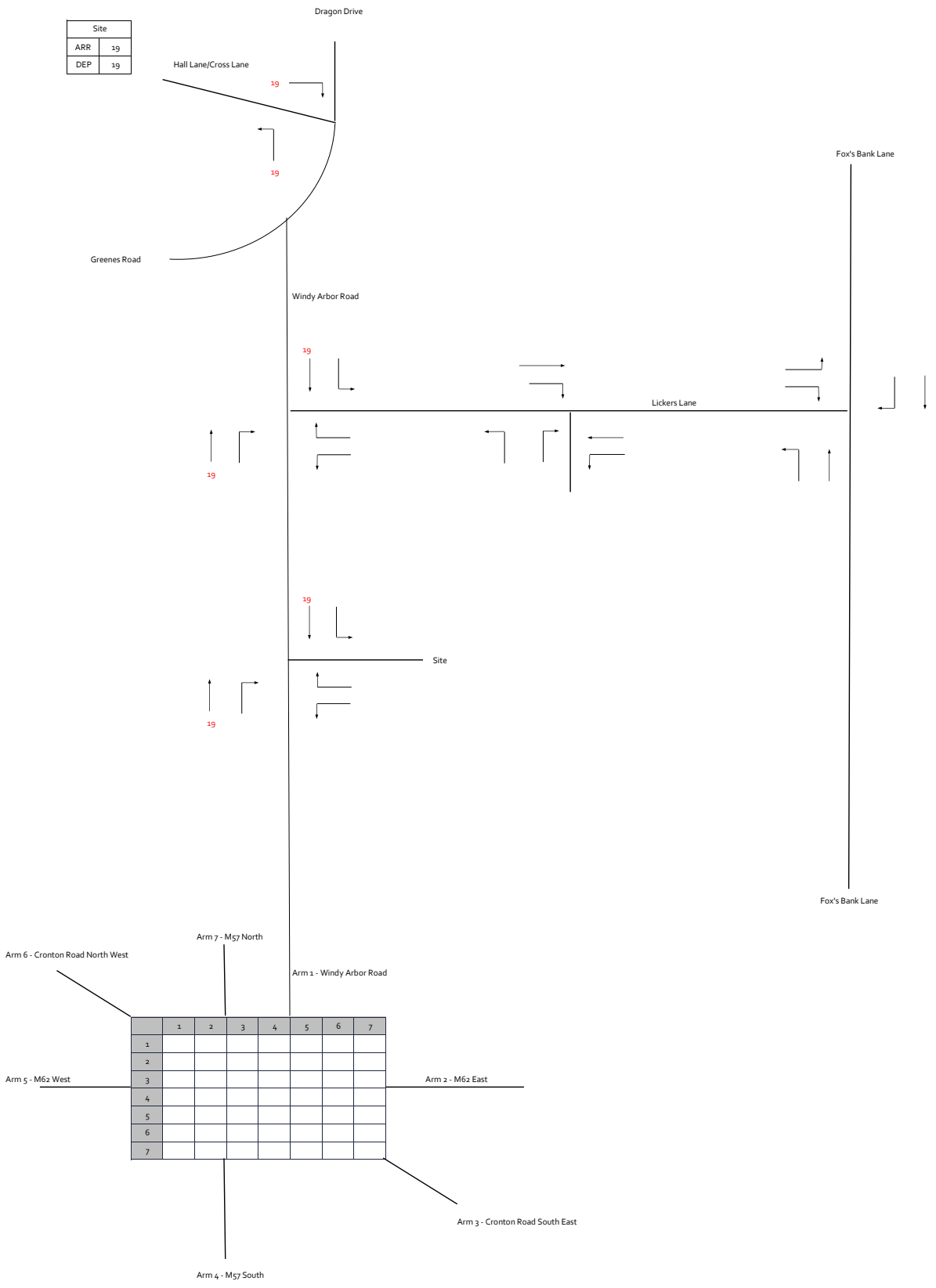
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*Forecast Flows

Figure 5 - Committed Development - 15/00022/OUT - Former Prysmian Site - AM Peak

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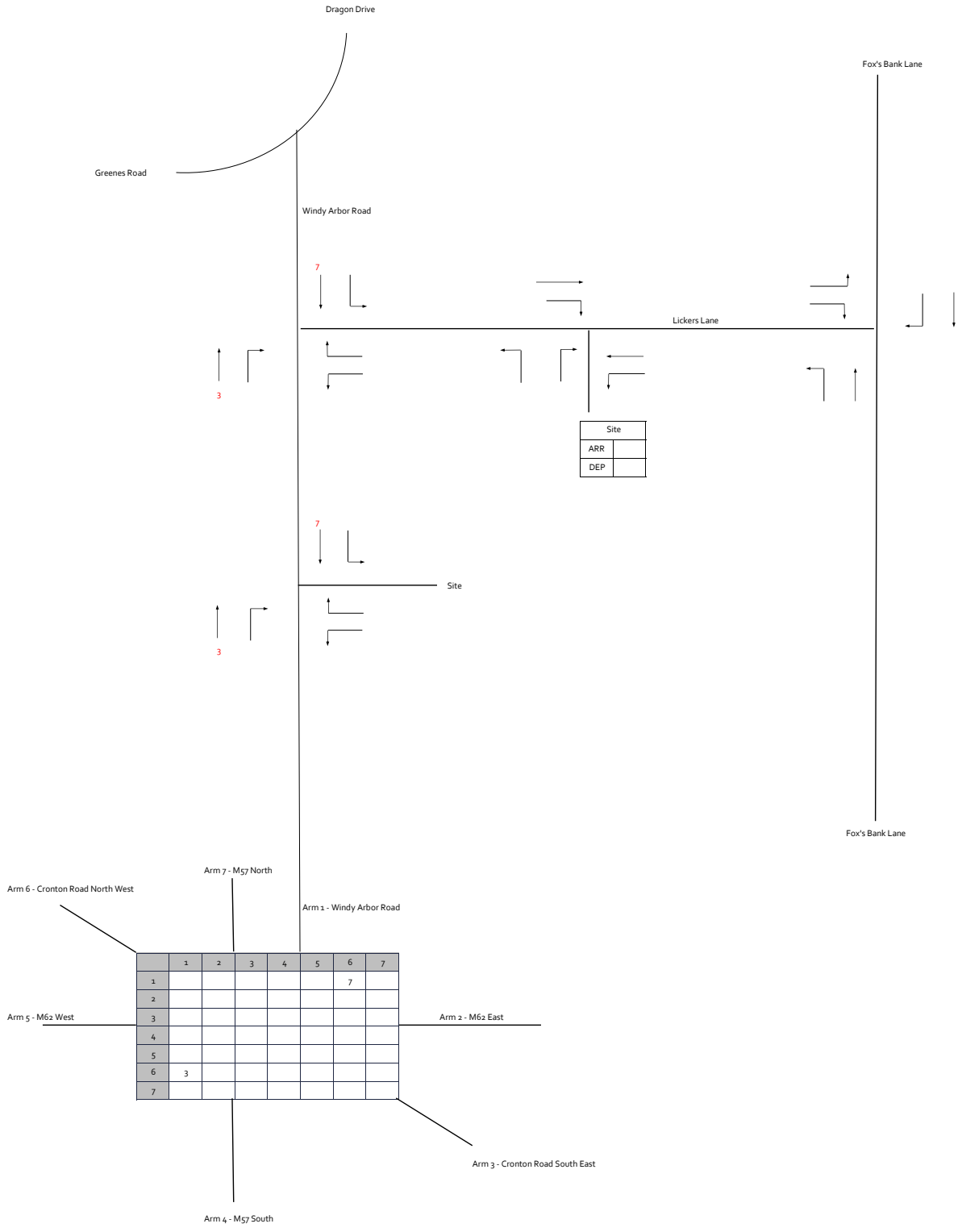


*Forecast Flows

Figure 6 - Committed Development - 15/00022/OUT - Former Prysmian Site - PM Peak

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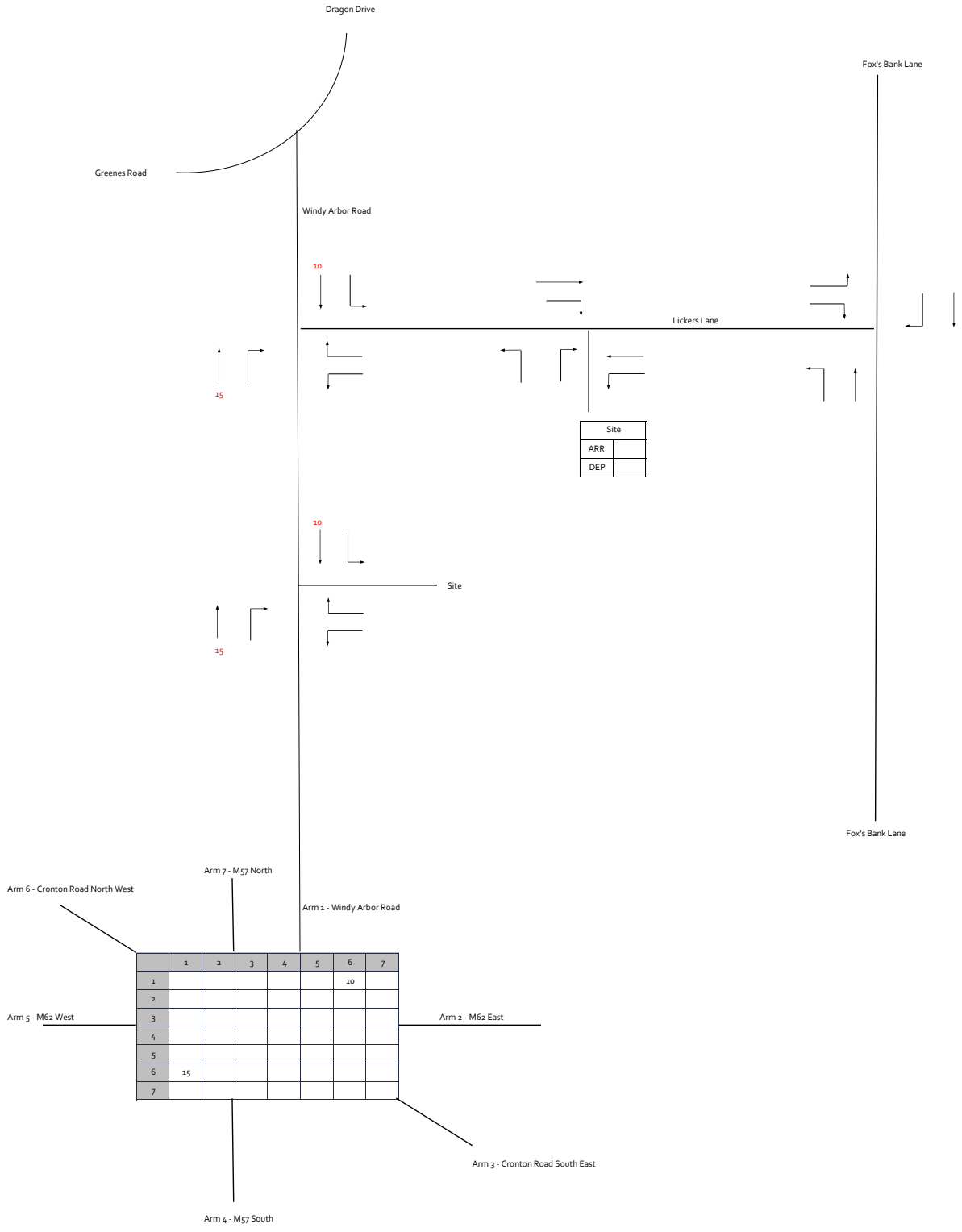


*Forecast Flows

Figure 7 - Committed Development -17/00301/HYB - Beacon 62 - AM Peak

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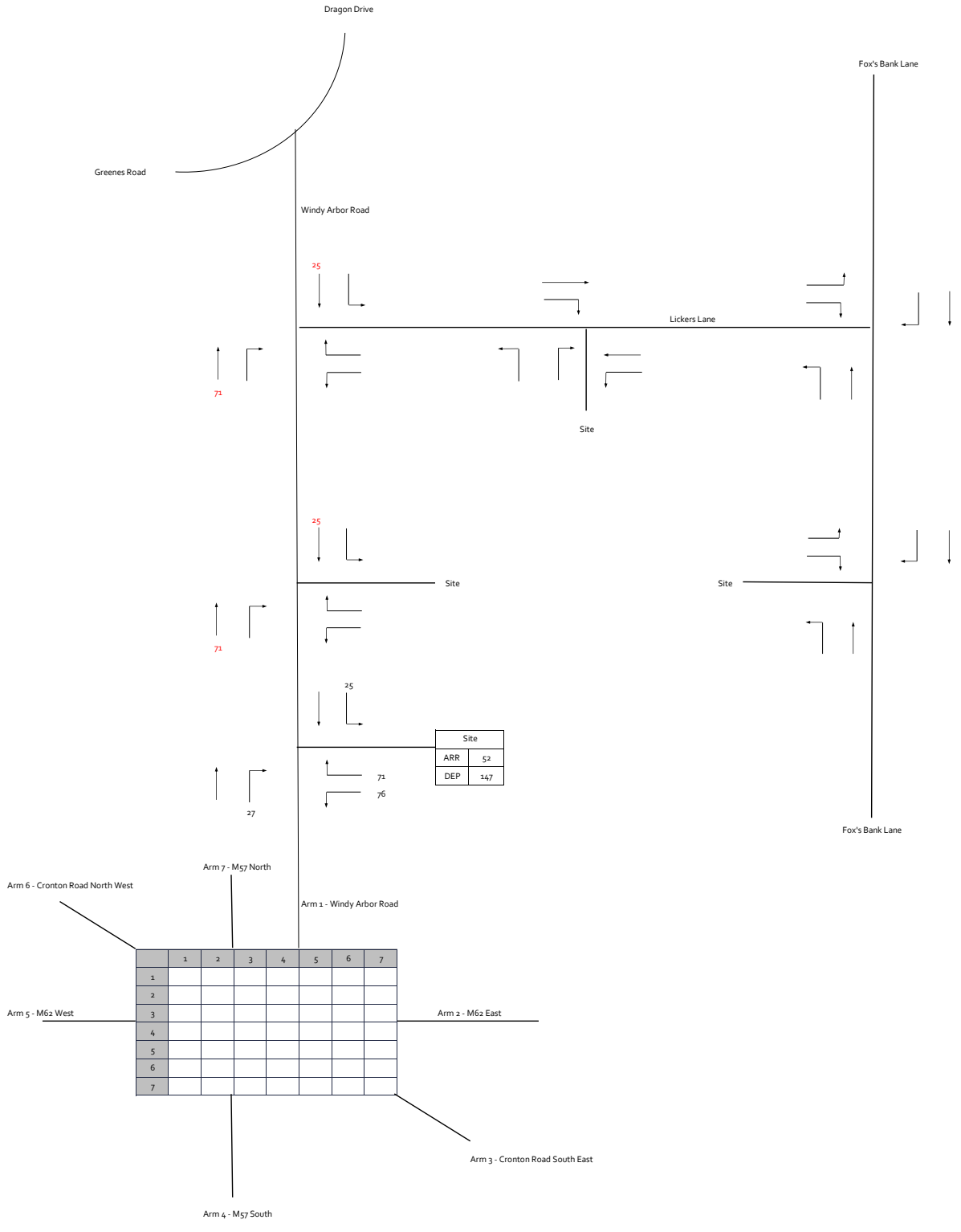
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*Forecast Flows

Figure 8 - Committed Development - 17/00301/HYB - Beacon 62 - PM Peak

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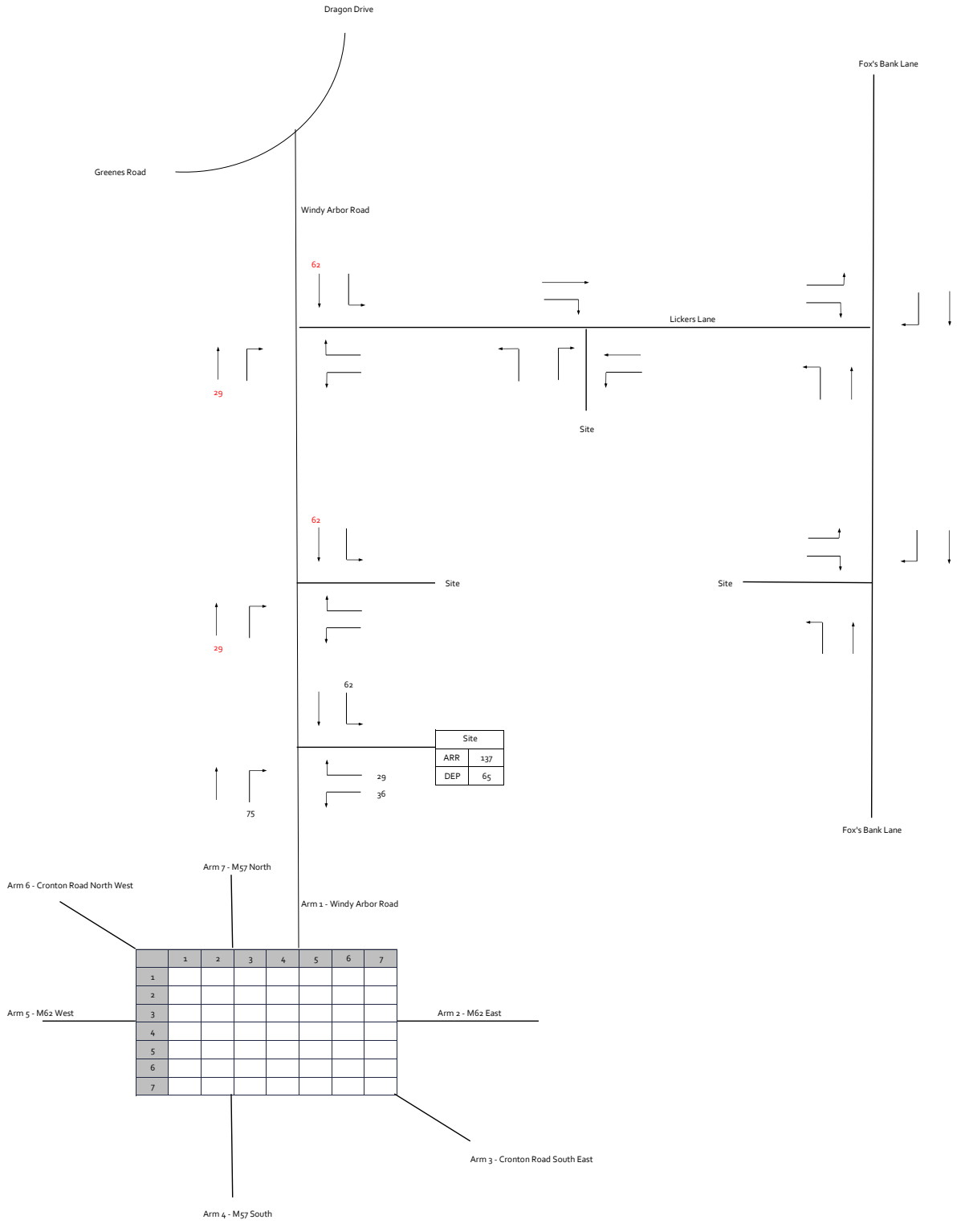


*Forecast Flows

Figure 9 - Committed Development - 18/00283/HYB - Land North of M62 off Windy Arbor Road - AM Peak

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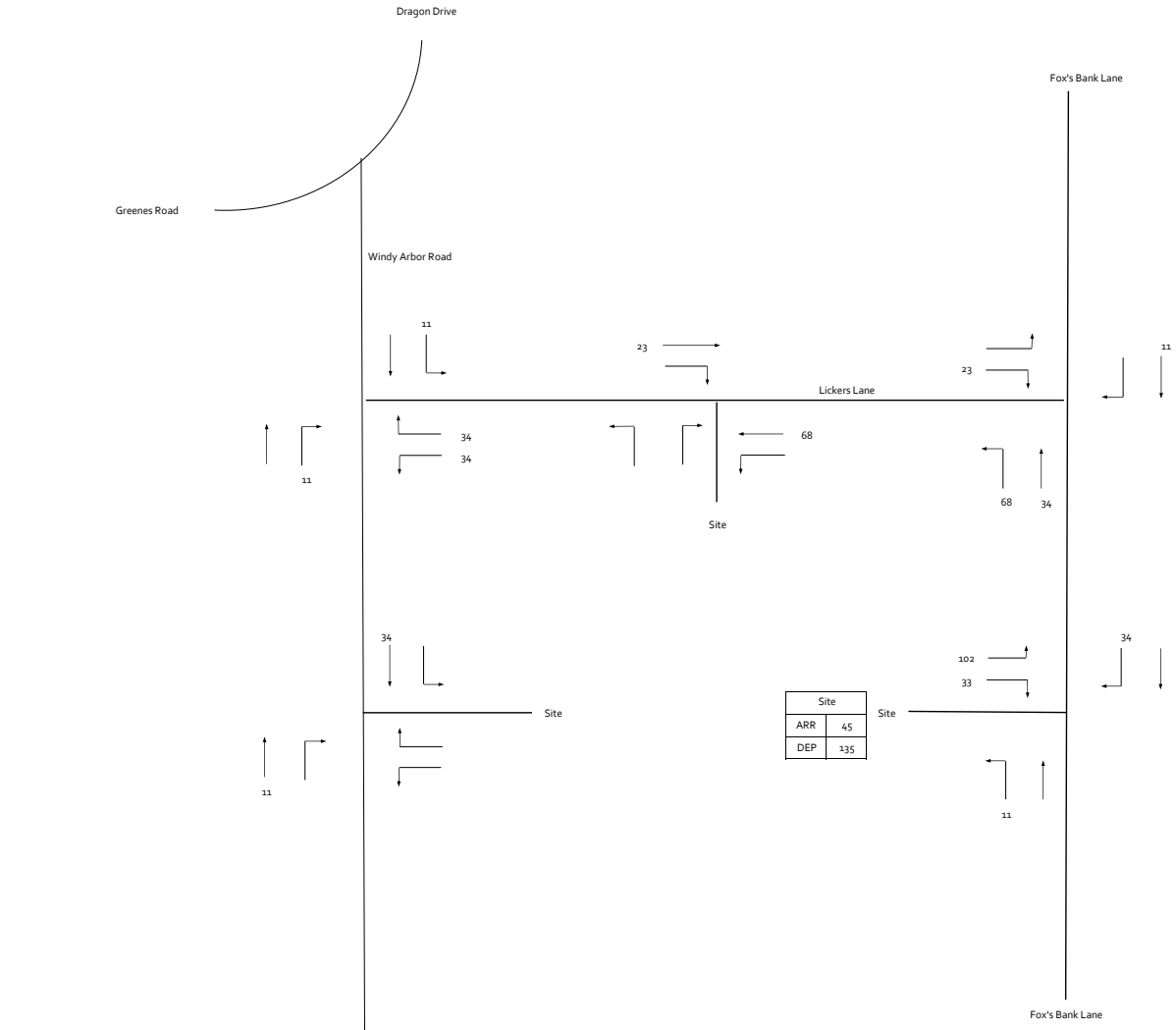


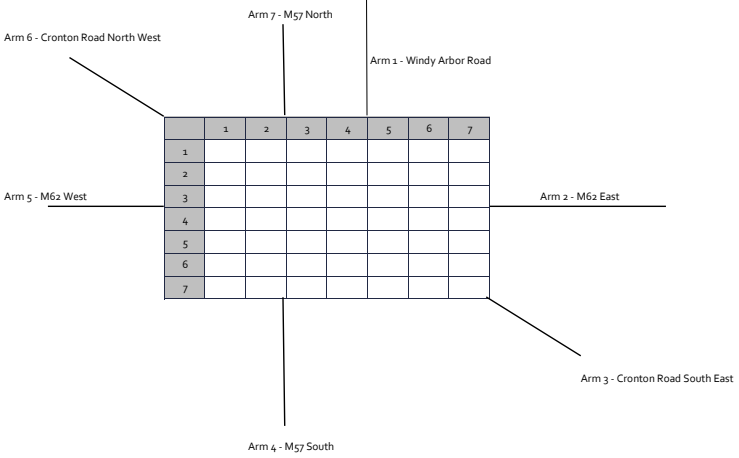
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Figure 10 - Committed Development - 18/00283/HYB - Land North of M62 off Windy Arbor Road - AM Peak

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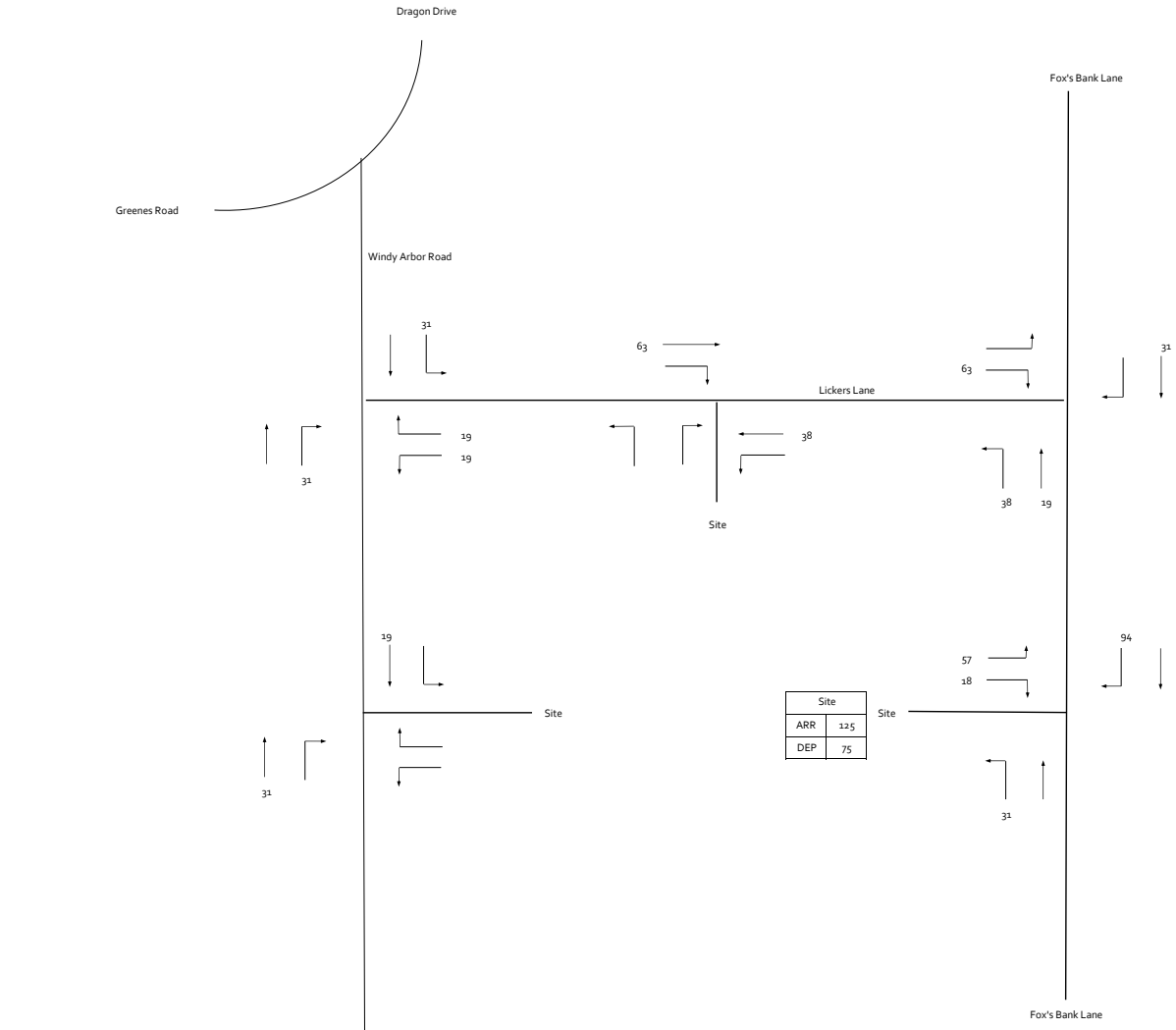
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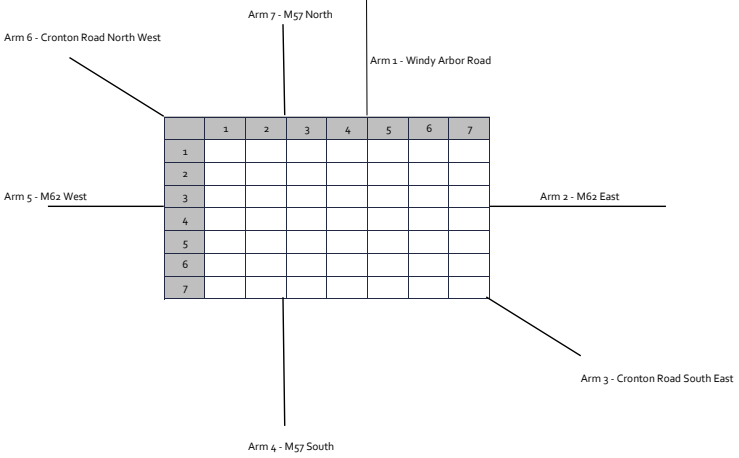
*Forecast Flows

Figure 11 - Committed Development Fox's Bank Lane - AM Peak

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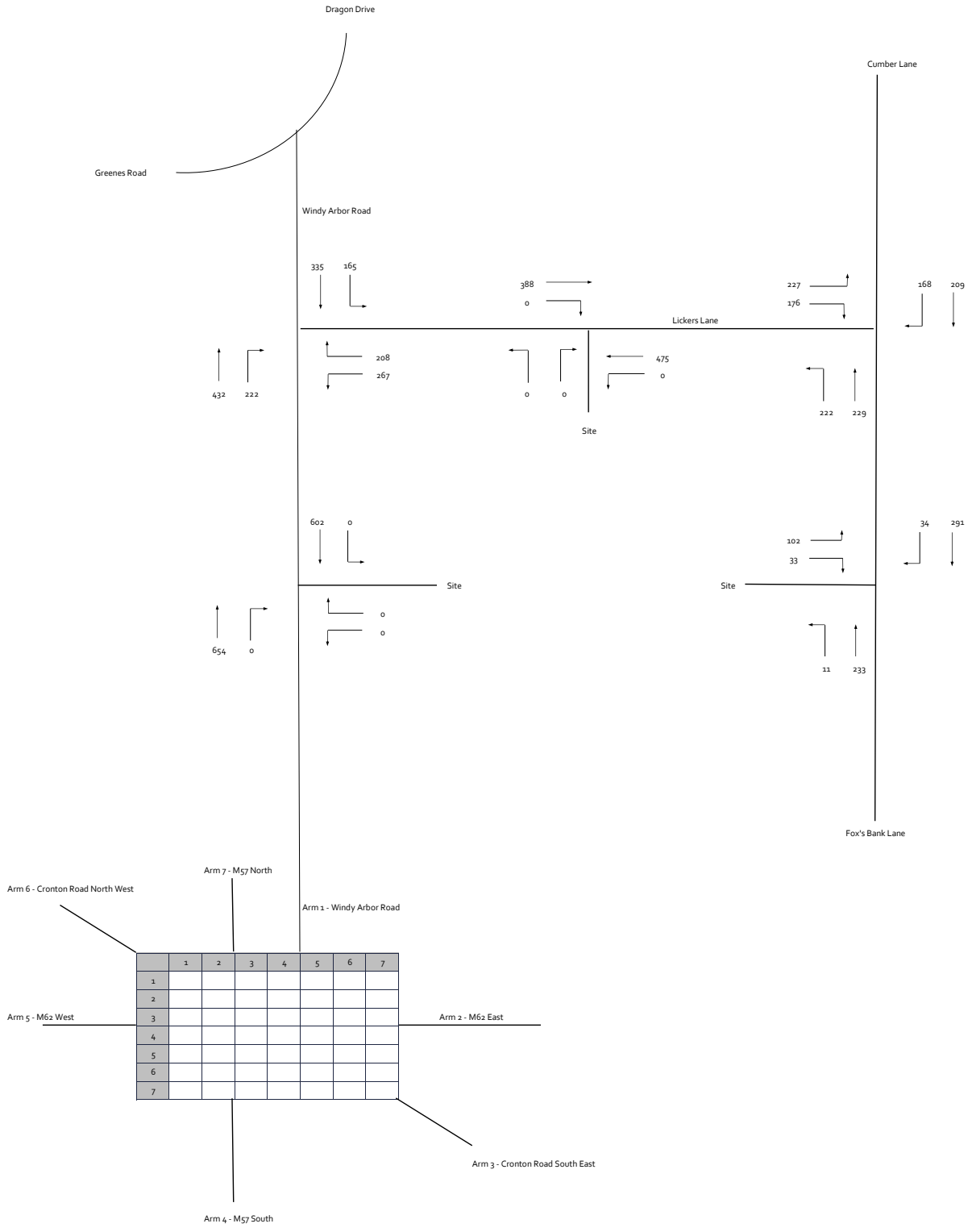
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*Forecast Flows

Figure 12 - Committed Development Fox's Bank Lane - PM Peak

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	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Figure 13 - 2030 Base Flows - AM Peak

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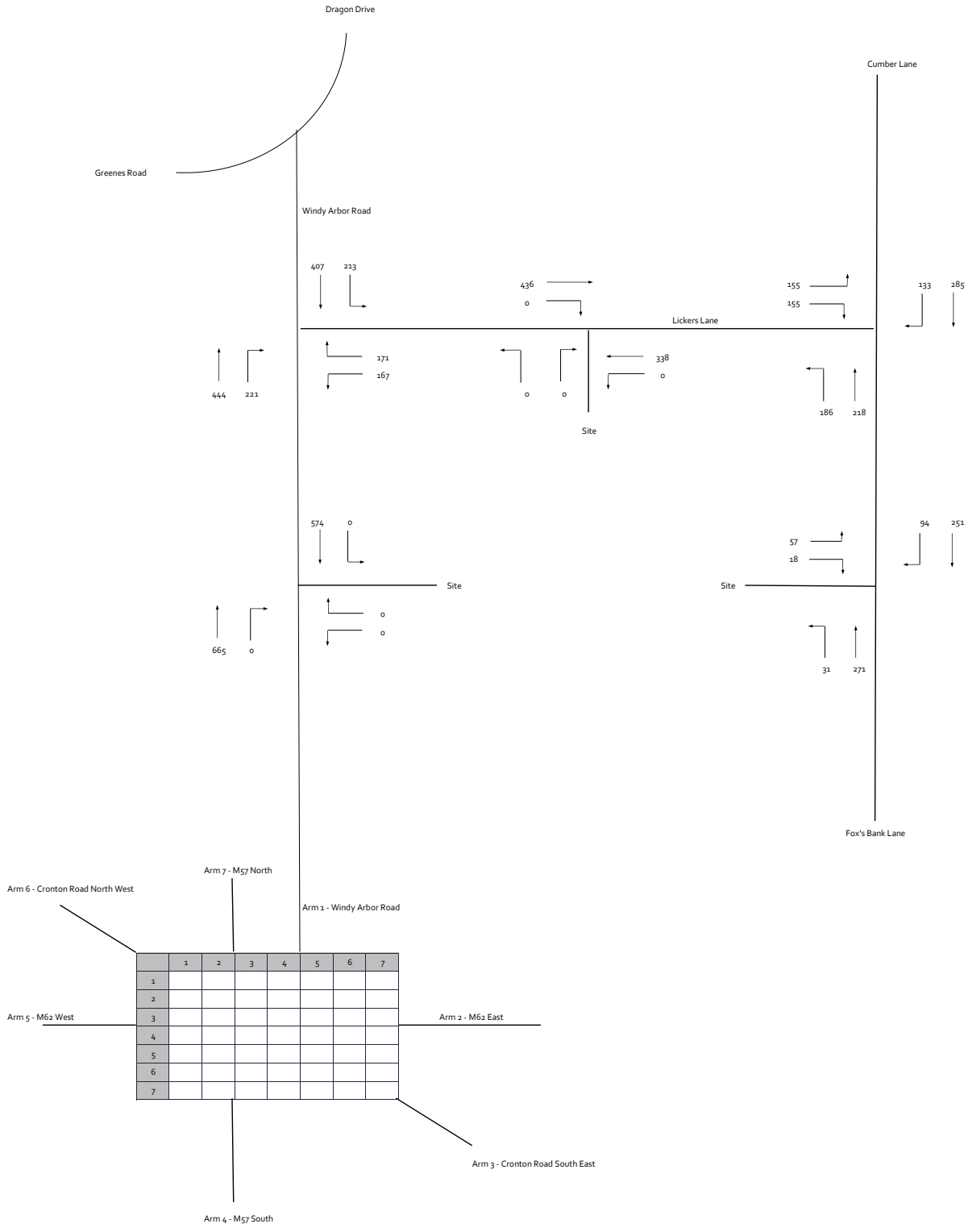
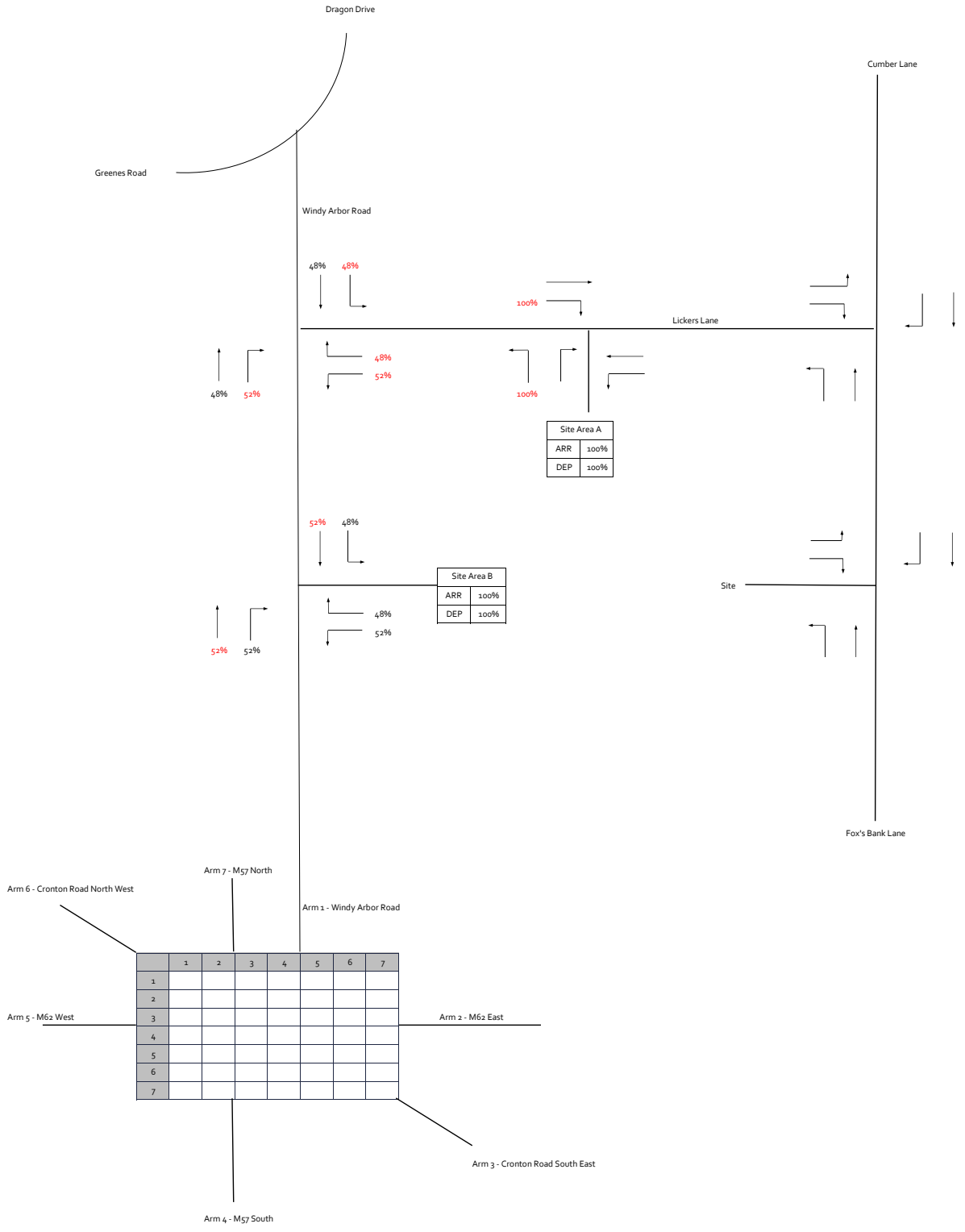


Figure 14 - 2030 Base Flows - PM Peak



Flows in PCUs

Figure 15 - Proposed Distribution - AM Peak

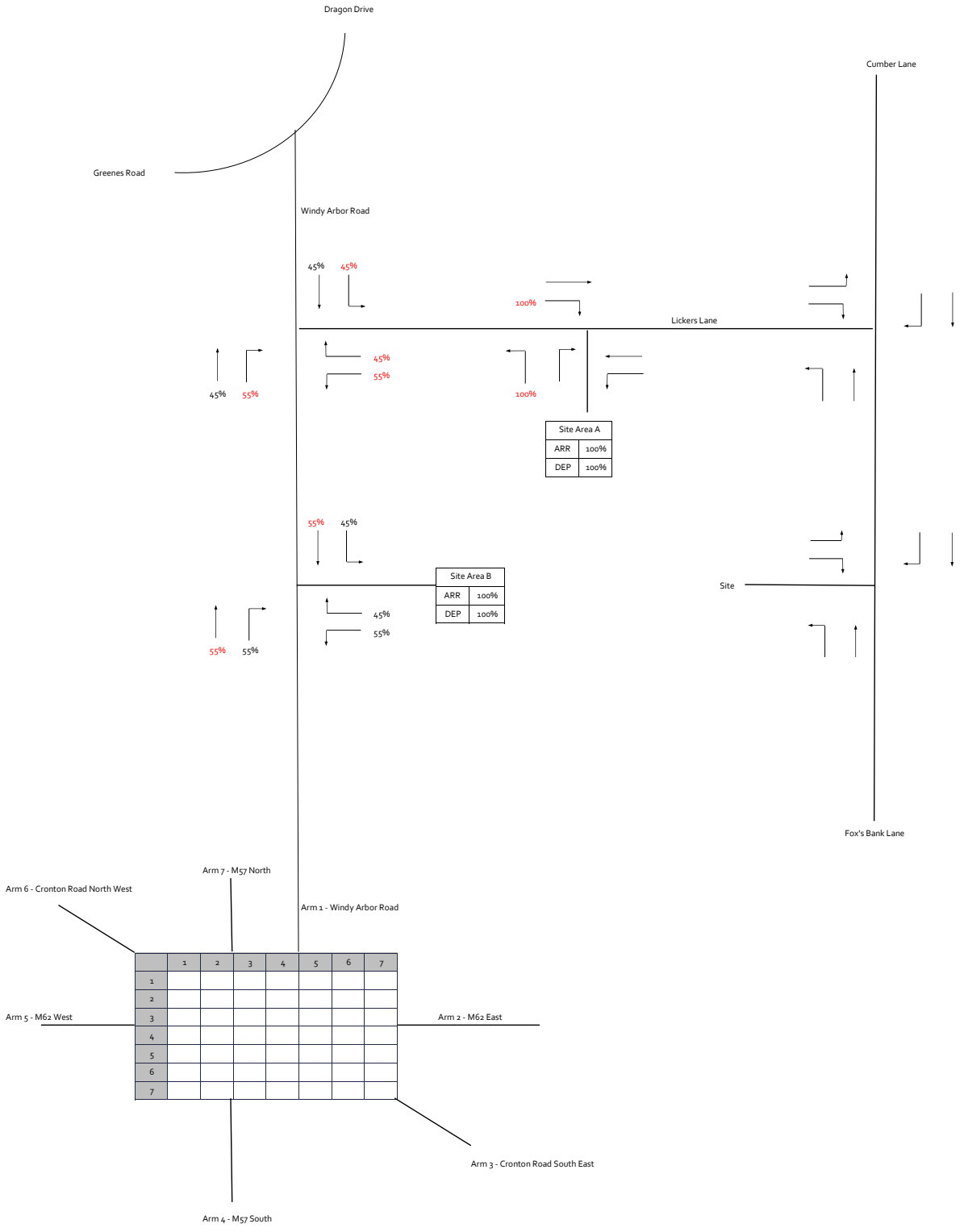
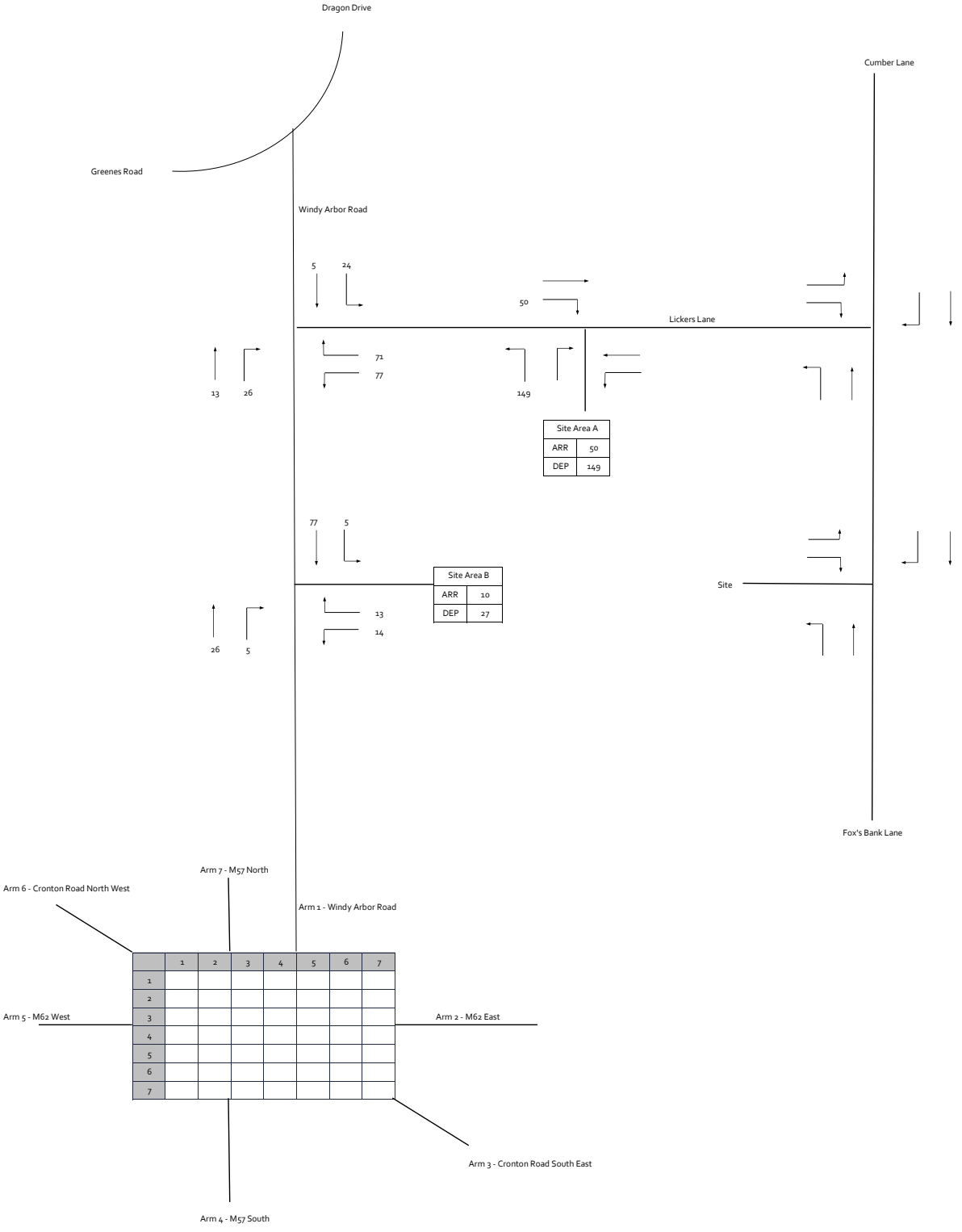


Figure 16 - Proposed Distribution - PM Peak

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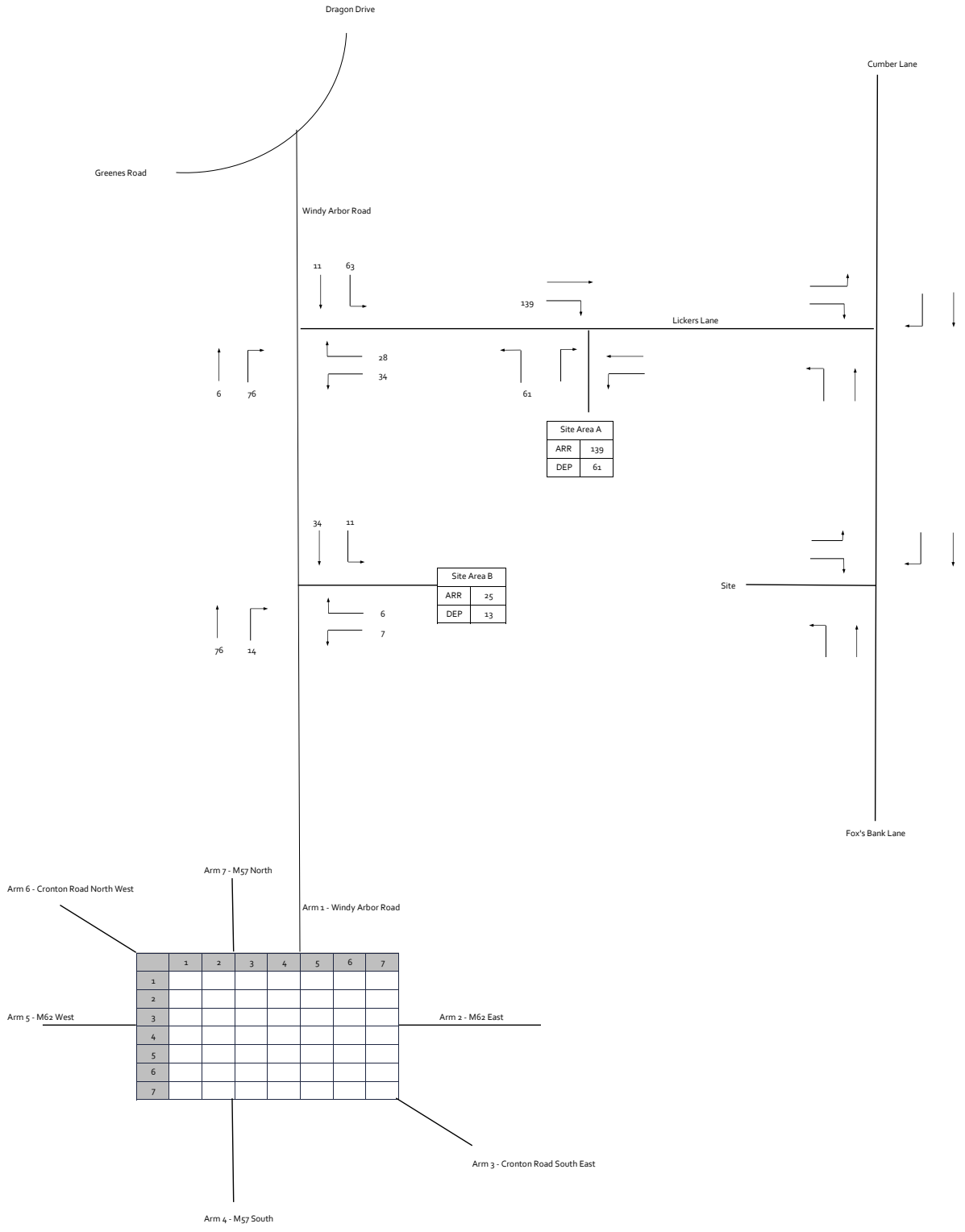
	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows in PCUs

Figure 17 - Proposed Development Flows - AM Peak

CROFT

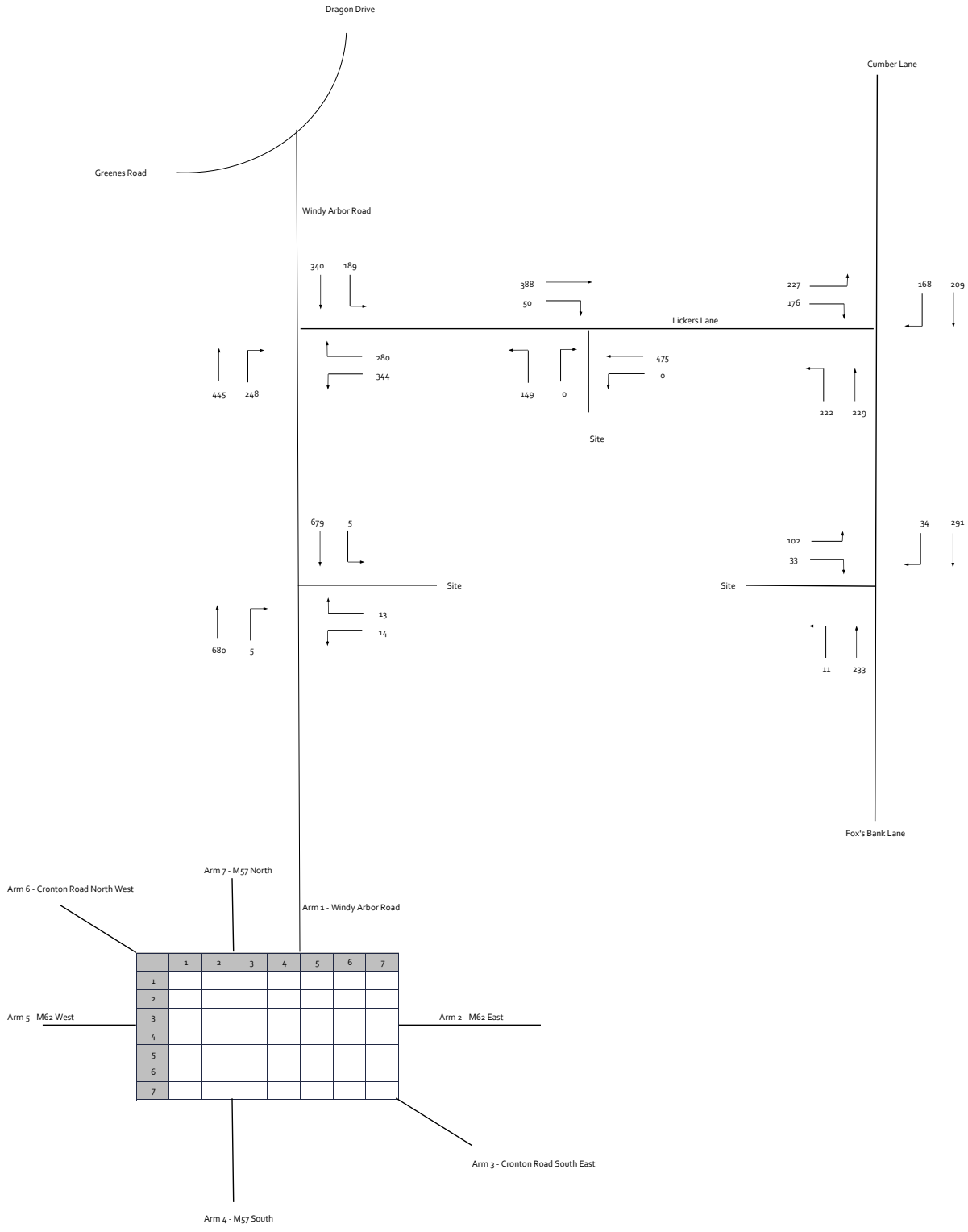
Eddisons
TRANSPORT PLANNING & DESIGN
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	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows in PCUs

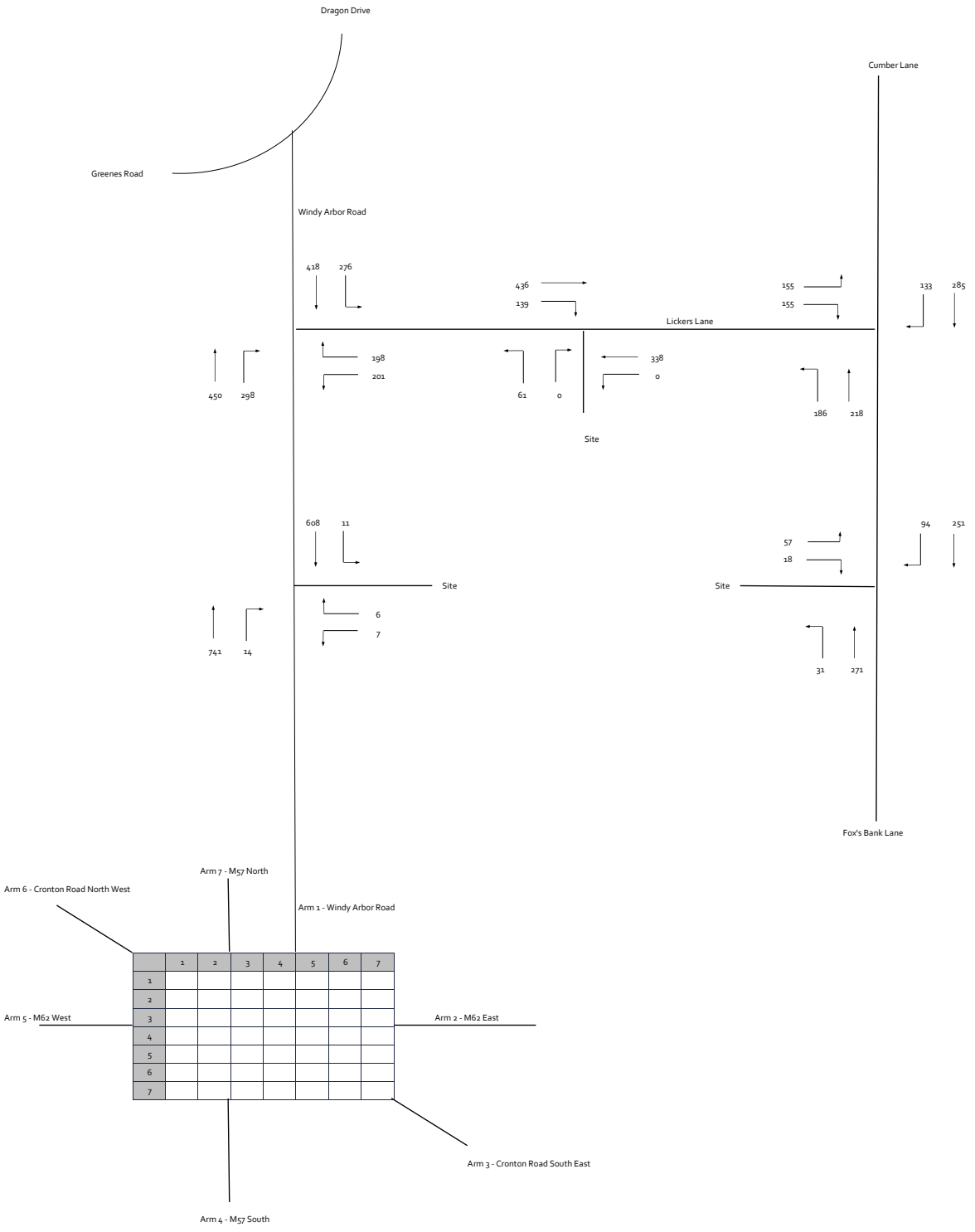
Figure 18 - Proposed Development Flows - PM Peak



	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows in PCUs

Figure 19 - 2030 Assessment Flows - AM Peak



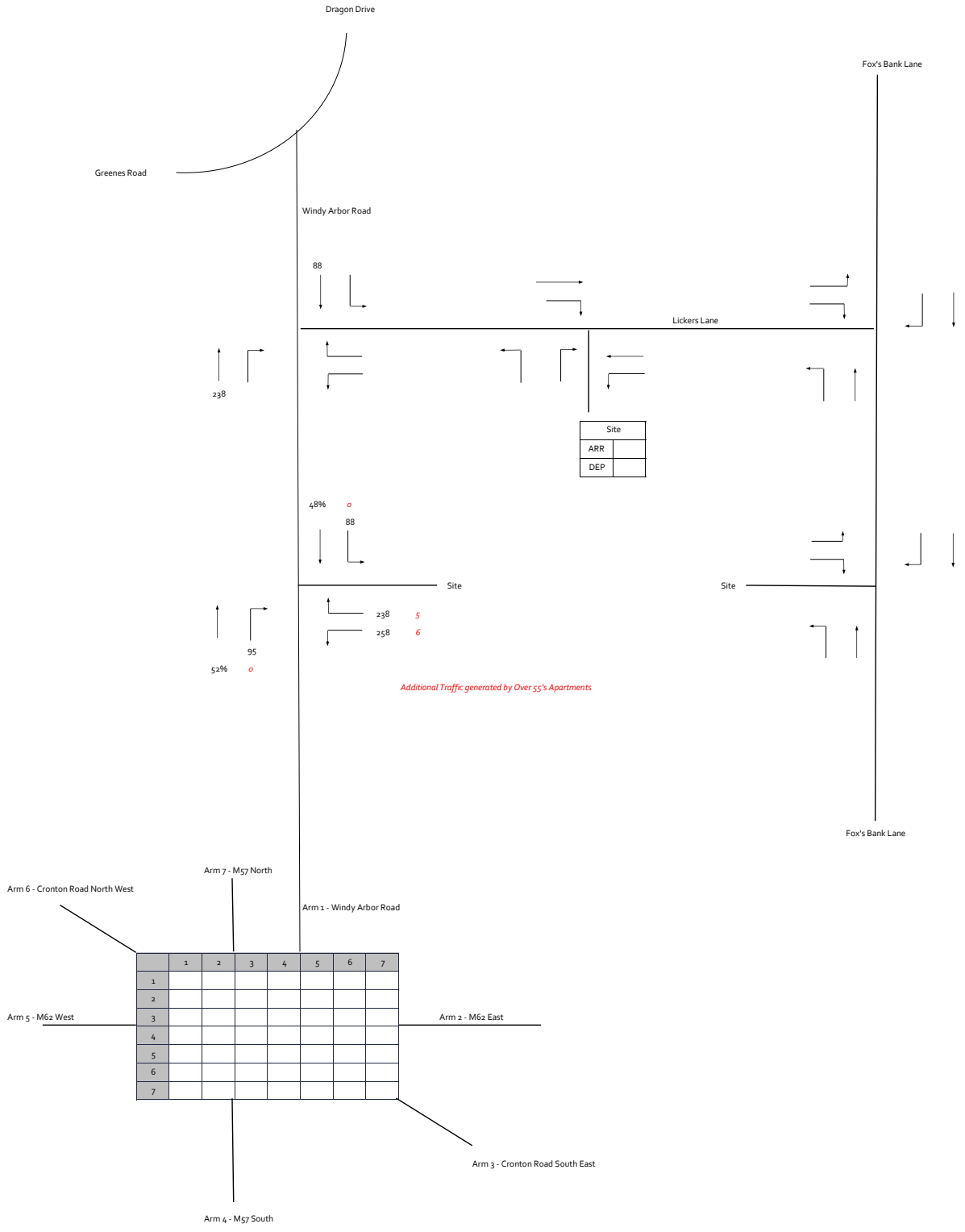
	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows in PCUs

Figure 20 - 2030 Assessment Flows - PM Peak

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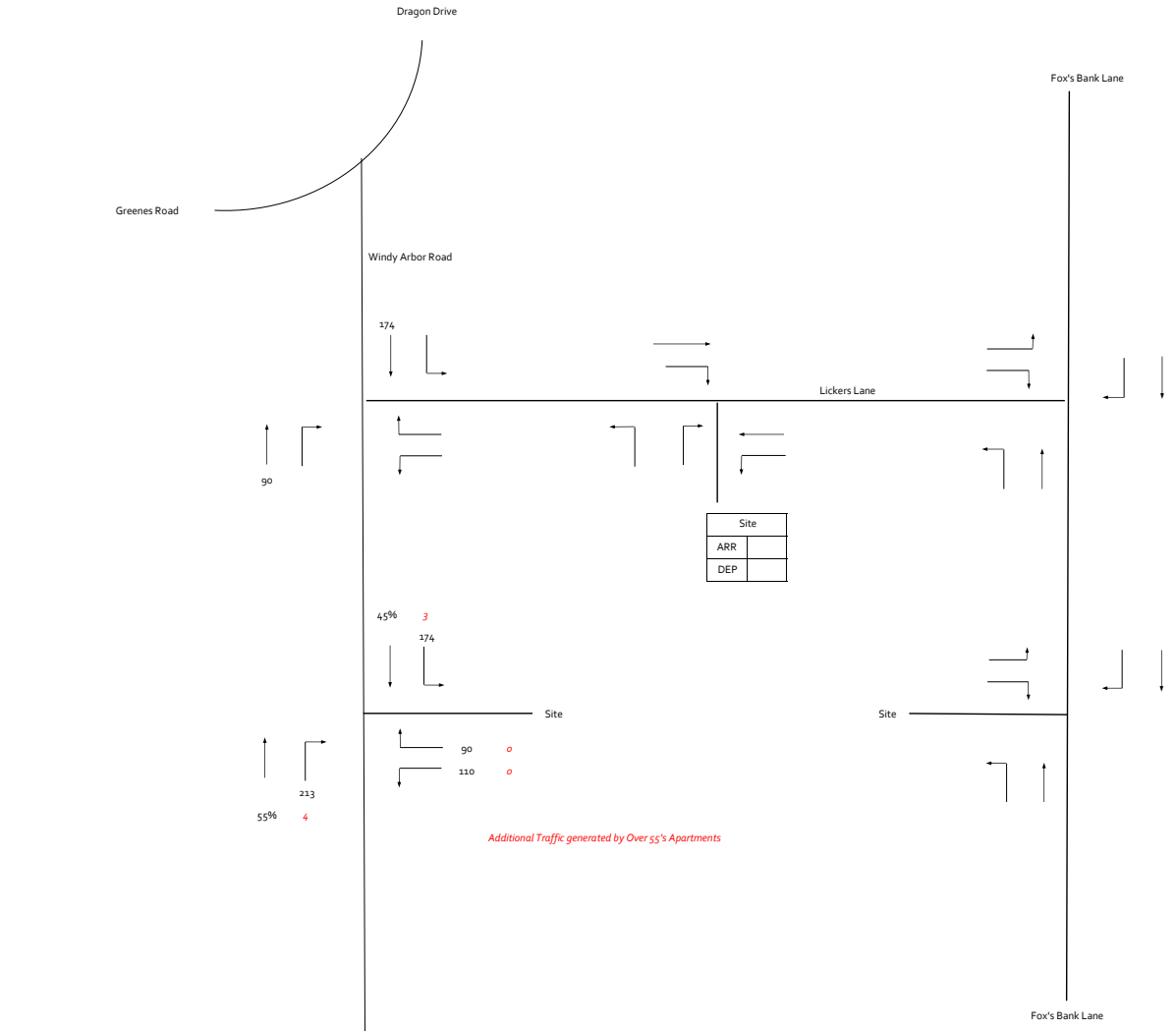
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1							
2							
3							
4							
5							
6							
7							

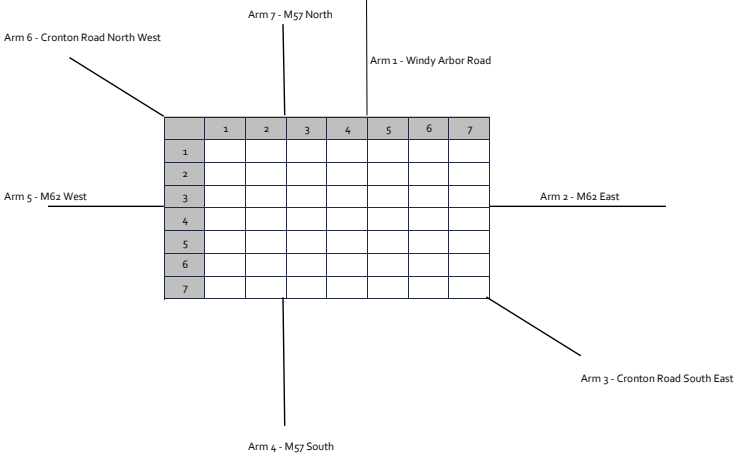
Flows in PCUs

Figure 21 - Sensitivity Test - Wider Halsnead Allocation Development Flows (1600 Dwellings) - AM Peak

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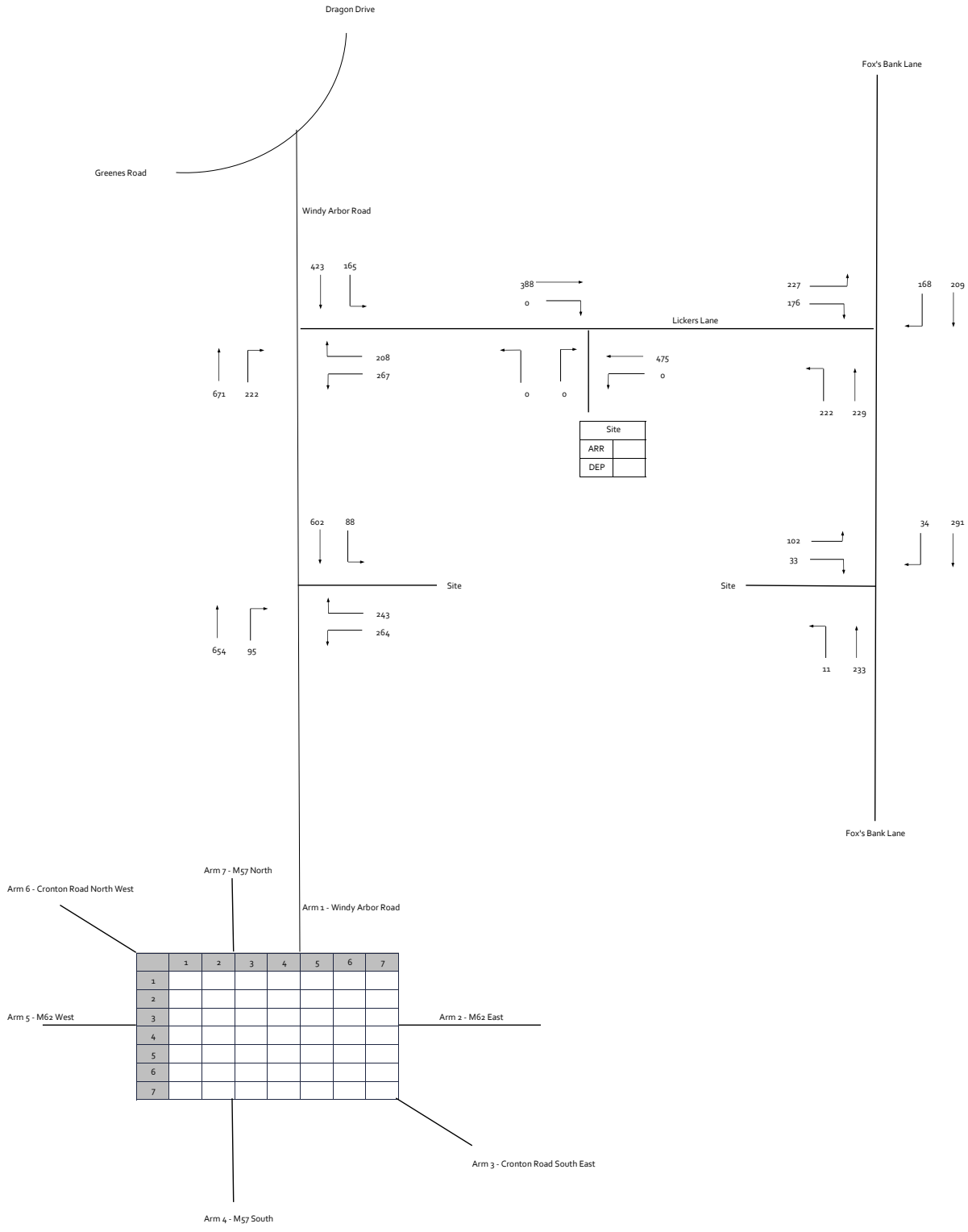
	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows base on Mott Macdonald/WSP Strategic Modelling Report

Figure 22 - Sensitivity Test - Wider Halsnead Allocation Development Flows (1600 Dwellings) - PM Peak

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	ARR	DEP
Site		

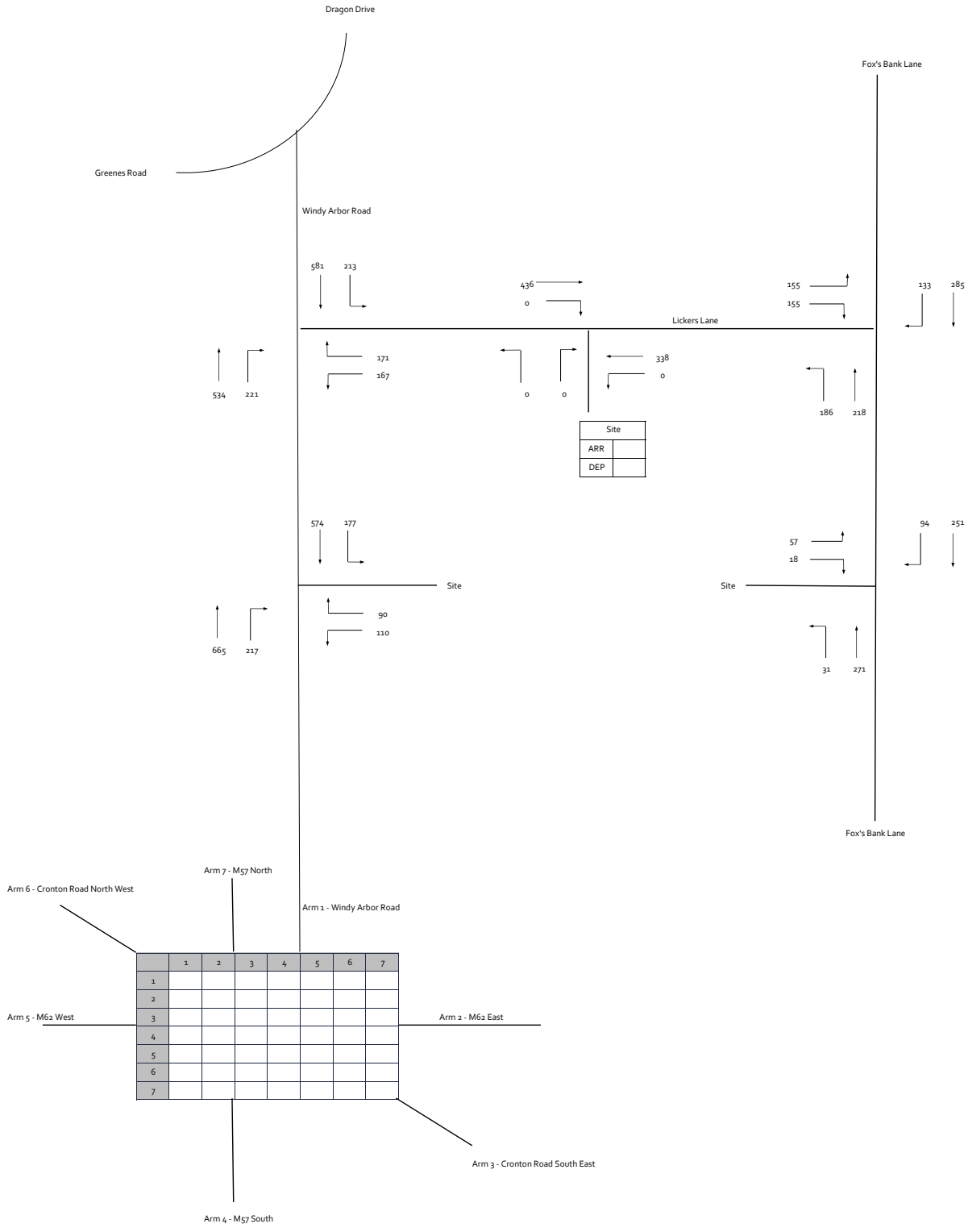
	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

Flows in PCUs

Figure 23 - Sensitivity Test - 2030 With Halsnead Allocation Flows - AM Peak

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Eddisons
TRANSPORT PLANNING & DESIGN
Incorporating Croft Transport Planning & Design



	1	2	3	4	5	6	7
1							
2							
3							
4							
5							
6							
7							

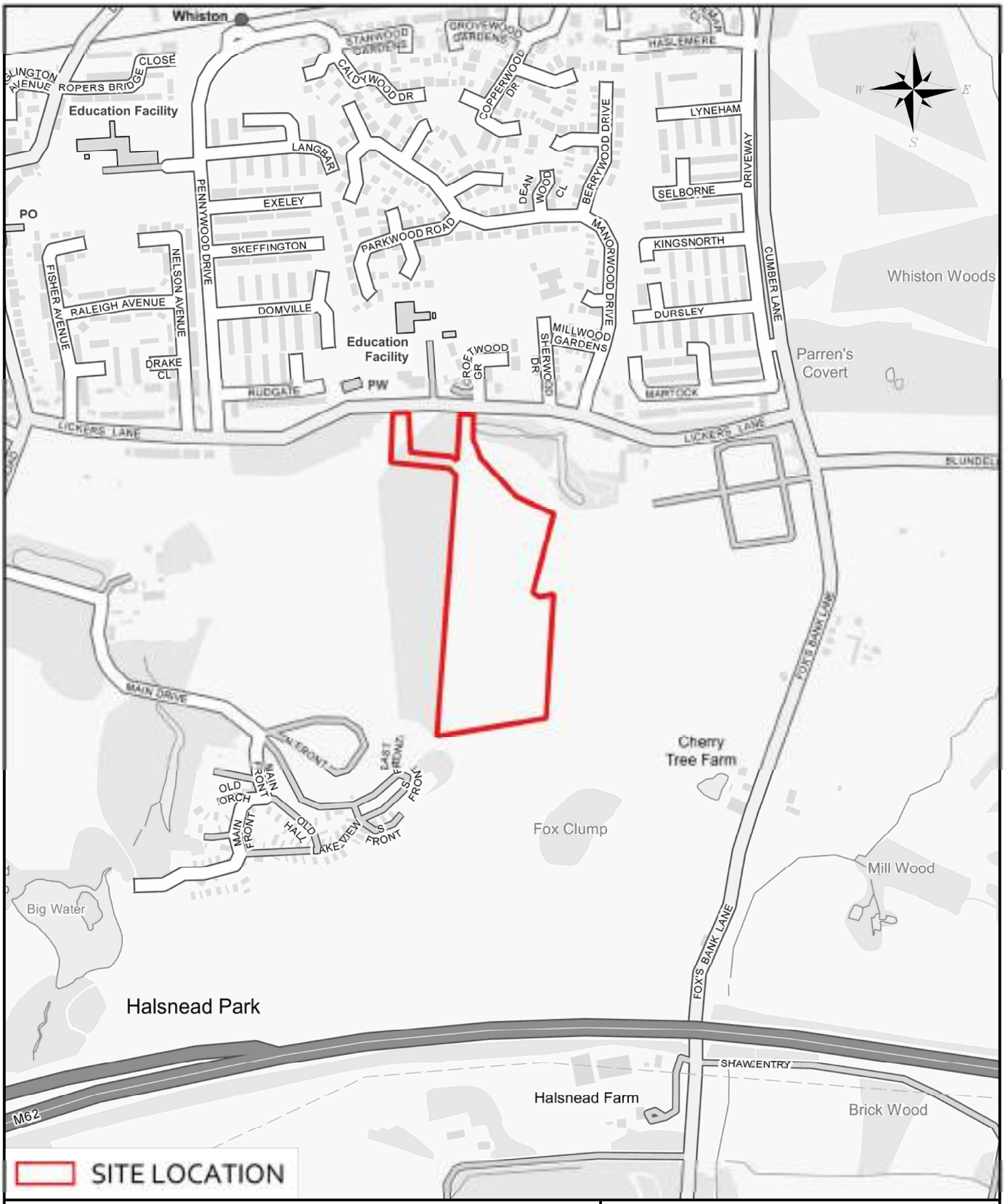
Flows base on Mott Macdonald/WSP Strategic Modelling Report

Figure 24 - Sensitivity Test - 2030 With Halsnead Allocation Flows (1600 Dwellings) - PM Peak

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Eddisons
TRANSPORT PLANNING & DESIGN
Incorporating Croft Transport Planning & Design

PLANS



CLIENT:

VISTRY

DRAWING TITLE:

LICKERS LANE, HALSHEAD
SITE LOCATION

DRAWN	DATE	CHECKED	DATE	SCALES
LG	22.06.22	MR	22.06.22	NTS @ A4

Croft Transport Planning & Design
340 Deansgate
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M3 4LY

Email: info@croftts.co.uk
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Web: www.eddisons.com/services/transport-planning

DRAWING NUMBER.	REVISION.
3463-01	-

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Lickers Lane, Whiston.

ACCOMMODATION SCHEDULE

	HOUSE TYPE	DESCRIPTION	SQFT (NET)	SQFT (GROSS)	NO.	TOTAL SQFT	%
OPEN MARKET SALE	GRAINGER	4 BED DETACHED	1328	1349	4	5396	3%
	MYLNE	4 BED DETACHED	1136	1152	18	20736	15%
	MOUNTFORD	3 BED DETACHED	971	985	5	4925	4%
	MOUNTFORD	3 BED SEMI DETACHED	971	985	5	4925	4%
	WYATT	3 BED TOWNHOUSE	872	883	8	7064	7%
	BESPOKE	3 BED ANGLED	850	850	1	850	1%
	EVELEIGH	3 BED SEMI DETACHED	865	879	13	11427	11%
	TOTAL				54		45%
PRS	SHARMAN	3 BED SEMI / END	862	875	16	14000	13%
	STAFFORD	2 BED END MEWS	679	691	18	12438	15%
	EVELEIGH	3 BED SEMI DETACHED	865	879	20	17580	17%
	TOTAL				54		45%
AFF	Apts Bespoke	2 BED APARTMENTS	650	650	12	7800	10%
	TOTAL				12		10%
TOTAL					120 PLOTS	107141 SQFT	100%

Gross Site Area	8.40	Acres
		Acres
		Acres
		Acres
Nett Site Area	7.12	Acres
Net Density	17	Units / Acre
Gross Density	14	Units / Acre
SQFT PER NET DEVELOPABLE ACRE	15048	SqFt / A

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- Do not scale from this drawing - Work to figured dimensions only. All dimensions to be checked on site prior to the execution of any work.
- For the avoidance of doubt all dimensions are measured to wall structure and not the finishes unless otherwise stated.
- Where any discrepancy is found to exist within or between drawings and/or documents it should be reported to the architect immediately.
- MPSL Planning & Design Ltd. shall not be liable for any use of drawings and documents for any purpose other than for which the same were prepared by or on behalf of MPSL Planning & Design Ltd.

Community Centre

CROFTWOOD GROVE

Potential S278 works required to Lickers Lane in the form of pedestrian barriers, signage, pedestrian island and footpath to the Southern side of Lickers Lane.

Shelter

Pond

Proposed route to adjacent site

Proposed footpath link to existing public footpath

Dot hatch denotes area of open space subject to detailed landscape design.

Sub Sta.

Existing overhead cables to be diverted underground.

YHG Development to be amended to suit Main Street location and access to Vistry land.

1:500

10m 0 10m 20m 30m 40m 50m

Rev | Date | Revision | Initial

Client: Vistry Partnerships

Drawing Title: PARCEL 2C

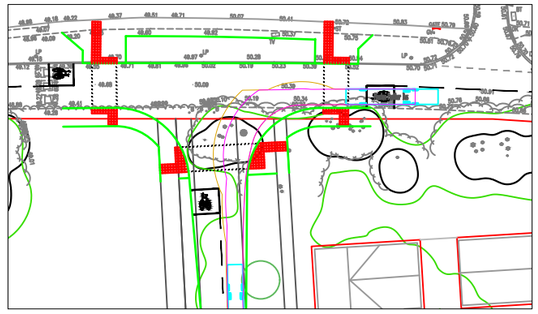
Project: Lickers Lane, Whiston.

DRAFT

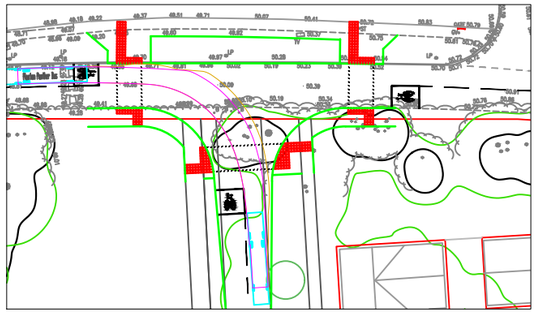
Job No	Drg No	Drawn	Rev
21062	SK 10	ac	
Scale: 1:500 @ A1	Date: 14.10.2021	Stage: PRELIMINARY	

mpsl planning & design ltd
14 west point enterprise park,
clarence avenue, trafford park,
manchester. M17 1QS
t: 0161 772 1999
e: info@mpsldesign.co.uk
www.mpsldesign.co.uk

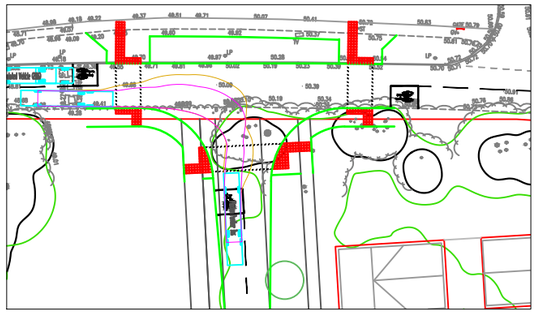
mpsl planning&design



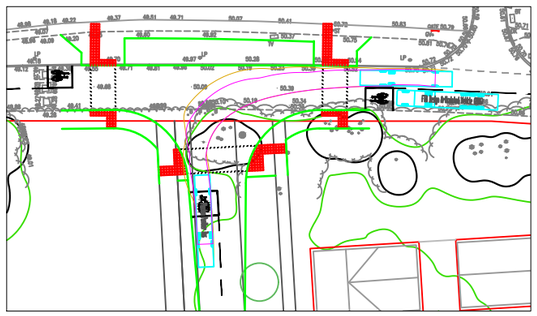
15M BUS TURNING LEFT INTO SITE



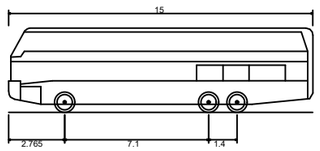
15M BUS TURNING RIGHT INTO SITE



15M BUS TURNING LEFT OUT OF SITE



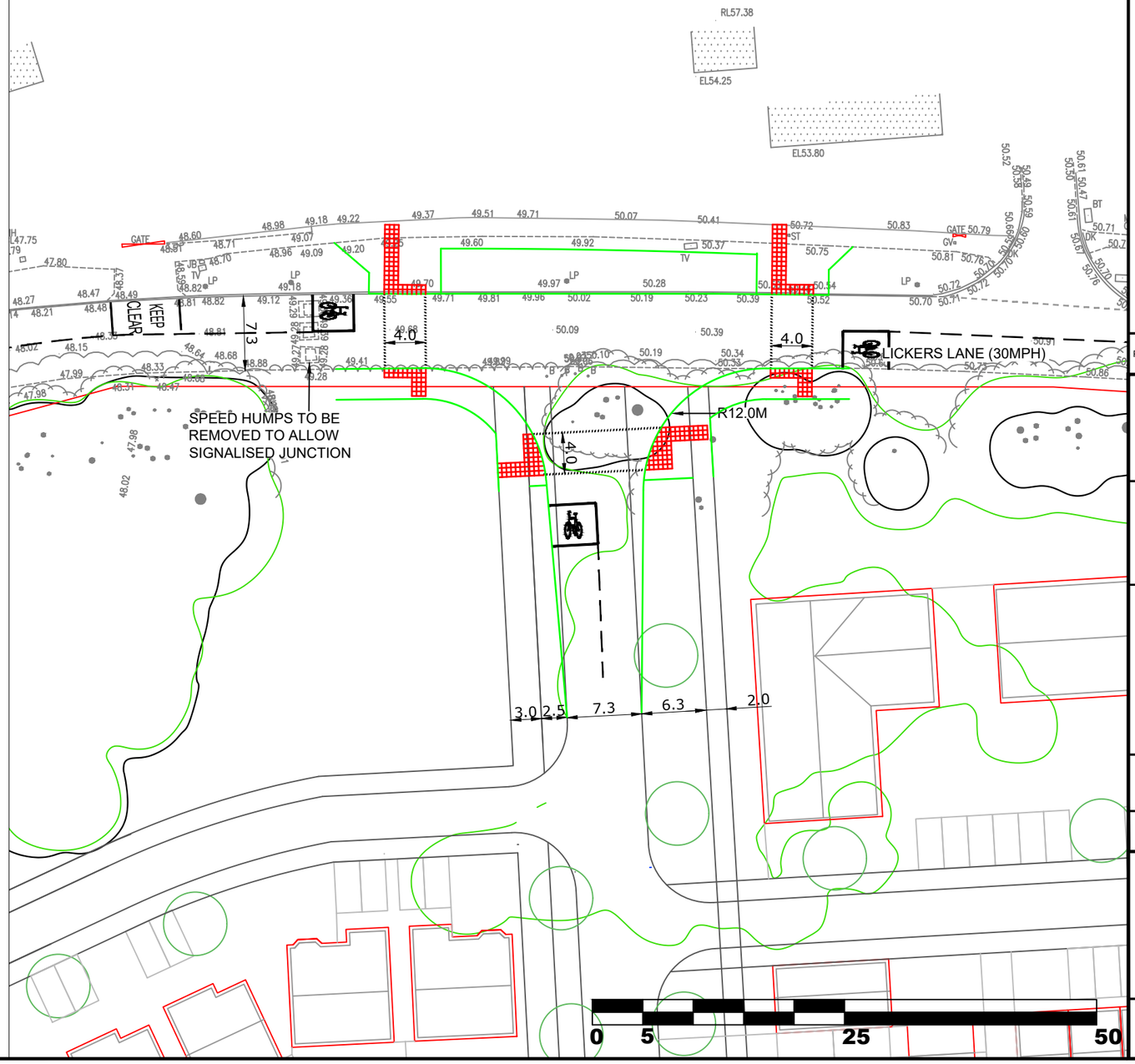
15M BUS TURNING RIGHT OUT OF SITE



Plaxton Panther Bus	
Overall Length	15.000m
Overall Width	2.500m
Overall Body Height	4.157m
Min Body Ground Clearance	0.397m
Track Width	2.500m
Lock to lock time	5.00s
Wall to Wall Turning Radius	12.500m



NORTH SOUTH AERIAL VIEW

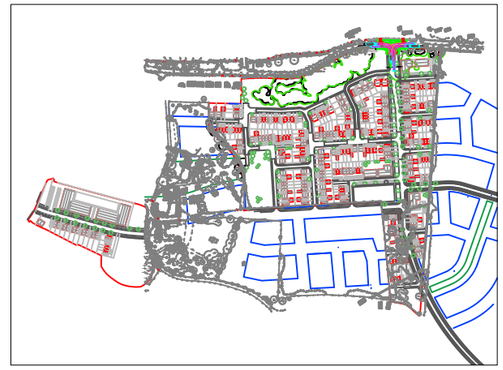


NOTES

THIS IS NOT A CONSTRUCTION DRAWING AND IS FOR INDICATIVE PURPOSES ONLY.
THE DRAWING WILL BE SUBJECT TO CHANGE FOLLOWING LOCAL AUTHORITY REVIEW AND CONFIRMATION OF PUBLIC HIGHWAY AND THIRD PARTY LAND BOUNDARIES.

INDICATIVE SITE BOUNDARY

DENOTES NEW KERBS



SITE LAYOUT NTS

REV	DETAILS	DRAWN	CHECKED	DATE
B	MINOR AMENDMENTS	LB	MC	FEB 21

CLIENT:
CLEAN SWEEP HOLDINGS LTD

PROJECT:
HALSNEAD PARK, WHISTON

DRAWING TITLE:
PROPOSED SITE ACCESS PLAN

SCALES:
1:500 @ A3

DRAWN:	CHECKED:	DATE:
LB	MC	JUN 20

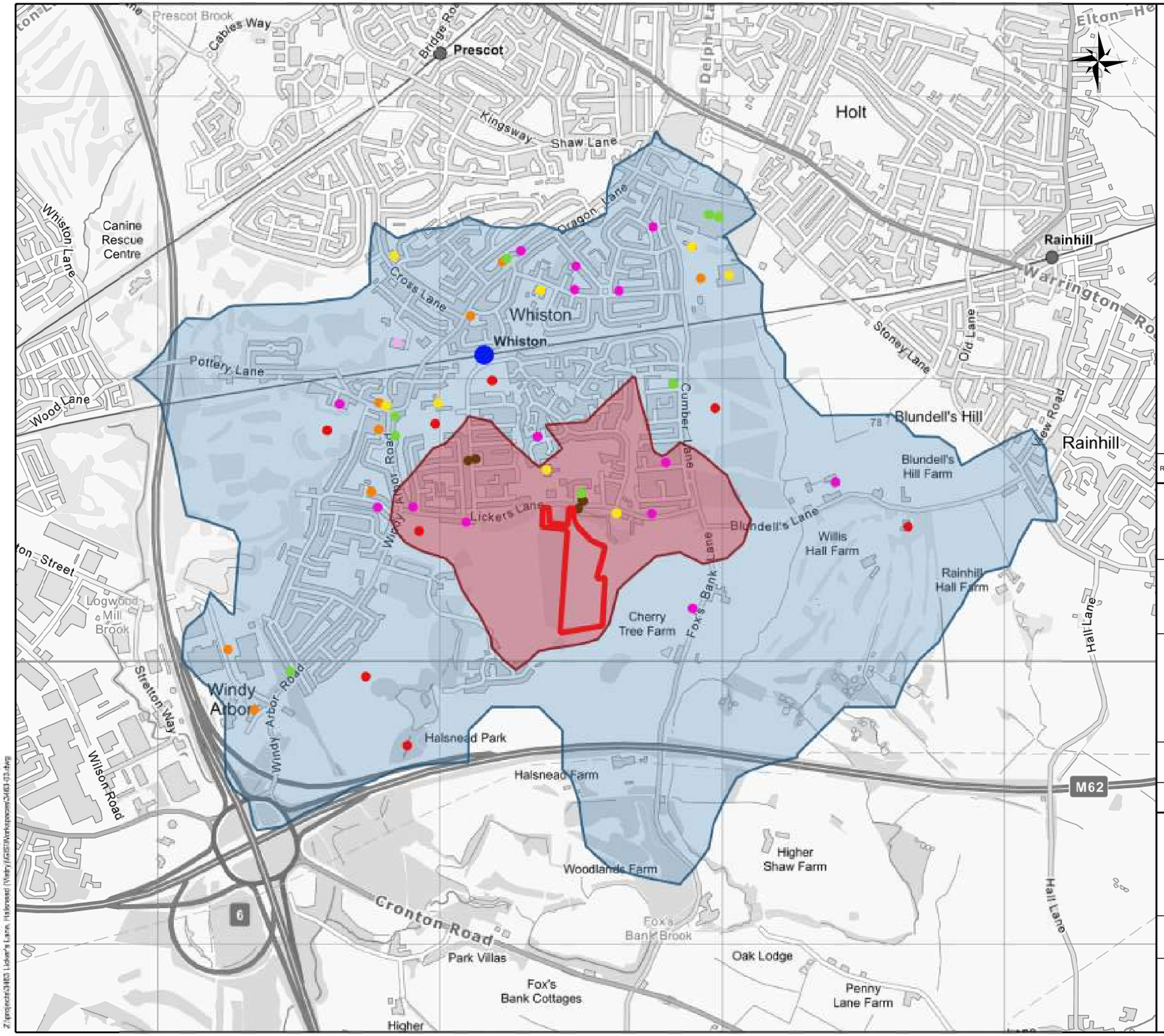
Croft Transport Planning & Design
340 Deansgate
Manchester
M3 4LY

Email: info@croftts.co.uk
Tel: 0161 837 7380
Web: www.croftts.co.uk

DRAWING NUMBER:	REVISION:
3028-F02	B

CROFT

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NOTES

- Site Location
- 800m Pedestrian Catchment
- 2km Pedestrian Catchment
- Train Station
- Nearest Bus Stop
- Medical/Healthcare
- Retail
- Leisure/Sport
- Education
- Cafe/Takeaway/Public House
- Business/Employment

REV	DETAILS	DRAWN	CHECKED	DATE

CLIENT:

VISTRY

PROJECT:

LICKERS LANE, HALSHEAD

DRAWING TITLE:

800M & 2KM PEDESTRIAN CATCHMENT WITH AMENITIES

SCALES:

NTS @ A3

DRAWN:	CHECKED:	DATE:
LG	MR	JUN 22

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M3 4LY

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Web: www.eddisons.com/services/transport-planning

DRAWING NUMBER: 3463-03

REVISION: -

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APPENDICES

APPENDIX 1

Traffic Survey Data

HALSNEAD GARDEN VILLAGE
SITE 3 - CUMBER LANE / LICKERS LANE / FOX BANK LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018



KEY

1	CUMBER LANE
2	FOX BANK LANE
3	LICKER LANE

HALSNEAD GARDEN VILLAGE
SITE 3 - CUMBER LANE / LICKERS LANE / FOX BANK LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	1(Cumber Lane (North)) TO 2(Fox bank Lane (South))								1(Cumber Lane (North)) TO 3(Lickers lane (West))								1(Cumber Lane (North)) TO 1(Cumber Lane (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
07:30	0	0	32	0	7	1	0	40	0	0	8	0	1	1	0	10	0	0	0	0	0	0	0	0
07:45	0	0	26	0	10	1	0	37	0	0	16	0	1	1	0	18	0	0	0	0	0	0	0	0
H/TOT	0	0	58	0	17	2	0	77	0	0	24	0	2	2	0	28	0	0	0	0	0	0	0	0
08:00	0	0	38	0	5	0	0	43	0	0	17	1	1	0	0	19	0	0	0	0	0	0	0	0
08:15	0	0	29	0	7	0	0	36	0	0	31	1	4	1	0	37	0	0	0	0	0	0	0	0
08:30	0	1	55	0	2	0	0	58	0	0	38	0	4	0	0	42	0	0	0	0	0	0	0	0
08:45	0	0	27	1	6	1	0	35	0	0	40	2	0	0	0	42	0	0	0	0	0	0	0	0
H/TOT	0	1	149	1	20	1	0	172	0	0	126	4	9	1	0	140	0	0	0	0	0	0	0	0
09:00	0	0	16	0	4	0	0	20	0	0	20	0	4	0	0	24	0	0	0	0	0	0	0	0
09:15	0	0	22	0	3	0	0	25	0	0	12	1	2	0	0	15	0	0	0	0	0	0	0	0
H/TOT	0	0	38	0	7	0	0	45	0	0	32	1	6	0	0	39	0	0	0	0	0	0	0	0
P/TOT	0	1	245	1	44	3	0	294	0	0	182	5	17	3	0	207	0	0	0	0	0	0	0	0

	1(Cumber Lane (North)) TO 2(Fox bank Lane (South))								1(Cumber Lane (North)) TO 3(Lickers lane (West))								1(Cumber Lane (North)) TO 1(Cumber Lane (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
12:00	0	0	17	0	2	0	0	19	0	0	5	1	1	0	0	7	0	0	0	0	0	0	0	0
12:15	0	1	12	0	2	0	0	15	0	0	13	0	1	0	0	14	0	0	0	0	0	0	0	0
12:30	0	0	20	0	3	0	0	23	0	0	10	1	0	0	0	11	0	0	0	0	0	0	0	0
12:45	1	0	20	0	3	0	0	24	0	0	12	1	1	0	0	14	0	0	0	0	0	0	0	0
H/TOT	1	1	69	0	10	0	0	81	0	0	40	3	3	0	0	46	0	0	0	0	0	0	0	0
13:00	0	0	18	0	4	1	0	23	0	0	10	1	1	0	0	12	0	0	0	0	0	0	0	0
13:15	2	0	23	0	3	0	0	28	0	0	12	0	3	0	0	15	0	0	0	0	0	0	0	0
13:30	0	0	30	0	9	1	0	40	0	0	10	1	5	0	0	16	0	0	0	0	0	0	0	0
13:45	0	1	19	0	2	1	1	24	0	0	10	1	1	0	0	12	0	0	0	0	0	0	0	0
H/TOT	2	1	90	0	18	3	1	115	0	0	42	3	10	0	0	55	0	0	0	0	0	0	0	0
P/TOT	3	2	159	0	28	3	1	196	0	0	82	6	13	0	0	101	0	0	0	0	0	0	0	0

	1(Cumber Lane (North)) TO 2(Fox bank Lane (South))								1(Cumber Lane (North)) TO 3(Lickers lane (West))								1(Cumber Lane (North)) TO 1(Cumber Lane (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
15:00	0	0	35	0	7	4	0	46	0	0	31	0	3	0	0	34	0	0	0	0	0	0	0	0
15:15	1	0	23	0	2	0	0	26	0	0	25	1	4	0	1	31	0	0	0	0	0	0	0	0
15:30	0	1	33	0	6	0	0	40	1	0	31	0	3	0	0	35	0	0	0	0	0	0	0	0
15:45	0	0	21	0	3	1	0	25	0	1	26	2	0	1	0	30	0	0	0	0	0	0	0	0
H/TOT	1	1	112	0	18	5	0	137	1	1	113	3	10	1	1	130	0	0	0	0	0	0	0	0
16:00	0	0	51	0	3	0	0	54	1	0	26	1	2	0	0	30	0	0	0	0	0	0	0	0
16:15	0	0	47	0	4	0	0	51	0	0	17	0	3	0	0	20	0	0	0	0	0	0	0	0
16:30	0	0	63	0	3	1	0	67	0	0	28	1	5	0	0	34	0	0	0	0	0	0	0	0
16:45	0	0	43	0	6	0	0	49	0	1	22	0	1	0	0	24	0	0	0	0	0	0	0	0
H/TOT	0	0	204	0	16	1	0	221	1	1	93	2	11	0	0	108	0	0	0	0	0	0	0	0
17:00	0	0	49	0	5	0	0	54	0	0	26	1	1	0	0	28	0	0	0	0	0	0	0	0
17:15	0	0	52	0	1	0	0	53	0	1	25	0	3	0	0	29	0	0	0	0	0	0	0	0
17:30	0	1	42	0	5	0	0	48	0	0	21	0	2	0	0	23	0	0	0	0	0	0	0	0
17:45	0	0	36	0	0	0	0	36	0	0	38	1	0	0	0	39	0	0	0	0	0	0	0	0
H/TOT	0	1	179	0	11	0	0	191	0	1	110	2	6	0	0	119	0	0	0	0	0	0	0	0
P/TOT	1	2	495	0	45	6	0	549	2	3	316	7	27	1	1	357	0	0	0	0	0	0	0	0

	0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0800 - 0815	0	0	38	0	5	0	0	43	0	0	17	1	1	0	0	19	0	0	0	0	0	0	0	0
0815 - 0830	0	0	29	0	7	0	0	36	0	0	31	1	4	1	0	37	0	0	0	0	0	0	0	0
0830 - 0845	0	1	55	0	2	0	0	58	0	0	38	0	4	0	0	42	0	0	0	0	0	0	0	0
0845 - 0900	0	0	27	1	6	1	0	35	0	0	40	2	0	0	0	42	0	0	0	0	0	0	0	0
Total Vehicles	0	1	149	1	20	1	0	172	0	0	126	4	9	1	0	140	0	0	0	0	0	0	0	0
PCUS	0	0.7	149	2.5	20	1.9	0	**174**	0	0	126	10	9	1.9	0	**147**	0	0	0	0	0	0	0	**0**

1630 - 1645	0	0	63	0	3	1	0	67	0	0	28	1	5	0	0	34	0	0	0	0	0	0	0	0
1645 - 1700	0	0	43	0	6	0	0	49	0	1	22	0	1	0	0	24	0	0	0	0	0	0	0	0
1700 - 1715	0	0	49	0	5	0	0	54	0	0	26	1	1	0	0	28	0	0	0	0	0	0	0	0
1715 - 1730	0	0	52	0	1	0	0	53	0	1	25	0	3	0	0	29	0	0	0	0	0	0	0	0
Total Vehicles	0	0	207	0	15	1	0	223	0	2	101	2	10	0	0	115	0	0	0	0	0	0	0	0
PCUS	0	0	207	0	15	1.9	0	**224**	0	1	101	5	10	0	0	**117**	0	0	0	0	0	0	0	**0**

HALSNEAD GARDEN VILLAGE
SITE 3 - CUMBER LANE / LICKERS LANE / FOX BANK LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	2(Fox bank Lane (South)) TO 3(Lickers lane (West))								2(Fox bank Lane (South)) TO 1(Cumber Lane (North))								2(Fox bank Lane (South)) TO 2(Fox bank Lane (South))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
07:30	0	0	10	0	1	2	0	13	0	0	18	0	2	0	0	20	0	0	0	0	0	0	0	0
07:45	0	0	19	0	2	0	0	21	1	0	35	0	2	0	0	38	0	0	0	0	0	0	0	0
H/TOT	0	0	29	0	3	2	0	34	1	0	53	0	4	0	0	58	0	0	0	0	0	0	0	0
08:00	0	0	33	0	0	0	0	33	0	0	36	0	3	0	0	39	0	0	0	0	0	0	0	0
08:15	0	0	21	0	4	0	0	25	0	0	47	0	5	0	0	52	0	0	0	0	0	0	0	0
08:30	0	0	23	0	4	2	0	29	0	0	40	0	1	1	0	42	0	0	0	0	0	0	0	0
08:45	0	0	43	0	3	0	0	46	0	0	30	0	5	1	0	36	0	0	0	0	0	0	0	0
H/TOT	0	0	120	0	11	2	0	133	0	0	153	0	14	2	0	169	0	0	0	0	0	0	0	0
09:00	0	0	27	0	2	2	0	31	0	0	30	0	1	0	0	31	0	0	0	0	0	0	0	0
09:15	0	0	13	0	1	0	0	14	0	0	20	0	6	0	0	26	0	0	0	0	0	0	0	0
H/TOT	0	0	40	0	3	2	0	45	0	0	50	0	7	0	0	57	0	0	0	0	0	0	0	0
P/TOT	0	0	189	0	17	6	0	212	1	0	256	0	25	2	0	284	0	0	0	0	0	0	0	0

	2(Fox bank Lane (South)) TO 3(Lickers lane (West))								2(Fox bank Lane (South)) TO 1(Cumber Lane (North))								2(Fox bank Lane (South)) TO 2(Fox bank Lane (South))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
12:00	0	0	12	0	1	0	0	13	0	0	26	0	3	0	0	29	0	0	0	0	0	0	0	0
12:15	0	0	7	0	1	0	0	8	0	0	19	0	2	1	0	22	0	0	0	0	0	0	0	0
12:30	0	0	12	0	0	0	0	12	0	0	28	0	3	0	0	31	0	0	0	0	0	0	0	0
12:45	0	0	7	0	1	0	0	8	1	0	15	0	2	2	0	20	0	0	0	0	0	0	0	0
H/TOT	0	0	38	0	3	0	0	41	1	0	88	0	10	3	0	102	0	0	0	0	0	0	0	0
13:00	0	0	13	0	1	1	0	15	0	0	14	0	1	0	0	15	0	0	0	0	0	0	0	0
13:15	0	0	17	0	1	0	0	18	0	0	15	0	2	0	0	17	0	0	0	0	0	0	0	0
13:30	0	0	11	0	2	0	0	13	0	1	24	0	3	0	0	28	0	0	0	0	0	0	0	0
13:45	0	0	8	0	1	0	0	9	1	0	34	0	1	1	0	37	0	0	0	0	0	0	0	0
H/TOT	0	0	49	0	5	1	0	55	1	1	87	0	7	1	0	97	0	0	0	0	0	0	0	0
P/TOT	0	0	87	0	8	1	0	96	2	1	175	0	17	4	0	199	0	0	0	0	0	0	0	0

	2(Fox bank Lane (South)) TO 3(Lickers lane (West))								2(Fox bank Lane (South)) TO 1(Cumber Lane (North))								2(Fox bank Lane (South)) TO 2(Fox bank Lane (South))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
15:00	0	0	16	0	1	3	0	20	0	1	23	0	3	0	0	27	0	0	0	0	0	0	0	0
15:15	0	0	35	0	1	1	0	37	0	0	26	0	9	0	0	35	0	0	0	0	0	0	0	0
15:30	0	0	23	0	2	0	0	25	0	0	35	0	2	0	0	37	0	0	0	0	0	0	0	0
15:45	1	0	15	0	4	0	0	20	0	1	24	0	4	0	0	29	0	0	0	0	0	0	0	0
H/TOT	1	0	89	0	8	4	0	102	0	2	108	0	18	0	0	128	0	0	0	0	0	0	0	0
16:00	1	0	15	0	4	0	0	20	0	0	23	0	5	0	0	28	0	0	0	0	0	0	0	0
16:15	0	0	20	0	2	0	0	22	0	0	40	0	9	1	0	50	0	0	0	0	0	0	0	0
16:30	0	0	34	0	5	0	0	39	0	1	36	0	6	0	1	44	0	0	0	0	0	0	0	0
16:45	0	0	24	0	5	0	0	29	0	0	33	0	4	0	0	37	0	0	0	0	0	0	0	0
H/TOT	1	0	93	0	16	0	0	110	0	1	132	0	24	1	1	159	0	0	0	0	0	0	0	0
17:00	0	0	28	0	5	0	0	33	0	0	35	0	8	0	0	43	0	0	0	0	0	0	0	0
17:15	0	0	25	0	5	0	0	30	0	0	45	0	5	0	0	50	0	0	0	0	0	0	0	0
17:30	0	0	24	0	2	0	0	26	0	0	39	0	1	0	0	40	0	0	0	0	0	0	0	0
17:45	1	0	23	0	5	0	0	29	0	0	29	0	0	1	0	30	0	0	0	0	0	0	0	0
H/TOT	1	0	100	0	17	0	0	118	0	0	148	0	14	1	0	163	0	0	0	0	0	0	0	0
P/TOT	3	0	282	0	41	4	0	330	0	3	388	0	56	2	1	450	0	0	0	0	0	0	0	0

0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0	0	33	0	0	0	0	33	0	0	36	0	3	0	0	39	0	0	0	0	0	0	0	0
0	0	21	0	4	0	0	25	0	0	47	0	5	0	0	52	0	0	0	0	0	0	0	0
0	0	23	0	4	2	0	29	0	0	40	0	1	1	0	42	0	0	0	0	0	0	0	0
0	0	43	0	3	0	0	46	0	0	30	0	5	1	0	36	0	0	0	0	0	0	0	0
0	0	120	0	11	2	0	133	0	0	153	0	14	2	0	169	0	0	0	0	0	0	0	0
0	0	120	0	11	3.8	0	**135**	0	0	153	0	14	3.8	0	**171**	0	0	0	0	0	0	0	**0**

0	0	34	0	5	0	0	39	0	1	36	0	6	0	1	44	0	0	0	0	0	0	0	0
0	0	24	0	5	0	0	29	0	0	33	0	4	0	0	37	0	0	0	0	0	0	0	0
0	0	28	0	5	0	0	33	0	0	35	0	8	0	0	43	0	0	0	0	0	0	0	0
0	0	25	0	5	0	0	30	0	0	45	0	5	0	0	50	0	0	0	0	0	0	0	0
0	0	111	0	20	0	0	131	0	1	149	0	23	0	1	174	0	0	0	0	0	0	0	0
0	0	111	0	20	0	0	**131**	0	1	149	0	23	0	2.9	**176**	0	0	0	0	0	0	0	**0**

HALSNEAD GARDEN VILLAGE
SITE 3 - CUMBER LANE / LICKERS LANE / FOX BANK LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	3(Lickers lane (West)) TO 1(Cumber Lane (North))								3(Lickers lane (West)) TO 2(Fox bank Lane (South))								3(Lickers lane (West)) TO 3(Lickers lane (West))								
TIME	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	
07:30	0	0	11	1	2	0	0	14	0	0	20	0	2	1	0	23	0	0	0	0	0	0	0	0	120
07:45	0	0	26	1	2	0	0	29	0	0	22	0	3	0	0	25	0	0	0	0	0	0	0	0	168
H/TOT	0	0	37	2	4	0	0	43	0	0	42	0	5	1	0	48	0	0	0	0	0	0	0	0	
08:00	0	0	33	1	4	2	0	40	0	1	23	0	6	0	0	30	0	0	0	0	0	0	0	0	204
08:15	0	0	51	1	5	1	0	58	0	0	28	0	4	0	0	32	0	0	0	0	0	0	0	0	240
08:30	0	0	49	0	3	1	0	53	0	0	33	0	5	1	0	39	0	0	0	0	0	0	0	0	263
08:45	0	1	35	1	1	1	0	39	0	0	30	0	2	0	0	32	0	0	0	0	0	0	0	0	230
H/TOT	0	1	168	3	13	5	0	190	0	1	114	0	17	1	0	133	0	0	0	0	0	0	0	0	
09:00	0	0	31	1	3	0	0	35	0	0	16	0	1	2	0	19	0	0	0	0	0	0	0	0	160
09:15	0	0	14	0	3	0	0	17	0	0	9	0	1	0	0	10	0	0	0	0	0	0	0	0	107
H/TOT	0	0	45	1	6	0	0	52	0	0	25	0	2	2	0	29	0	0	0	0	0	0	0	0	
P/TOT	0	1	250	6	23	5	0	285	0	1	181	0	24	4	0	210	0	0	0	0	0	0	0	0	

0730 - 0830	732
0745 - 0845	875
0800 - 0900	937
0815 - 0915	893
0830 - 0930	760
MAX	937

	3(Lickers lane (West)) TO 1(Cumber Lane (North))								3(Lickers lane (West)) TO 2(Fox bank Lane (South))								3(Lickers lane (West)) TO 3(Lickers lane (West))								
TIME	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	
12:00	0	0	8	2	1	1	0	12	0	0	8	0	2	0	1	11	0	0	0	0	0	0	0	0	91
12:15	0	0	17	0	3	0	0	20	0	0	11	0	1	0	0	12	0	0	0	0	0	0	0	0	91
12:30	0	0	15	1	1	0	0	17	0	0	13	0	1	1	0	15	0	0	0	0	0	0	0	0	109
12:45	0	0	13	0	2	0	0	15	0	0	12	0	2	0	0	14	0	0	0	0	0	0	0	0	95
H/TOT	0	0	53	3	7	1	0	64	0	0	44	0	6	1	1	52	0	0	0	0	0	0	0	0	
13:00	0	0	17	2	4	0	0	23	0	0	13	0	2	0	0	15	0	0	0	0	0	0	0	0	103
13:15	0	0	20	0	2	0	0	22	0	0	12	0	0	0	0	12	0	0	0	0	0	0	0	0	112
13:30	0	0	12	1	3	0	0	16	0	0	6	0	2	0	0	8	0	0	0	0	0	0	0	0	121
13:45	0	1	12	0	0	0	0	13	0	0	13	0	2	0	0	15	0	0	0	0	0	0	0	0	110
H/TOT	0	1	61	3	9	0	0	74	0	0	44	0	6	0	0	50	0	0	0	0	0	0	0	0	
P/TOT	0	1	114	6	16	1	0	138	0	0	88	0	12	1	1	102	0	0	0	0	0	0	0	0	

	3(Lickers lane (West)) TO 1(Cumber Lane (North))								3(Lickers lane (West)) TO 2(Fox bank Lane (South))								3(Lickers lane (West)) TO 3(Lickers lane (West))								
TIME	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	PC	MC	CAR	PSV	LGV	OGV1	OGV2	TOT	
15:00	0	0	23	1	0	0	0	24	0	0	41	0	0	0	0	41	0	0	0	0	0	0	0	0	192
15:15	0	0	34	1	4	0	0	39	0	1	16	0	1	1	0	19	0	0	0	0	0	0	0	0	187
15:30	0	0	32	1	1	3	0	37	0	0	18	0	2	0	0	20	0	0	0	0	0	0	0	0	194
15:45	0	0	18	0	3	1	0	22	0	0	6	0	3	1	0	10	0	0	0	0	0	0	0	0	136
H/TOT	0	0	107	3	8	4	0	122	0	1	81	0	6	2	0	90	0	0	0	0	0	0	0	0	
16:00	0	0	16	2	0	0	0	18	0	0	17	0	2	0	0	19	0	0	1	0	0	0	0	1	170
16:15	0	0	18	0	0	0	0	18	0	0	19	0	0	0	0	19	0	0	0	0	0	0	0	0	180
16:30	0	0	27	1	1	1	0	30	0	0	14	0	2	0	0	16	0	0	0	0	0	0	0	0	230
16:45	0	0	29	0	12	0	0	41	0	0	22	0	0	0	0	22	0	0	0	0	0	0	0	0	202
H/TOT	0	0	90	3	13	1	0	107	0	0	72	0	4	0	0	76	0	0	1	0	0	0	0	1	
17:00	0	0	30	0	8	0	0	38	1	0	18	0	4	0	0	23	0	0	0	0	0	0	0	0	219
17:15	0	0	19	1	4	0	0	24	0	0	20	0	1	0	0	21	0	0	0	0	0	0	0	0	207
17:30	0	1	28	0	3	0	0	32	0	0	25	0	3	0	0	28	0	0	0	0	0	0	0	0	197
17:45	0	0	25	1	2	0	0	28	0	0	23	0	1	0	0	24	0	0	0	0	0	0	0	0	186
H/TOT	0	1	102	2	17	0	0	122	1	0	86	0	9	0	0	96	0	0	0	0	0	0	0	0	
P/TOT	0	1	299	8	38	5	0	351	1	1	239	0	19	2	0	262	0	0	1	0	0	0	0	1	

1500 - 1600	709
1515 - 1615	687
1530 - 1630	680
1545 - 1645	716
1600 - 1700	782
1615 - 1715	831
1630 - 1730	858
1645 - 1745	825
1700 - 1800	809
MAX	858

0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0	0	33	1	4	2	0	40	0	1	23	0	6	0	0	30	0	0	0	0	0	0	0	0
0	0	51	1	5	1	0	58	0	0	28	0	4	0	0	32	0	0	0	0	0	0	0	0
0	0	49	0	3	1	0	53	0	0	33	0	5	1	0	39	0	0	0	0	0	0	0	0
0	1	35	1	1	1	0	39	0	0	30	0	2	0	0	32	0	0	0	0	0	0	0	0
0	1	168	3	13	5	0	190	0	1	114	0	17	1	0	133	0	0	0	0	0	0	0	0
0	0.7	168	7.5	13	9.5	0	**199**	0	0.7	114	0	17	1.9	0	**134**	0	0	0	0	0	0	0	**0**

0	0	27	1	1	1	0	30	0	0	14	0	2	0	0	16	0	0	0	0	0	0	0	0
0	0	29	0	12	0	0	41	0	0	22	0	0	0	0	22	0	0	0	0	0	0	0	0
0	0	30	0	8	0	0	38	1	0	18	0	4	0	0	23	0	0	0	0	0	0	0	0
0	0	19	1	4	0	0	24	0	0	20	0	1	0	0	21	0	0	0	0	0	0	0	0
0	0	105	2	25	1	0	133	1	0	74	0	7	0	0	82	0	0	0	0	0	0	0	0
0	0	105	5	25	1.9	0	**137**	0.2	0	74	0	7	0	0	**81**	0	0	0	0	0	0	0	**0**

HALSNEAD GARDEN VILLAGE
SITE 5 - WINDY ARBOUR ROAD / LICKER LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018



KEY

1	**WINDY ARBOUR ROAD - NORTH**
2	**LICKERS LANE**
3	**WINDY ARBOUR ROAD - SOUTH**

HALSNEAD GARDEN VILLAGE
SITE 5 - WINDY ARBOUR ROAD / LICKER LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	1(Windy Arbour Road (North)) TO 2(Lickers lane (East))								1(Windy Arbour Road (North)) TO 3(Windy Arbour Road (South))								1(Windy Arbour Road (North)) TO 1(Windy Arbour Road (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
07:30	0	0	9	1	1	1	0	12	0	0	59	0	13	0	0	72	0	0	0	0	0	0	0	0
07:45	0	0	24	1	3	0	0	28	0	0	26	2	6	0	0	34	0	0	0	0	0	0	0	0
H/TOT	0	0	33	2	4	1	0	40	0	0	85	2	19	0	0	106	0	0	0	0	0	0	0	0
08:00	0	0	30	1	1	0	0	32	0	0	43	1	8	1	0	53	0	0	0	0	0	0	0	0
08:15	0	0	19	1	4	0	0	24	0	0	42	1	4	1	0	48	0	0	0	0	0	0	0	0
08:30	0	0	35	0	1	0	0	36	1	0	43	1	9	2	0	56	0	0	0	0	0	0	0	0
08:45	0	0	36	1	1	0	0	38	1	0	57	1	8	3	2	72	0	0	0	0	0	0	0	0
H/TOT	0	0	120	3	7	0	0	130	2	0	185	4	29	7	2	229	0	0	0	0	0	0	0	0
09:00	0	0	23	0	5	1	0	29	0	0	67	1	4	2	1	75	0	0	0	0	0	0	0	0
09:15	0	0	15	0	5	0	0	20	0	0	47	1	3	3	0	54	0	0	0	0	0	0	0	0
H/TOT	0	0	38	0	10	1	0	49	0	0	114	2	7	5	1	129	0	0	0	0	0	0	0	0
P/TOT	0	0	191	5	21	2	0	219	2	0	384	8	55	12	3	464	0	0	0	0	0	0	0	0

	1(Windy Arbour Road (North)) TO 2(Lickers lane (East))								1(Windy Arbour Road (North)) TO 3(Windy Arbour Road (South))								1(Windy Arbour Road (North)) TO 1(Windy Arbour Road (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
12:00	0	0	18	1	2	0	0	21	0	0	44	2	7	0	1	54	0	0	0	0	0	0	0	0
12:15	1	0	31	0	2	0	0	34	0	1	61	1	6	0	0	69	0	0	0	0	0	0	0	0
12:30	0	0	24	1	3	0	0	28	0	0	44	2	6	1	0	53	0	0	0	0	0	0	0	0
12:45	0	0	21	0	2	0	0	23	1	0	49	1	8	1	0	60	0	0	0	0	0	0	0	0
H/TOT	1	0	94	2	9	0	0	106	1	1	198	6	27	2	1	236	0	0	0	0	0	0	0	0
13:00	0	0	29	1	1	0	0	31	0	0	68	1	6	1	0	76	0	0	0	0	0	0	0	0
13:15	0	1	25	0	2	0	0	28	1	0	42	0	4	1	1	49	0	0	1	0	0	0	0	1
13:30	0	1	18	1	5	1	0	26	0	0	67	1	8	3	0	79	0	0	0	0	0	0	0	0
13:45	0	0	15	0	2	0	0	17	0	0	50	1	8	1	0	60	0	0	0	0	0	0	0	0
H/TOT	0	2	87	2	10	1	0	102	1	0	227	3	26	6	1	264	0	0	1	0	0	0	0	1
P/TOT	1	2	181	4	19	1	0	208	2	1	425	9	53	8	2	500	0	0	1	0	0	0	0	1

	1(Windy Arbour Road (North)) TO 2(Lickers lane (East))								1(Windy Arbour Road (North)) TO 3(Windy Arbour Road (South))								1(Windy Arbour Road (North)) TO 1(Windy Arbour Road (North))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
15:00	0	0	39	1	5	1	0	46	0	0	45	2	7	2	0	56	0	0	0	0	0	0	0	0
15:15	0	0	27	0	3	1	0	31	0	0	46	1	7	1	0	55	0	0	0	0	0	0	0	0
15:30	0	0	26	1	2	1	0	30	1	0	68	0	6	2	0	77	0	0	0	0	0	0	0	0
15:45	0	0	31	0	0	1	0	32	1	2	66	2	6	0	0	77	0	0	0	0	0	0	0	0
H/TOT	0	0	123	2	10	4	0	139	2	2	225	5	26	5	0	265	0	0	0	0	0	0	0	0
16:00	0	0	38	1	2	0	0	41	0	0	45	2	4	1	0	52	0	0	0	0	0	0	0	0
16:15	0	0	40	0	2	0	0	42	0	1	65	2	5	0	0	73	0	0	0	0	0	0	0	0
16:30	0	0	34	1	4	0	0	39	0	0	60	1	7	1	0	69	0	0	0	0	0	0	0	0
16:45	0	0	39	0	0	0	0	39	0	1	63	1	5	0	0	70	0	0	0	0	0	0	0	0
H/TOT	0	0	151	2	8	0	0	161	0	2	233	6	21	2	0	264	0	0	0	0	0	0	0	0
17:00	0	0	30	0	4	0	0	34	1	0	57	1	5	0	0	64	0	0	0	0	0	0	0	0
17:15	0	0	42	1	3	0	0	46	0	2	64	1	4	0	0	71	0	0	0	0	0	0	0	0
17:30	0	1	37	0	3	0	0	41	0	0	69	1	7	0	0	77	0	0	0	0	0	0	0	0
17:45	0	0	42	1	3	0	0	46	0	0	49	1	1	0	0	51	0	0	0	0	0	0	0	0
H/TOT	0	1	151	2	13	0	0	167	1	2	239	4	17	0	0	263	0	0	0	0	0	0	0	0
P/TOT	0	1	425	6	31	4	0	467	3	6	697	15	64	7	0	792	0	0	0	0	0	0	0	0

	0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0800 - 0815	0	0	30	1	1	0	0	32	0	0	43	1	8	1	0	53	0	0	0	0	0	0	0	0
0815 - 0830	0	0	19	1	4	0	0	24	0	0	42	1	4	1	0	48	0	0	0	0	0	0	0	0
0830 - 0845	0	0	35	0	1	0	0	36	1	0	43	1	9	2	0	56	0	0	0	0	0	0	0	0
0845 - 0900	0	0	36	1	1	0	0	38	1	0	57	1	8	3	2	72	0	0	0	0	0	0	0	0
Total Vehicles	0	0	120	3	7	0	0	130	2	0	185	4	29	7	2	229	0	0	0	0	0	0	0	0
PCUS	0	0	120	7.5	7	0	0	**135**	0.4	0	185	10	29	13.3	5.8	**244**	0	0	0	0	0	0	0	**0**

1630 - 1645	0	0	34	1	4	0	0	39	0	0	60	1	7	1	0	69	0	0	0	0	0	0	0	0
1645 - 1700	0	0	39	0	0	0	0	39	0	1	63	1	5	0	0	70	0	0	0	0	0	0	0	0
1700 - 1715	0	0	30	0	4	0	0	34	1	0	57	1	5	0	0	64	0	0	0	0	0	0	0	0
1715 - 1730	0	0	42	1	3	0	0	46	0	2	64	1	4	0	0	71	0	0	0	0	0	0	0	0
Total Vehicles	0	0	145	2	11	0	0	158	1	3	244	4	21	1	0	274	0	0	0	0	0	0	0	0
PCUS	0	0	145	5	11	0	0	**161**	0.2	2	244	10	21	1.9	0	**279**	0	0	0	0	0	0	0	**0**

HALSNEAD GARDEN VILLAGE
SITE 5 - WINDY ARBOUR ROAD / LICKER LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	2(Lickers lane (East)) TO 3(Windy Arbour Road (South))								2(Lickers lane (East)) TO 1(Windy Arbour Road (North))								2(Lickers lane (East)) TO 2(Lickers lane (East))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
07:30	0	0	31	0	7	1	1	40	0	0	16	0	2	0	0	18	0	0	0	0	0	0	0	0
07:45	0	0	27	0	7	0	1	35	0	0	23	0	3	1	0	27	0	0	0	0	0	0	0	0
H/TOT	0	0	58	0	14	1	2	75	0	0	39	0	5	1	0	45	0	0	0	0	0	0	0	0
08:00	0	0	29	0	7	0	0	36	0	0	39	1	0	0	0	40	0	0	0	0	0	0	0	0
08:15	0	0	39	0	6	1	0	46	0	0	32	1	4	0	0	37	0	0	0	0	0	0	0	0
08:30	0	0	43	0	9	1	0	53	0	0	25	0	3	1	0	29	0	0	0	0	0	0	0	0
08:45	0	0	61	0	6	0	0	67	0	0	39	0	4	0	0	43	0	0	0	0	0	0	0	0
H/TOT	0	0	172	0	28	2	0	202	0	0	135	2	11	1	0	149	0	0	0	0	0	0	0	0
09:00	0	0	34	0	5	1	0	40	0	0	28	1	2	0	0	31	0	0	0	0	0	0	0	0
09:15	0	0	18	0	3	1	0	22	0	0	21	1	2	0	0	24	0	0	0	0	0	0	0	0
H/TOT	0	0	52	0	8	2	0	62	0	0	49	2	4	0	0	55	0	0	0	0	0	0	0	0
P/TOT	0	0	282	0	50	5	2	339	0	0	223	4	20	2	0	249	0	0	0	0	0	0	0	0

	2(Lickers lane (East)) TO 3(Windy Arbour Road (South))								2(Lickers lane (East)) TO 1(Windy Arbour Road (North))								2(Lickers lane (East)) TO 2(Lickers lane (East))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
12:00	0	0	16	0	1	0	0	17	0	0	19	1	2	0	0	22	0	0	0	0	0	0	0	0
12:15	0	0	11	0	2	0	0	13	0	0	13	0	3	0	0	16	0	0	0	0	0	0	0	0
12:30	0	0	22	0	2	0	0	24	0	0	30	1	2	0	0	33	0	0	0	0	0	0	0	0
12:45	0	0	17	1	1	0	0	19	0	1	23	0	1	0	0	25	0	0	0	0	0	0	0	0
H/TOT	0	0	66	1	6	0	0	73	0	1	85	2	8	0	0	96	0	0	0	0	0	0	0	0
13:00	0	0	11	0	5	0	0	16	0	0	21	0	0	0	0	21	0	0	0	0	0	0	0	0
13:15	0	0	20	0	2	0	0	22	0	0	16	1	1	1	0	19	0	0	0	0	0	0	0	0
13:30	0	1	19	0	3	0	0	23	0	2	19	1	2	0	0	24	0	0	0	0	0	0	0	0
13:45	0	0	17	1	1	1	0	20	0	0	18	0	4	0	0	22	0	0	0	0	0	0	0	0
H/TOT	0	1	67	1	11	1	0	81	0	2	74	2	7	1	0	86	0	0	0	0	0	0	0	0
P/TOT	0	1	133	2	17	1	0	154	0	3	159	4	15	1	0	182	0	0	0	0	0	0	0	0

	2(Lickers lane (East)) TO 3(Windy Arbour Road (South))								2(Lickers lane (East)) TO 1(Windy Arbour Road (North))								2(Lickers lane (East)) TO 2(Lickers lane (East))							
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
15:00	0	0	15	0	1	1	0	17	0	0	25	0	3	3	0	31	0	0	0	0	0	0	0	0
15:15	0	0	42	0	3	0	0	45	0	0	36	1	2	2	1	42	0	0	0	0	0	0	0	0
15:30	1	0	30	0	5	0	0	36	0	1	22	0	4	0	0	27	0	0	0	0	0	0	0	0
15:45	0	0	20	0	0	0	0	20	0	0	22	1	3	1	0	27	0	0	0	0	0	0	0	0
H/TOT	1	0	107	0	9	1	0	118	0	1	105	2	12	6	1	127	0	0	0	0	0	0	0	0
16:00	1	0	34	0	2	1	2	40	0	1	35	0	4	0	0	40	0	0	0	0	0	0	0	0
16:15	0	0	14	0	7	0	0	21	0	0	24	1	5	0	0	30	0	0	0	0	0	0	0	0
16:30	1	0	36	0	3	0	0	40	0	0	23	0	3	1	0	27	0	0	0	0	0	0	0	0
16:45	0	1	23	0	2	0	0	26	0	0	27	1	6	0	0	34	0	0	0	0	0	0	0	0
H/TOT	2	1	107	0	14	1	2	127	0	1	109	2	18	1	0	131	0	0	0	0	0	0	0	0
17:00	0	0	29	0	4	0	0	33	0	0	28	1	2	0	0	31	0	0	0	0	0	0	0	0
17:15	0	0	29	0	4	0	0	33	0	0	33	0	5	0	0	38	0	0	0	0	0	0	0	0
17:30	0	0	34	0	3	0	0	37	0	0	23	0	4	0	0	27	0	0	0	0	0	0	0	0
17:45	0	0	22	0	2	0	0	24	0	0	39	1	2	0	0	42	0	0	0	0	0	0	0	0
H/TOT	0	0	114	0	13	0	0	127	0	0	123	2	13	0	0	138	0	0	0	0	0	0	0	0
P/TOT	3	1	328	0	36	2	2	372	0	2	337	6	43	7	1	396	0	0	0	0	0	0	0	0

0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0	0	29	0	7	0	0	36	0	0	39	1	0	0	0	40	0	0	0	0	0	0	0	0
0	0	39	0	6	1	0	46	0	0	32	1	4	0	0	37	0	0	0	0	0	0	0	0
0	0	43	0	9	1	0	53	0	0	25	0	3	1	0	29	0	0	0	0	0	0	0	0
0	0	61	0	6	0	0	67	0	0	39	0	4	0	0	43	0	0	0	0	0	0	0	0
0	0	172	0	28	2	0	202	0	0	135	2	11	1	0	149	0	0	0	0	0	0	0	0
0	0	172	0	28	3.8	0	**204**	0	0	135	5	11	1.9	0	**153**	0	0	0	0	0	0	0	**0**

1	0	36	0	3	0	0	40	0	0	23	0	3	1	0	27	0	0	0	0	0	0	0	0
0	1	23	0	2	0	0	26	0	0	27	1	6	0	0	34	0	0	0	0	0	0	0	0
0	0	29	0	4	0	0	33	0	0	28	1	2	0	0	31	0	0	0	0	0	0	0	0
0	0	29	0	4	0	0	33	0	0	33	0	5	0	0	38	0	0	0	0	0	0	0	0
1	1	117	0	13	0	0	132	0	0	111	2	16	1	0	130	0	0	0	0	0	0	0	0
0.2	1	117	0	13	0	0	**131**	0	0	111	5	16	1.9	0	**134**	0	0	0	0	0	0	0	**0**

HALSNEAD GARDEN VILLAGE
SITE 5 - WINDY ARBOUR ROAD / LICKER LANE
CLASSIFIED TURNING COUNT
TUESDAY 27TH MARCH 2018

	3(Windy Arbour Road (South)) TO 1(Windy Arbour Road (North))								3(Windy Arbour Road (South)) TO 2(Lickers lane (East))								3(Windy Arbour Road (South)) TO 3(Windy Arbour Road (South))								
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
07:30	0	0	66	0	1	1	0	68	0	0	19	0	4	1	0	24	0	0	0	0	0	0	0	0
07:45	0	0	76	1	7	5	0	89	0	0	29	0	6	0	0	35	0	0	0	0	0	0	0	0
H/TOT	0	0	142	1	8	6	0	157	0	0	48	0	10	1	0	59	0	0	0	0	0	0	0	0
08:00	0	0	62	2	10	0	0	74	0	1	44	0	9	0	0	54	0	0	0	0	0	0	0	0
08:15	0	0	58	1	4	3	1	67	0	0	36	0	8	0	0	44	0	0	0	0	0	0	0	0
08:30	0	0	74	0	2	1	1	78	0	0	47	0	5	2	0	54	0	0	0	0	0	0	0	0
08:45	0	0	52	1	9	3	1	66	0	0	25	0	3	2	0	30	0	0	0	0	0	0	0	0
H/TOT	0	0	246	4	25	7	3	285	0	1	152	0	25	4	0	182	0	0	0	0	0	0	0	0
09:00	0	1	53	2	7	1	0	64	0	0	21	0	1	0	0	22	0	0	0	0	0	0	0	0
09:15	0	1	50	1	5	1	0	58	0	0	21	0	2	0	0	23	0	0	0	0	0	0	0	0
H/TOT	0	2	103	3	12	2	0	122	0	0	42	0	3	0	0	45	0	0	0	0	0	0	0	0
P/TOT	0	2	491	8	45	15	3	564	0	1	242	0	38	5	0	286	0	0	0	0	0	0	0	0

	3(Windy Arbour Road (South)) TO 1(Windy Arbour Road (North))								3(Windy Arbour Road (South)) TO 2(Lickers lane (East))								3(Windy Arbour Road (South)) TO 3(Windy Arbour Road (South))								
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
12:00	0	0	65	1	7	2	1	76	0	0	18	0	3	0	1	22	0	0	0	0	0	0	0	0
12:15	0	0	64	0	3	1	1	69	0	0	23	0	4	1	0	28	0	0	0	0	0	0	0	0
12:30	0	0	71	2	10	1	0	84	0	0	25	0	3	0	0	28	0	0	0	0	0	0	0	0
12:45	0	0	53	1	11	2	0	67	0	0	15	1	0	0	0	16	0	0	0	0	0	0	0	0
H/TOT	0	0	253	4	31	6	2	296	0	0	81	1	10	1	1	94	0	0	0	0	0	0	0	0
13:00	1	0	58	1	5	0	0	65	0	0	12	0	2	0	0	14	0	0	0	0	0	0	0	0
13:15	0	0	57	1	3	3	0	64	0	0	20	0	3	0	0	23	0	0	0	0	0	0	0	0
13:30	0	0	66	1	10	2	0	79	0	0	24	0	2	1	0	27	0	0	0	0	0	0	0	0
13:45	0	0	55	1	4	0	0	60	0	1	23	1	4	0	0	29	0	0	0	0	0	0	0	0
H/TOT	1	0	236	4	22	5	0	268	0	1	79	1	11	1	0	93	0	0	0	0	0	0	0	0
P/TOT	1	0	489	8	53	11	2	564	0	1	160	2	21	2	1	187	0	0	0	0	0	0	0	0

	3(Windy Arbour Road (South)) TO 1(Windy Arbour Road (North))								3(Windy Arbour Road (South)) TO 2(Lickers lane (East))								3(Windy Arbour Road (South)) TO 3(Windy Arbour Road (South))								
TIME	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**	**PC**	**MC**	**CAR**	**PSV**	**LGV**	**OGV1**	**OGV2**	**TOT**
15:00	1	0	53	2	9	4	0	69	0	0	40	0	3	0	0	43	0	0	0	0	0	0	0	0
15:15	1	0	61	0	6	1	0	69	0	2	30	0	7	0	1	40	0	0	0	0	0	0	0	0
15:30	0	0	55	2	13	0	0	70	0	0	31	0	3	2	0	36	0	0	0	0	0	0	0	0
15:45	0	0	69	1	5	1	0	76	0	0	18	0	3	1	0	22	0	0	0	0	0	0	0	0
H/TOT	2	0	238	5	33	6	0	284	0	2	119	0	16	3	1	141	0	0	0	0	0	0	0	0
16:00	0	0	57	1	10	0	0	68	0	0	11	0	3	0	0	14	0	0	0	0	0	0	0	0
16:15	0	0	64	1	11	0	0	76	0	0	26	0	2	1	0	29	0	0	0	0	0	0	0	0
16:30	0	0	60	1	4	1	1	67	0	0	32	0	2	1	0	35	0	0	0	0	0	0	0	0
16:45	0	0	75	0	5	0	1	81	0	0	32	0	10	0	0	42	0	0	0	0	0	0	0	0
H/TOT	0	0	256	3	30	1	2	292	0	0	101	0	17	2	0	120	0	0	0	0	0	0	0	0
17:00	0	0	72	2	9	0	0	83	0	0	39	0	8	0	0	47	0	0	0	0	0	0	0	0
17:15	0	0	80	1	11	1	0	93	0	0	38	0	3	1	0	42	0	0	0	0	0	0	0	0
17:30	0	0	61	1	4	0	0	66	0	0	37	0	7	0	0	44	0	0	0	0	0	0	0	0
17:45	0	0	67	1	5	0	0	73	0	0	31	0	4	0	0	35	0	0	0	0	0	0	0	0
H/TOT	0	0	280	5	29	1	0	315	0	0	145	0	22	1	0	168	0	0	0	0	0	0	0	0
P/TOT	2	0	774	13	92	8	2	891	0	2	365	0	55	6	1	429	0	0	0	0	0	0	0	0

0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9		0.2	0.7	1	2.5	1	1.9	2.9	
0	0	62	2	10	0	0	74	0	1	44	0	9	0	0	54	0	0	0	0	0	0	0	0
0	0	58	1	4	3	1	67	0	0	36	0	8	0	0	44	0	0	0	0	0	0	0	0
0	0	74	0	2	1	1	78	0	0	47	0	5	2	0	54	0	0	0	0	0	0	0	0
0	0	52	1	9	3	1	66	0	0	25	0	3	2	0	30	0	0	0	0	0	0	0	0
0	0	246	4	25	7	3	285	0	1	152	0	25	4	0	182	0	0	0	0	0	0	0	0
0	0	246	10	25	13.3	8.7	**303**	0	0.7	152	0	25	7.6	0	**185**	0	0	0	0	0	0	0	**0**

0	0	60	1	4	1	1	67	0	0	32	0	2	1	0	35	0	0	0	0	0	0	0	0
0	0	75	0	5	0	1	81	0	0	32	0	10	0	0	42	0	0	0	0	0	0	0	0
0	0	72	2	9	0	0	83	0	0	39	0	8	0	0	47	0	0	0	0	0	0	0	0
0	0	80	1	11	1	0	93	0	0	38	0	3	1	0	42	0	0	0	0	0	0	0	0
0	0	287	4	29	2	2	324	0	0	141	0	23	2	0	166	0	0	0	0	0	0	0	0
0	0	287	10	29	3.8	5.8	**336**	0	0	141	0	23	3.8	0	**168**	0	0	0	0	0	0	0	**0**

234			
248			
289			
266			
306			
316	0730 - 0830	1037	1769
	0745 - 0845	1109	1984
261	0800 - 0900	1177	2114
201	0815 - 0915	1149	2042
	0830 - 0930	1084	1844
	MAX	1177	

212			
229			
250			
210			
223			
206			
258			
208			

262			
282			
276			
254			
	1500 - 1600	1074	1783
255	1515 - 1615	1067	1754
271	1530 - 1630	1056	1736
277	1545 - 1645	1057	1773
292	1600 - 1700	1095	1877
	1615 - 1715	1132	1963
292	1630 - 1730	1184	2042
323	1645 - 1745	1199	2024
292	1700 - 1800	1178	1987
271	MAX	1199	

APPENDIX 2

TRICS Output - Residential

Calculation Reference: AUDIT-851401-200622-0626

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	3 days
	EX	ESSEX	1 days
	HC	HAMPSHIRE	1 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	4 days
	SC	SURREY	2 days
	WS	WEST SUSSEX	4 days
03	SOUTH WEST		
	DV	DEVON	2 days
04	EAST ANGLIA		
	NF	NORFOLK	4 days
	SF	SUFFOLK	1 days
05	EAST MIDLANDS		
	DS	DERBYSHIRE	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	1 days
07	YORKSHIRE & NORTH LINCOLNSHIRE		
	NY	NORTH YORKSHIRE	2 days
	SY	SOUTH YORKSHIRE	1 days
09	NORTH		
	DH	DURHAM	2 days
11	SCOTLAND		
	FA	FALKIRK	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 50 to 371 (units:)
Range Selected by User: 50 to 400 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/12 to 19/11/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	8 days
Tuesday	4 days
Wednesday	8 days
Thursday	7 days
Friday	5 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	31 days
Directional ATC Count	1 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	11
Edge of Town	21

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	30
Out of Town	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	32 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	2 days
5,001 to 10,000	10 days
10,001 to 15,000	10 days
15,001 to 20,000	5 days
20,001 to 25,000	3 days
25,001 to 50,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	4 days
25,001 to 50,000	4 days
50,001 to 75,000	2 days
75,001 to 100,000	8 days
100,001 to 125,000	2 days
125,001 to 250,000	10 days
250,001 to 500,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	6 days
1.1 to 1.5	24 days
1.6 to 2.0	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	11 days
No	21 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	31 days
2 Poor	1 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 DH-03-A-01 SEMI DETACHED DURHAM
GREENFIELDS ROAD
BISHOP AUCKLAND

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 50
Survey date: TUESDAY *28/03/17* *Survey Type: MANUAL*

2 DH-03-A-03 SEMI-DETACHED & TERRACED DURHAM
PILGRIMS WAY
DURHAM

Edge of Town
Residential Zone
Total No of Dwellings: 57
Survey date: FRIDAY *19/10/18* *Survey Type: MANUAL*

3 DS-03-A-02 MIXED HOUSES DERBYSHIRE
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

4 DV-03-A-02 HOUSES & BUNGALOWS DEVON
MILLHEAD ROAD
HONITON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 116
Survey date: FRIDAY *25/09/15* *Survey Type: MANUAL*

5 DV-03-A-03 TERRACED & SEMI DETACHED DEVON
LOWER BRAND LANE
HONITON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 70
Survey date: MONDAY *28/09/15* *Survey Type: MANUAL*

6 ES-03-A-03 MIXED HOUSES & FLATS EAST SUSSEX
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

7 ES-03-A-04 MIXED HOUSES & FLATS EAST SUSSEX
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

8 ES-03-A-05 MIXED HOUSES & FLATS EAST SUSSEX
RATTLE ROAD
NEAR EASTBOURNE
STONE CROSS
Edge of Town
Residential Zone
Total No of Dwellings: 99
Survey date: WEDNESDAY *05/06/19* *Survey Type: MANUAL*

9 EX-03-A-02 DETACHED & SEMI-DETACHED ESSEX
MANOR ROAD
CHIGWELL
GRANGE HILL
Edge of Town
Residential Zone
Total No of Dwellings: 97
Survey date: MONDAY *27/11/17* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

10 FA-03-A-02 MIXED HOUSES FALKIRK
ROSEBANK AVENUE & SPRINGFIELD DRIVE
FALKIRK

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 161
Survey date: WEDNESDAY *29/05/13* *Survey Type: MANUAL*

11 HC-03-A-23 HOUSES & FLATS HAMPSHIRE
CANADA WAY
LIPHOOK

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 62
Survey date: TUESDAY *19/11/19* *Survey Type: MANUAL*

12 HF-03-A-03 MIXED HOUSES HERTFORDSHIRE
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

13 KC-03-A-03 MIXED HOUSES & FLATS KENT
HYTHE ROAD
ASHFORD
WILLESBOROUGH
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 51
Survey date: THURSDAY *14/07/16* *Survey Type: MANUAL*

14 KC-03-A-04 SEMI-DETACHED & TERRACED KENT
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total No of Dwellings: 110
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

15 KC-03-A-06 MIXED HOUSES & FLATS KENT
MARGATE ROAD
HERNE BAY

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 363
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

16 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

17 NF-03-A-02 HOUSES & FLATS NORFOLK
DEREHAM ROAD
NORWICH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 98
Survey date: MONDAY *22/10/12* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

18 NF-03-A-04 MIXED HOUSES NORFOLK
NORTH WALSHAM ROAD
NORTH WALSHAM

Edge of Town
Residential Zone
Total No of Dwellings: 70
Survey date: WEDNESDAY *18/09/19* *Survey Type: MANUAL*

19 NF-03-A-06 MIXED HOUSES NORFOLK
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 275
Survey date: MONDAY *23/09/19* *Survey Type: MANUAL*

20 NF-03-A-07 MIXED HOUSES & FLATS NORFOLK
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total No of Dwellings: 297
Survey date: FRIDAY *20/09/19* *Survey Type: DIRECTIONAL ATC COUNT*

21 NY-03-A-09 MIXED HOUSING NORTH YORKSHIRE
GRAMMAR SCHOOL LANE
NORTHALLERTON

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 52
Survey date: MONDAY *16/09/13* *Survey Type: MANUAL*

22 NY-03-A-10 HOUSES AND FLATS NORTH YORKSHIRE
BOROUGHBRIDGE ROAD
RIPON

Edge of Town
No Sub Category
Total No of Dwellings: 71
Survey date: TUESDAY *17/09/13* *Survey Type: MANUAL*

23 SC-03-A-04 DETACHED & TERRACED SURREY
HIGH ROAD
BYFLEET

Edge of Town
Residential Zone
Total No of Dwellings: 71
Survey date: THURSDAY *23/01/14* *Survey Type: MANUAL*

24 SC-03-A-05 MIXED HOUSES SURREY
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 207
Survey date: MONDAY *01/04/19* *Survey Type: MANUAL*

25 SF-03-A-07 MIXED HOUSES SUFFOLK
FOXHALL ROAD
IPSWICH

Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 73
Survey date: THURSDAY *09/05/19* *Survey Type: MANUAL*

26 SH-03-A-05 SEMI-DETACHED/TERRACED SHROPSHIRE
SANDCROFT
TELFORD
SUTTON HILL
Edge of Town
Residential Zone
Total No of Dwellings: 54
Survey date: THURSDAY *24/10/13* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

27 ST-03-A-07 DETACHED & SEMI-DETACHED STAFFORDSHIRE
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total No of Dwellings: 248
Survey date: WEDNESDAY 22/11/17 Survey Type: MANUAL

28 SY-03-A-01 SEMI DETACHED HOUSES SOUTH YORKSHIRE
A19 BENTLEY ROAD
DONCASTER
BENTLEY RISE
Suburban Area (PPS6 Out of Centre)
Residential Zone
Total No of Dwellings: 54
Survey date: WEDNESDAY 18/09/13 Survey Type: MANUAL

29 WS-03-A-04 MIXED HOUSES WEST SUSSEX
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 151
Survey date: THURSDAY 11/12/14 Survey Type: MANUAL

30 WS-03-A-08 MIXED HOUSES WEST SUSSEX
ROUNDSTONE LANE
ANGMERING

Edge of Town
Residential Zone
Total No of Dwellings: 180
Survey date: THURSDAY 19/04/18 Survey Type: MANUAL

31 WS-03-A-09 MIXED HOUSES & FLATS WEST SUSSEX
LITTLEHAMPTON ROAD
WORTHING
WEST DURRINGTON
Edge of Town
Residential Zone
Total No of Dwellings: 197
Survey date: THURSDAY 05/07/18 Survey Type: MANUAL

32 WS-03-A-10 MIXED HOUSES WEST SUSSEX
TODDINGTON LANE
LITTLEHAMPTON
WICK
Edge of Town
Residential Zone
Total No of Dwellings: 79
Survey date: WEDNESDAY 07/11/18 Survey Type: MANUAL

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	32	143	0.085	32	143	0.322	32	143	0.407
08:00 - 09:00	32	143	0.126	32	143	0.376	32	143	0.502
09:00 - 10:00	32	143	0.144	32	143	0.172	32	143	0.316
10:00 - 11:00	32	143	0.123	32	143	0.158	32	143	0.281
11:00 - 12:00	32	143	0.129	32	143	0.144	32	143	0.273
12:00 - 13:00	32	143	0.161	32	143	0.145	32	143	0.306
13:00 - 14:00	32	143	0.163	32	143	0.157	32	143	0.320
14:00 - 15:00	32	143	0.159	32	143	0.186	32	143	0.345
15:00 - 16:00	32	143	0.261	32	143	0.165	32	143	0.426
16:00 - 17:00	32	143	0.285	32	143	0.165	32	143	0.450
17:00 - 18:00	32	143	0.352	32	143	0.155	32	143	0.507
18:00 - 19:00	32	143	0.293	32	143	0.170	32	143	0.463
19:00 - 20:00	1	97	0.062	1	97	0.052	1	97	0.114
20:00 - 21:00	1	97	0.031	1	97	0.021	1	97	0.052
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.374			2.388			4.762

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

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Parameter summary

Trip rate parameter range selected:	50 - 371 (units:)
Survey date date range:	01/01/12 - 19/11/19
Number of weekdays (Monday-Friday):	36
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	3
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

APPENDIX 3

LINSIG Output – Site Access/Lickers Lane

LinSig V1 style report

User and Project Details

Project:	
Title:	
Location:	
Additional detail:	
File name:	Lickers Lane_Site Access.lsg3x
Author:	
Company:	
Address:	

Phase Input Data

Phase Name	Phase Type	Stage Stream	Assoc. Phase	Street Min	Cont Min
A	Traffic	1		7	7
B	Traffic	1		7	7
C	Traffic	1		7	7
D	Pedestrian	1		6	6

Phase Intergreens Matrix

Terminating Phase \ Starting Phase	A	B	C	D
A		-	8	10
B	-		6	9
C	7	7		10
D	11	11	11	

Phase Delays

Stage Stream: 1

Term. Stage	Start Stage	Phase	Type	Value	Cont value
There are no Phase Delays defined					

Prohibited Stage Change

Stage Stream: 1

From Stage \ To Stage	1	2	3
1		8	10
2	7		10
3	11	11	

Phases in Stage

Stream	Stage No.	Phases in Stage
1	1	A B
1	2	C
1	3	D

Give-Way Lane Input Data

Junction: Unnamed Junction

Lane	Movement	Max Flow when Giving Way (PCU/Hr)	Min Flow when Giving Way (PCU/Hr)	Opposing Lane	Opp. Lane Coeff.	Opp. Mvmnts.	Right Turn Storage (PCU)	Non-Blocking Storage (PCU)	RTF	Right Turn Move up (s)	Max Turns in Intergreen (PCU)
1/1 (Lickers Lane (E))	6/1 (Right)	1439	0	2/1	1.09	All	2.00	1.00	0.50	2	2.00

Lane Input Data

Junction: Unnamed Junction

Lane	Lane Type	Phases	Start Disp.	End Disp.	Physical Length (PCU)	Sat Flow Type	Def User Saturation Flow (PCU/Hr)	Lane Width (m)	Gradient	Nearside Lane	Turns	Turning Radius (m)
1/1 (Lickers Lane (E))	O	A	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 5 Ahead	Inf
											Arm 6 Right	11.00
2/1 (Lickers Lane (W))	U	B	2	3	60.0	Geom	-	3.50	0.00	Y	Arm 4 Ahead	Inf
											Arm 6 Left	10.00
3/1 (Site Access)	U	C	2	3	60.0	Geom	-	3.65	0.00	Y	Arm 4 Left	9.00
											Arm 5 Right	10.00
4/1	U		2	3	60.0	Inf	-	-	-	-	-	-
5/1	U		2	3	60.0	Inf	-	-	-	-	-	-
6/1	U		2	3	60.0	Inf	-	-	-	-	-	-

Lane Saturation Flows

Scenario 1: '2030 With Development Flows - AM Peak' (FG1: '2030 With Development Flows - AM Peak', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Lickers Lane (E))	3.65	0.00	Y	Arm 5 Ahead	Inf	91.7 %	1958	1958
				Arm 6 Right	11.00	8.3 %		
2/1 (Lickers Lane (W))	3.50	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1965	1965
				Arm 6 Left	10.00	0.0 %		
3/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	9.00	100.0 %	1697	1697
				Arm 5 Right	10.00	0.0 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Scenario 2: '2030 With Development Flows - PM Peak' (FG2: '2030 With Development Flows - PM Peak', Plan 1: 'Network Control Plan 1')

Junction: Unnamed Junction

Lane	Lane Width (m)	Gradient	Nearside Lane	Allowed Turns	Turning Radius (m)	Turning Prop.	Sat Flow (PCU/Hr)	Flared Sat Flow (PCU/Hr)
1/1 (Lickers Lane (E))	3.65	0.00	Y	Arm 5 Ahead	Inf	81.8 %	1932	1932
				Arm 6 Right	11.00	18.2 %		
2/1 (Lickers Lane (W))	3.50	0.00	Y	Arm 4 Ahead	Inf	100.0 %	1965	1965
				Arm 6 Left	10.00	0.0 %		
3/1 (Site Access)	3.65	0.00	Y	Arm 4 Left	9.00	100.0 %	1697	1697
				Arm 5 Right	10.00	0.0 %		
4/1	Infinite Saturation Flow						Inf	Inf
5/1	Infinite Saturation Flow						Inf	Inf
6/1	Infinite Saturation Flow						Inf	Inf

Traffic Flow Groups

Flow Group	Start Time	End Time	Duration	Formula
1: '2030 With Development Flows - AM Peak'	08:00	09:00	01:00	
2: '2030 With Development Flows - PM Peak'	16:30	17:30	01:00	

Traffic Flows, Desired

FG1: '2030 With Development Flows - AM Peak'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	388	35	423
	B	475	0	0	475
	C	103	0	0	103
	Tot.	578	388	35	1001

FG2: '2030 With Development Flows - PM Peak'
Desired Flow :

		Destination			
		A	B	C	Tot.
Origin	A	0	436	97	533
	B	338	0	0	338
	C	43	0	0	43
	Tot.	381	436	97	914

Stage Timings

Scenario 1: '2030 With Development Flows - AM Peak' (FG1: '2030 With Development Flows - AM Peak', Plan 1: 'Network Control Plan 1')

Stage Stream: 1

Stage	1	2	3
Duration	28	7	6
Change Point	0	39	54

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**58.3%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**58.3%**
1/1	Lickers Lane (E) Ahead Right	O	1	N/A	A		1	28	-	423	1958	792	53.4%
2/1	Lickers Lane (W) Ahead Left	U	1	N/A	B		1	28	-	475	1965	814	58.3%
3/1	Site Access Left Right	U	1	N/A	C		1	7	-	103	1697	194	53.1%
4/1		U	N/A	N/A	-		-	-	-	578	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	388	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	35	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**34**	**0**	**0**	**4.7**	**1.8**	**0.1**	**6.6**	-	-	-	-
Unnamed Junction	-	-	**34**	**0**	**0**	**4.7**	**1.8**	**0.1**	**6.6**	-	-	-	-
1/1	423	423	34	0	0	1.8	0.6	0.1	2.4	20.7	6.1	0.6	6.7
2/1	475	475	-	-	-	2.1	0.7	-	2.8	21.1	7.1	0.7	7.8
3/1	103	103	-	-	-	0.8	0.6	-	1.4	48.8	1.9	0.6	2.4
4/1	578	578	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	388	388	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	35	35	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 54.2 Total Delay for Signalled Lanes (pcuHr): 6.62 Cycle Time (s): 70
PRC Over All Lanes (%): 54.2 Total Delay Over All Lanes(pcuHr): 6.62

Stage Timings

Scenario 2: '2030 With Development Flows - PM Peak' (FG2: '2030 With Development Flows - PM Peak', Plan 1: 'Network Control Plan 1')

Stage Stream: 1

Stage	1	2	3
Duration	28	7	6
Change Point	0	39	54

Network Results

Item	Lane Description	Lane Type	Controller Stream	Position In Filtered Route	Full Phase	Arrow Phase	Num Greens	Total Green (s)	Arrow Green (s)	Demand Flow (pcu)	Sat Flow (pcu/Hr)	Capacity (pcu)	Deg Sat (%)
Network	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.8%**
Unnamed Junction	-	-	**N/A**	-	-		-	-	-	-	-	-	**69.8%**
1/1	Lickers Lane (E) Ahead Right	O	1	N/A	A		1	28	-	533	1932	763	69.8%
2/1	Lickers Lane (W) Ahead Left	U	1	N/A	B		1	28	-	338	1965	814	41.5%
3/1	Site Access Left Right	U	1	N/A	C		1	7	-	43	1697	194	22.2%
4/1		U	N/A	N/A	-		-	-	-	381	Inf	Inf	0.0%
5/1		U	N/A	N/A	-		-	-	-	436	Inf	Inf	0.0%
6/1		U	N/A	N/A	-		-	-	-	97	Inf	Inf	0.0%

Item	Arriving (pcu)	Leaving (pcu)	Turners In Gaps (pcu)	Turners When Unopposed (pcu)	Turners In Intergreen (pcu)	Uniform Delay (pcuHr)	Rand + Oversat Delay (pcuHr)	Storage Area Uniform Delay (pcuHr)	Total Delay (pcuHr)	Av. Delay Per PCU (s/pcu)	Max. Back of Uniform Queue (pcu)	Rand + Oversat Queue (pcu)	Mean Max Queue (pcu)
Network	-	-	**96**	**0**	**1**	**4.2**	**1.6**	**0.1**	**5.9**	-	-	-	-
Unnamed Junction	-	-	**96**	**0**	**1**	**4.2**	**1.6**	**0.1**	**5.9**	-	-	-	-
1/1	533	533	96	0	1	2.5	1.1	0.1	3.7	25.3	8.6	1.1	9.7
2/1	338	338	-	-	-	1.4	0.4	-	1.7	18.3	4.6	0.4	5.0
3/1	43	43	-	-	-	0.3	0.1	-	0.5	40.1	0.8	0.1	0.9
4/1	381	381	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
5/1	436	436	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0
6/1	97	97	-	-	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0

C1 Stream: 1 PRC for Signalled Lanes (%): 28.9 Total Delay for Signalled Lanes (pcuHr): 5.93 Cycle Time (s): 70
PRC Over All Lanes (%): 28.9 Total Delay Over All Lanes(pcuHr): 5.93

APPENDIX 4

Travel Plan Framework



Proposed Residential Development

Halsnead Garden Village | Lickers Lane | Knowsley

VISTRY PARTNERSHIPS

Residential Travel Plan Framework

September 2022

CROFT

Eddisons

TRANSPORT PLANNING & DESIGN

Incorporating Croft Transport Planning & Design

REPORT

Document:	Residential Travel Plan Framework
Project:	Proposed Residential Development, Halsnead Garden Village, Lickers Lane, Knowsley
Client:	Vistry Partnerships
Job Number:	3463
File Origin:	Z:\projects\3463 Licker's Lane, Halsnead (Vistry)\Docs\Reports\3463TP.01.docx

Document Checking:

Primary Author	MTC	**Initialled:**
Contributor	SM	**Initialled:**
Review By	PJW	**Initialled:**

Issue	Date	Status	Checked for Issue
1	11-07-22	Final	
2			
3			
4			

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PLANS

(See Transport Assessment)

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1 INTRODUCTION

1.1 Introduction

1.1.1 Croft have been instructed by Vistry Partnerships to advise on the traffic and transport issues relating to a planning application for approximately 120 residential dwellings on a parcel of land which forms part of the Halsnead Garden Village site in Knowsley.

1.1.2 This Travel Plan Framework will set out the principal strategies that will be put in place once the development is open and residents are occupying the dwellings, to encourage sustainable travel to the development.

1.1.3 The Department for Transport has issued two separate guides on the preparation of travel plans which are of relevance to this proposed development, these documents are as follows;

- Making Residential Travel Plans Work - Published in September 2005.
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process - Published in April 2009.

1.2 Structure of the Travel Plan

1.2.1 Following this introduction, Section 2 details Travel Plan Policy and guidance and presents the 'Travel Plan Pyramid'. Section 3 sets out a series of management measures that will be implemented as part of the Travel Plan.

1.2.2 Section 4 of the Travel Plan considers the accessibility of the site by non-car modes, including walking, cycling and public transport. Section 5 discusses targets for reducing trips by the private car while Section 6 details the monitoring of the Travel Plan.

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1.2.3 Section 7 draws together the findings and conclusions.

1.3 Development Proposals

1.3.1 The applicant is seeking outline planning permission to develop the site for up to 120 residential dwellings, with associated car parking and landscaping.

1.3.2 The proposed internal site layout for the site is provided at **Plan 2**.

1.3.3 As detailed in the Transport Assessment, the site will be accessed through the site (Site A) located immediately to the west, which is proposed to take access from Lickers Lane.

1.3.4 The proposed Lickers Lane site access (being pursued by others, under a separate application) is presented in **Plan 3**.

1.4 The Travel Plan

1.4.1 The aim of the Travel Plan is as follows:

- To encourage residents and visitors to use alternatives to the private car;
- To increase the awareness of the advantages and potential for travel by more environmentally friendly modes, and
- To introduce a package of management measures that will facilitate travel by modes of transport other than the private car.

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2 TRAVEL PLANNING POLICY AND GUIDANCE

2.1 Travel Planning Policy

2.1.1 The need to manage transport in new developments is included within national and local policy. The need to reduce car dependency, increase travel choices and encourage sustainable distribution is supported by the National Planning Policy Framework (NPPF) which states that all developments which generate significant amounts of movement should be required to provide a Travel Plan.

2.1.2 The NPPF further reinforces the importance of travel plans in the planning context and states "*Travel Plans should be considered in parallel to development proposals and readily integrated into the design and occupation of a new site".*

2.2 Travel Planning Guidance

2.2.1 The preparation and adoption of a Travel Plan is an important element of managing the demand for travel to all modern developments.

2.2.2 The document, entitled *'Good Practice Guidelines: Delivering Travel Plans through the Planning Process'* sets out an overview of the process and delivery of Travel Plans and states that *"A Travel Plan is a long-term management strategy for an occupier or site that seeks to deliver sustainable transport objectives through positive action and is articulated in a document that is regularly reviewed*." The DfT document entitled *"Making Residential Travel Plans Work"* states that *Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas" and goes on to say "Travel Planning is one of a range of measures known as smarter choices which have been found to be effective on reducing traffic and improving accessibility in residential areas".*

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2.2.3 The DfT's *'Making Residential Travel Plans Work'* also introduces the concept of a 'Travel Plan Pyramid'. This helps demonstrate how successful plans are built on the firm foundations of a good location and site design. The pyramid is presented in **Figure 2.1** below;

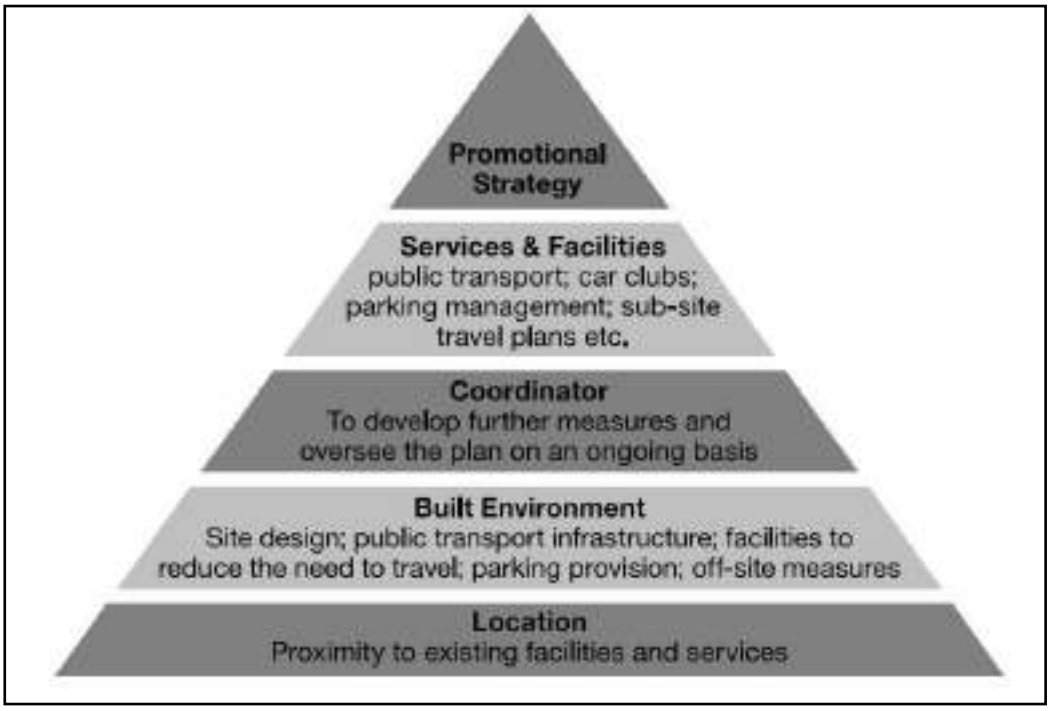


Figure 2.1 – The Travel Plan Pyramid

2.2.4 The hierarchy of 5 tiers of measures and criteria are well illustrated in pyramid form since the concept presented within that "good practice" is that each higher layer builds upon the more important foundations of the criteria and initiatives below it.

2.2.5 The most important layer of the pyramid is considered to be the base, this shows the key to making Travel Plans work is the actual location of the development and its proximity to local facilities and services essential to everyday life.

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2.2.6 The second layer of the pyramid refers to how the layout of the site can assist in reducing the need to travel, which in this instance is again linked to the existing level of provision to facilitate sustainable travel.

2.2.7 As indicated in level 3 of the pyramid, the Travel Plan co-ordinator will be free to develop further measures to maximise the sustainably of the site.

2.2.8 The fourth layer of the pyramid looks at how parking management and public transport can influence travel choice, while the top layer of the pyramid relates to how the Travel Plan will be marketed and how the measures within are to be promoted.

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3 MANAGEMENT MEASURES

3.1 Introduction

3.1.1 The following Travel Plan measures will be implemented:

i) Appointment of Travel Plan Co-ordinator

ii) Resident's Travel Pack

iii) Travel Awareness and Information

iv) Promotion of Lift Share Scheme

v) Encouraging Walking/Cycling

vi) Encourage Home Working and Delivery Services

vii) Encouraging Travel by Public Transport

viii) Marketing and Promotion

3.2 Appointment of Travel Co-ordinator

3.2.1 A Travel Plan Co-ordinator (TPC) is to be appointed prior to the properties being occupied, although until all of the properties are occupied this role is likely to be undertaken by a person employed by the housebuilder, as this will show a commitment to the Travel Plan from an early stage.

3.2.2 The TPC will be responsible for all aspects of the Travel Plan.

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3.2.3 Their primary functions will be as follows;

- Liaison with the local planning and highways authority.
- Provision of a Resident's Travel Pack containing information for residents.
- Promotion of the sustainable transport options available to residents, including public transport, cycle, walking and car sharing schemes.
- Maintenance of all necessary systems, data and paperwork.

3.2.4 The role of the TPC will also be to develop and manage the Travel Plan for the site.

3.2.5 The duties will include monitoring, reviewing targets and forming action plans to remedy areas where the Travel Plan in not performing. Annual progress reports will be prepared and submitted to Knowsley Council.

3.2.6 Details of the nominated TPC will be submitted to Knowsley Council and the appropriate local bus companies at least one month prior to first occupation at the site. Similarly, the TPC will be advised of appropriate contact personnel at the Council.

3.3 Resident's Travel Pack

3.3.1 It is an important principle in residential developments that where appropriate, the implementation of travel plan type measures can establish a pattern of travel behaviour favouring sustainable modes from the inception of the development.

3.3.2 The proposed development is very well placed for encouraging access on foot or by cycle to a wide range of facilities. Similarly, the existence of nearby public transport services will encourage choice of public transport as a primary means of travel for the development.

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3.3.3 However, in order to build on these locational advantages, it is recommended that a Resident's Travel Pack is provided for the occupants of each new dwelling.

3.3.4 The contents of such a travel pack would include information relating to walking and cycling routes in the area and the provision of up to date bus and rail timetable information as well as identification of the location of nearby amenity facilities as part of the information supplied to prospective purchasers.

3.3.1 The contents of the packs will vary depending upon the information available on sources such as the internet or local bus stops.

3.3.2 However, the Travel Packs will include:

- Information about the local area, e.g. location, distance and directions to local shops, schools, Post Offices, Doctor Surgeries, Hospitals, Banks, Libraries, Parks, attractions and other local amenities.
- Copies of the most recently published public transport information.
- Details of web sites and other sources of information which can be accessed in the future such as:
    - Public Transport - Links to timetable information e.g. www.traveline.org.uk and www.nationalrail.co.uk
    - Car Sharing - Links to websites that co-ordinate car sharing such as www.carshare.com, www.liftshare.org.uk and www.nationalcarshare.co.uk to encourage car sharing.
    - Cycling - Link to the UK's National Cyclists Organisation website www.ctc.org.uk and Sustrans www.sustrans.org.uk

- Local Amenities - local supermarkets offering internet shopping would reduce the need for car travel.

3.3.3 The adoption of such travel packs is recognised as being an important element in ensuring that access by non-car modes is promoted from the earliest occupation of a residential development. Within the Resident's Travel Pack, residents will be encouraged to consider ways in which to reduce their need to travel such as home delivery for shopping and working from home.

3.3.4 The first issue of the Resident's Travel Pack will be the responsibility of housebuilder.

3.4 Travel Awareness and Information

3.4.1 Residents will be made aware of the existence of the Travel Plan and its aims. As mentioned previously, Resident's Travel Packs will be issued for new residents moving into the development and prospective buyers will be made aware of the Travel Plan when viewing properties.

3.5 Promotion of Lift Share Scheme

3.5.1 The Travel Plan Co-ordinator will promote the use of car sharing via registering on the Liftshare website. It allows users to register their details, where they are travelling to, if they are offering a lift or need a lift to their destination.

3.5.2 The website can be found at the following location www.liftshare.com.

3.6 Encouraging Walking/Cycling

3.6.1 Residents will be provided with information and advice concerning safe pedestrian and cycle routes to the site through the provision of the Resident's Travel Pack.

3.6.2 Local and National campaigns for walking and cycling will also be promoted by the Travel Plan Co-ordinator

3.6.3 As part of these schemes the provision of walking/cycling signage will be investigated by the Travel Plan Co-ordinator, this signage could provide details on the routes and distances to and from local services and amenities in the area.

3.7 Encourage Home Working and Delivery Services

3.7.1 All new properties will have the ability to have broadband internet connection points, enabling the residents to obtain the internet. Therefore, encouraging home working and shopping, reducing the need to travel especially during peak times.

3.7.2 A number of telecommunication providers serve the area enabling residents to search for potential liftshare opportunities, as well as complete online shopping. Broadband will also enable residents to work from home thus, complying with goals highlighted within national and local policy.

3.8 Encouraging Travel by Public Transport

3.8.1 The TPC will liaise with the local bus operators to promote the use of public transport services and ensure that up to date timetable information is readily available to residents.

3.8.2 Travel by public transport will be promoted and residents will be encouraged to access the public transport information provided on relevant websites, as well as utilising the Journey Planning tools available.

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3.9 Marketing and Promotion

3.9.1 To ensure that potential residents of the site are informed about the Travel Plan and its goals from the earliest stage, the Travel Plan will have a significant presence within the sales suite of the development which will include a display outlining the sustainable travel measures being implemented and details of access by sustainable travel modes.

3.9.2 The sales staff will be given training to promote the Travel Plan as an asset and selling point of the development and key concepts relating to accessibility included in marketing/sales particulars.

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4 ACCESSIBILITY BY NON CAR MODES

4.1 Introduction

4.1.1 In order to accord with the aspirations of the NPPF, any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

4.1.2 New proposals should attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

4.1.3 The accessibility of the proposed site has been considered by the following modes of transport:

- Accessibility on foot;
- Accessibility by cycle;
- Accessibility by bus; and
- Accessibility by rail.

4.2 Accessibility on Foot

4.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life.

4.2.2 This philosophy clearly encourages the opportunity to walk whatever the journey purpose and helps to create more active streets and a more vibrant neighbourhood.

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4.2.3 The internal site layout will facilitate pedestrian linkages through the adjacent site to the existing footways that are provided along Lickers Lane.

4.2.4 These footways provide links to a comprehensive network of routes within the local area, supplemented by a number of controlled crossing points which facilitate access to the nearby day to day amenities within the area. As part of development proposals, numerous pedestrian links are provided to the wider Whiston SUE, as per the wider site Masterplan.

4.2.5 The CIHT document 'Planning for Walking' from 2015 states, in paragraph 2.1, that in 2012 that 79% of all journeys made in the UK of less than a mile (1.6 kilometres) are carried out on foot.

4.2.6 Within the Institution of Highways and Transportation (IHT) document, entitled "Guidelines for Providing for Journeys on Foot", Table 2.2 suggests distances for desirable, acceptable and preferred maximum walks to 'town centres', 'commuting/schools' and 'elsewhere'. The 'preferred maximum' distances are shown below in **Table 4.1**.

Suggested Preferred Maximum Walk		
Town Centre	**Commuting/School**	**Elsewhere**
800m	2,000m	1,200m

Table 4.1 – IHT 'Providing for Journeys on Foot' Walk Distances

4.2.7 Reference to the 2,000 metres walk distance is also made in the now superseded Planning Policy Guidance (PPG) Note 13 which advised that 'walking is the most important mode of travel at the local level and offers the greatest potential to replace short car trips, particularly under 2km'.

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4.2.8 Manual for Streets (MfS) continues the theme of the acceptability of the 2,000-metre distance in paragraph 4.4.1. This states that 'walkable neighbourhoods are typically characterised by having a range of facilities within 10 minutes' (up to about 800m) walking distance of residential areas which residents may access comfortably on foot. However, this is not an upper limit and PPS13 states that walking offers the greatest potential to replace short car trips, particularly those under 2 km'. **Table 4.2** below summarises this guidance in tabular form.

'Comfortable' Walk	'Preferred Maximum' Walk
800m	2,000m

Table 4.2 – Manual for Streets Walk Distances

4.2.9 More specific guidance on the distances that children will walk to school is found in the July 2014 document published by the Department for Education (DfE) entitled 'Home to School Travel and Transport' statutory guidance document. This suggests that the maximum walking distance to schools is 2 miles (3.2 kilometres) for children under 8 and 3 miles (4.8 kilometres) for children over the age of 8. This is summarised below in **Table 4.3**.

Children under 8 Walk Distance	Children over 8 Walk Distance
3,200m	4,800m

Table 4.3 – DfE Walk Distances to Schools

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4.2.10 Further evidence that people will walk further than the suggested 'preferred maximum' distances in the IHT 'Providing for Journeys on Foot' is contained in a WYG Report entitled 'Accessibility – How Far do People Walk and Cycle'. This report refers to National Travel Survey (NTS) data for the UK as a whole, excluding London, and confirms that the 85th percentile walk distance for:

- All journey purposes – 1,930 metres;
- Commuting – 2, 400 metres;
- Shopping – 1,600 metres;
- Education – 3,200 or 4,800 metres; and
- Personal business – 1,600 metres.

4.2.11 Overall, in Table 5.1, the document states that 1,950 metres is the 85th percentile distance for walking as the main mode of travel. **Table 4.4** below summarises the various 85th percentile walk distances suggested as guidelines in the WYG Study.

85th Percentile Walk Distances					Overall Recommended Preferred Max
All Journeys	Commuting	Shopping	Education	Personal	
1,950m	2,100m	1,600m	3,200/4,800m	1,600m	1,950m

Table 4.4 – WYG Report/NTS Data Walk Distances

4.2.12 In summary, it is considered that the distance of 1,950 metres, or around 2 kilometres, represents an acceptable maximum walking distance for the majority of land uses although clearly the DfE guidance for walking to school is up to 3.2 kilometres.

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4.2.13 Section 3.1 of the CIHT guidance 'Planning for Walking' mentioned earlier in this report provides a useful reminder of the health benefits of walking. This states that:

A brisk 20 minute walk each day could be enough to reduce an individual's risk of an early death'.

4.2.14 A 20-minute walk equates to a walking distance of around 1,600 metres.

4.2.15 In light of the above review, a pedestrian catchment of 2 kilometres from the centre of the site, using all usable pedestrian routes, has been provided in **Plan 4** and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

4.2.16 In addition, to the pedestrian catchment plan, a review of the proximity of local facilities such as local shops/retail outlets and leisure facilities has been undertaken and the location of these is also shown in Plan 4.

4.2.17 The 2,000-metre pedestrian catchment illustrates that parts of Whiston and Halsnead Park can be accessed, such as, Lickers Lane Local Shop, St Leo's South Mead Catholic Primary and Nursery School, Costcutter, Tesco Express, Brunch at No. 10, Halsnead Primary School, Whiston Woods, Mp Food, News and Wine Store, Springfield Natural Play Centre, and Rowlands Pharmacy.

4.2.18 **Table 4.5** below, shows the walking distance from the centre of the site to the local amenities in the vicinity of the site. The table also confirms whether the amenity is within the 'preferred maximum' walk distances using the above guideline criteria.

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Local Amenity	Distance	Guidance Criteria	Meets with Guidance?
Lickers Lane Local Shop	45m	1,600m	**YES**
St. Leo's South Mead Catholic Primary and Nursery School	145m	3,200m	**YES**
Springfield Natural Play Centre	220m	1,600m	**YES**
Southmead Childrens Centre	225m	1,600m	**YES**
Whiston Woods	590m	1,600m	**YES**
Whiston Juniors Football Club	660m	1,600m	**YES**
Halsnead Primary School	720m	3,200m	**YES**
Whitestone Millennium Green	785m	1,600m	**YES**
Costcutter	875m	1,600m	**YES**
Mp Food, News and wine store	920m	1,600m	**YES**
Tesco Express	935m	1,600m	**YES**
Brunch at no. 10	1,015m	1,600m	**YES**
Halsnead Park	1,070m	1,600m	**YES**
Best One Mini Supermarket	1,280m	1,600m	**YES**
The Carrs Hotel	1,480m	1,600m	**YES**
Rowlands Pharmacy	1,580m	1,600m	**YES**

Table 4.5 - Distance from Site to Local Facilities

4.2.19 As can be seen in the above table, the site is located within proximity to a number of local amenities including primary services as well as leisure facilities.

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4.2.20 All of the day to day amenities are well within the 'preferred maximum' walk distances described earlier in this section and indeed many, including the nearest food store, pharmacy and nearest primary school, are within the 800 metres 'comfortable walk' from the site as contained within MfS guidance.

4.2.21 It is therefore considered that the existing and proposed pedestrian infrastructure will facilitate safe and direct pedestrian linkages between the site and local destinations.

4.3 Access by Cycle

4.3.1 An alternative mode of travel to the site could be achieved by bicycle. A distance of 5 kilometres 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 12 kilometres per hour and would encompass parts of Prescot, Rainhill, Halewood and Huyton.

4.3.2 National cycle route 56 runs close to the north western edge of the site through Stadt Moers Park providing connectivity and a traffic free route north and south around the Whiston area.

4.3.3 The site can therefore be considered as being accessible by cycle.

4.4 Access by Bus

4.4.1 An effective public transport system is essential in providing good accessibility for large parts of the population to opportunities for work, education, shopping, leisure and healthcare in the town and beyond.

4.4.2 The nearest bus stops to the site are located approximately 40 metres to the north on Lickers Lane. All the nearest bus stops to the site are shown on **Plan 4**.

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4.4.3 A summary of the services available from the nearest bus stops from the development site is provided in **Table 4.6** below.

Servic No	Route	Monday – Friday (per hour)				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
239	Broadgreen Hospital – Huyton – Whiston - Prescot	1	2	1	0	1	0
248	Huyton - Whiston - Prescot	1	0	0	1	9 services	1 service every hour
99	Whiston – Prescot Circular	1	1	0	0	1	0

Table 4.6 - Existing Bus Services

4.4.4 As can be seen from Table 4.6, the nearest bus stops to the site provides various services throughout the day to destinations such as Widnes, Liverpool, Runcorn, Warrington and local centres in Knowsley.

4.4.5 The above services operate from around 6:00am to around 23:00pm, making travel by public transport a real alternative to travelling by car for commuting trips.

4.4.6 In order to demonstrate the level of accessibility, some example journey times by bus are presented below **Table 4.7** below.

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Destination	Duration
Huyton	16 minutes
Prescot	12 minutes
Whiston	5 minutes

Table 4.7 - Example Bus Journey Times from the Site

4.4.7 The above table demonstrates that Huyton is an approximate 16-minute bus journey from the site and Prescot is a 12-minute bus journey.

4.4.8 It is therefore concluded that employment, health and retail centres are highly accessible by bus from the proposed development site.

4.5 Accessibility by Rail

4.6 Whiston train station is the most accessible station to the site. It can be accessed via a short 11 minute walk as the station is 965 metres from the centre of the site.

4.6.1 This train station is managed by Northern and offers three services per hour to Liverpool Lime Street and two services per hour to St Helens Junction. Liverpool Lime Street is around a 20 minutes journey and St Helens is only 9 minute journey from Whiston.

4.7 Accessibility Summary

4.7.1 The proposals have been considered in terms of accessibility by non-car modes, so that sustainable travel can be encouraged.

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4.7.2 The above section has demonstrated that the development can be accessed by a variety of travel modes, and as such would accord with local and national planning policy guidance.

4.7.3 The following conclusions can be drawn from this section of the report:

- It has been demonstrated that there are numerous amenities within a short walk of the development.
- Pedestrian and cycle access to the site can be considered as being good with extensive existing infrastructure located in the vicinity.
- The services from the bus stops on Lickers Lane which connect the site with retail, employment and leisure facilities in Widnes, Liverpool, Runcorn, Warrington and local centres in Knowsley. It can therefore be concluded that the proposed development can be accessed by bus.
- The site is accessible via rail with Whiston railway station located within 2 kilometres of the site.

4.7.4 In light of the above, it is considered the site is highly accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

5 TRAVEL PLAN TARGETS

5.1 Introduction

5.1.1 This section of the Travel Plan deals with the post development scenario i.e. once the development is complete, occupied and the Travel Plan has been implemented and relates to targets against which the success of the Plan in achieving its objectives will be measured.

5.1.2 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.

5.1.3 In order to set the targets, further information (e.g. through a travel survey) will have to be obtained in order to establish against which to set the targets. This information will be related to existing patterns of movement (i.e. the proportion of residents who travel to their workplace by non-car mode) and may be obtained from sources such as the National Travel Survey and the National Census.

5.1.4 More accurate information to establish the baseline targets will be obtained from a Resident's Travel Survey which will be undertaken within three months of the development being 25% occupied.

5.2 Potential Targets

5.2.1 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.

5.2.2 Targets which according to the DfT may potentially be included in the Travel Plan include the following:

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- Car trips per household - targets set on the basis of predicted trip rates for the development.
- Uptake of alternatives - targets for bus patronage, registration and participation in the Liftshare car share scheme, cycle counts and pedestrian counts.
- Car ownership and mode of travel - trip based targets may be supplemented by targets related to car ownership, travel to work by mode and travel to school by mode.
- Travel Plan awareness targets - for example, a target can be established to ensure a significant percentage of residents are aware of the Travel Plan and its purpose.

5.3 Action Plan

5.3.1 **Table 5.1** below provides an Action Plan and timescales to assist the Travel Plan Co-ordinator (TPC) to implement the obligations of the Travel Plan;

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Action	Target Date	Indicator/Measured by	Responsibility
Appointment of TPC	TPC appointed one month prior to first occupation of site	Appointment of TPC by target date	Housebuilder
Production of Residents Travel Pack	Upon Occupation	Distribution of Residents Travel Pack	Housebuilder
Undertake initial travel surveys	Within 3 months of reaching 25% occupation of development	Receipt of survey results	TPC
Agree Travel Plan Targets	3 months after initial travel survey undertaken	Receipt of Written agreements of target	TPC
Achieve target car driver travel to work mode split	5 years after initial travel survey	Resident travel surveys conducted in years 1, 3 and 5	TPC

Table 5.1 – Travel Plan Action Plan and Timescales

5.3.2 The table above sets out the key tasks that will need to be undertaken by the Travel Plan Co-ordinator as part of the Travel Plan including guidance as to timescales for the tasks to be undertaken.

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6 PLAN MONITORING AND ASSESSMENT

6.1.1 DfT best practice guidelines state that monitoring of the Travel Plan should normally take place on the following basis:

- Early on in the occupation period of the site - for example, triggered by 25% occupancy to provide the information base for the review of the plan.
- Annually or at least every two years thereafter to provide on-going information on the impact of the plan.
- Monitoring should take place over a wide range of time periods to reflect the different pattern of journeys that can be generated by residential development.

6.1.2 The monitoring could include items such as:

- Full residential surveys to be completed in year 1, year 3 and year 5 and snap shot surveys to be completed every 6 to 12 months.
- Feedback from bus operators to establish demand for local bus services.

6.1.3 Consideration will then be given on how best to monitor and measure the success of the Travel Plan measures when preparing the final Travel Plan for the development. Appropriate monitoring arrangements will be discussed and agreed with Knowsley Council.

6.1.4 The monitoring and assessment of the Travel Plan will include the submission of annual progress reports detailing the results of the travel surveys with regards to targets, budgets, general effectiveness and current initiatives.

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6.1.5 An annual report is to be submitted to the local authority no later than one month following the anniversary of the approval of the Travel Plan.

6.1.6 This will allow effective measures to be promoted and increased while ineffective measures can be revised and rectified. New initiatives for the coming year will also be contained within the report and submitted to officers at the Council.

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7 CONCLUSIONS

7.1.1 This Travel Plan has detailed the proposals associated with the development site to promote sustainable modes of travel and reduce the dependency of the private car.

7.1.2 Additionally, the Travel Plan has presented a series of measures to be implemented to reduce the number of single car occupancy trips.

7.1.3 The information contained within the Travel Plan and details of sustainable modes of transport in the vicinity of the site will be accessible to residents and visitors to the development.

7.1.4 The aim of the Travel Plan is:

- to encourage residents to use sustainable modes of transport to access the site;
- reduce the reliance on single car occupancy journeys; and
- generally reduce traffic related pollution and noise.

7.1.5 A wide range of measures and actions will be used to encourage car sharing, public transport use, cycling and walking.

7.1.6 The Travel Plan Co-ordinator will ensure the Travel Plan is implemented and is operating effectively.

7.1.7 A detailed resident Travel Survey will be undertaken to establish travel modes of residents and following this, specific targets will be set and agreed with the Travel Plan team at Knowsley Council.

7.1.8 It can therefore be concluded that the proposals will provide a highly sustainable development which will be enhanced by the evolution of the Travel Plan.

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