

7. Ecology and Biodiversity

7.1. Introduction

7.1.1. This Chapter of the Environmental Statement (ES) has been prepared by FPCR Environment & Design Ltd. (FPCR) on behalf of Hallam Land Management Limited ('the Applicant'), in respect of land East of Knowsley Lane, Knowsley ('the Site'). It assesses the Proposed Development described in Chapter 4, in relation to Ecology.

7.1.2. The Chapter has been prepared with reference to the Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment (EclA) Guidelines¹ (CIEEM, 2018). In line with this guidance, the report: describes the assessment methodology; establishes the baseline condition currently existing at the Site and surroundings; the likely significant environmental effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the compensation measures required to offset any residual effects.

7.1.3. This chapter is supported by the following figures:

- **Figure 7.1:** Consultation Plan – Designated Sites within 15km
- **Figure 7.2:** Consultation Plan – Designated Sites within 1 km
- **Figure 7.3:** Consultation Plan – Species Records
- **Figure 7.4:** Priority habitats within 1km
- **Figure 7.5:** Baseline Habitats

7.1.4. This Chapter is supported by the following technical appendices provided at Volume 2 to this ES:

- **Appendix 7.1:** Relevant Legislation and Desk Study Results
- **Appendix 7.2:** Great Crested Newt Survey
- **Appendix 7.3:** Breeding Bird Survey
- **Appendix 7.4:** Wintering Bird Survey
- **Appendix 7.5:** Bat Survey
- **Appendix 7.6:** Red Squirrel Survey – to be issued during determination
- **Appendix 7.7:** Water Vole Survey
- **Appendix 7.8:** Botanical Species Lists

¹ CIEEM (2018) *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.3*. Chartered Institute of Ecology and Environmental Management, Winchester.

- **Appendix 7.9:** Logika Group – Biodiversity Air Quality Modelling Assessment
- **Appendix 7.10:** Survey Personnel
- **Appendix 7.11:** Arboricultural Assessment
- **Appendix 7.12:** Biodiversity Net Gain Report

7.1.5. This Chapter, and its associated appendices, is intended to be read as part of the wider ES with particular reference to the introductory chapters (Chapter 1 to Chapter 4), as well as to Chapter 6 (Landscape) and Chapter 10 (Air Quality).

7.2. Assessment Approach

Assessment Methodology

7.2.1. The EcIA has been prepared with reference to the Chartered Institute of Ecology and Environmental Management's (CIEEM) Ecological Impact Assessment (EcIA) Guidelines, published in 2018. Baseline information and potential impacts have been quantified as far as practical to inform the assessment, supported by professional judgement and experience as appropriate. Where uncertainties exist, a precautionary approach has been adopted and a 'worse case' scenario approach assumed for the purpose of assessing effects and recommending mitigation.

7.2.2. The significance of ecological effects in relation to a proposal can be considered in relation to the importance of affected ecological features and the predicted magnitude of impact upon them.

7.2.3. The main sources of information for this assessment are:

- Biological records obtained from Merseyside Biobank;
- Online sources of ecological data e.g.: Multi Agency Geographic Information for the Countryside (MAGIC) website, www.ordnancesurvey.co.uk, www.maps.google.co.uk.
- Review of legislation and local and national planning policies; and
- Field surveys.

Zone of Influence

7.2.4. The CIEEM guidelines require the identification of a 'Zone of Influence' (Zoi) within which the ecological features that may be affected by the Proposed Development can be identified. This will identify the potential impact of the not just to the Site but beyond the boundaries of Proposed Development.

7.2.5. The Zoi is determined by the source / type of impact, a potential pathway for that impact and the location and sensitivity of the important ecological feature beyond the boundary. For the majority of effects identified as part of the Proposed Development, the Zoi is generally considered as the application Site and immediately surrounding areas.

7.2.6. However, the Zoi can also vary considerably depending upon the species potentially affected by the Proposed Development. For example, some species may be confined to a specific

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location whilst others, such as bats and birds are more mobile and can occupy much larger home ranges. The presence of dispersal barriers can also have an effect on the ZOI such as roads or rivers which may either reduce the potential of animals crossing it or could cause a potential means of killing or injury. As such, this could isolate areas of potentially suitable habitat within the Proposed Development due to fragmentation. In each case this is considered in association with the nature and scale of the Proposed Development and informed by best practice guidance and professional judgement.

- 7.2.7. Specific study areas were identified for the desk study and field surveys to inform the valuation of ecological features and the selection of 'key' ecological features material to the assessment.

Determining Importance

- 7.2.8. CIEEM have identified various characteristics that can be used to identify ecological features or features likely to be important in terms of biodiversity. These include:

- Animal or plant species that are rare or uncommon, either internationally, nationally or more locally;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and / or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity, connectivity and or / synergistic associations (e.g. networks of hedgerows and areas of species-rich pasture that may provide important feeding habitat for rare species);
- Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical valued natural / semi-natural vegetation types – these will include examples of natural species-poor communities;
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change;
- Species-rich assemblages of plants and animals; and
- Typical faunal assemblages that are characteristic of homogenous habitats.

- 7.2.9. Once an ecological feature has been identified as being important, guidelines promote the use of characterising this feature with the relevant geographic frame of reference. This allows the scale of significance of effects to be presented in a meaningful way and provides a focus of maintaining a feature at an appropriate scale. The known or potential value of an ecological feature within this assessment will be considered within the following geographical context:

- International;
- National;
- Regional (Merseyside);

- Metropolitan Area (Knowsley Metropolitan District); or
- Local (Knowsley village civil parish).

- 7.2.10. If an ecological feature is not considered to be important, the Proposed Development is not anticipated to have an effect that would be of relevance to the decision maker and these features are not considered further within the assessment. Exceptions to this would be if the species, population or habitat in question was identified as having a high social or economic value or if they are afforded legal protection (e.g. badgers). While the assessment does include protected species that receive statutory protection and are of material consideration at the local level, the presence of such a species does not necessarily infer value in relation to the Proposed Development but only to the level of protection it receives.
- 7.2.11. As such the value of the Proposed Development for protected species is considered by the specific ecological feature, taking into account the level of activity, the level of protection it receives and the overall value of habitat to that species within the Site.
- 7.2.12. Features with a value of Local or above were considered to represent an 'Important Ecological Feature' (IEF). Those features not meeting the criteria for IEFs were classified as having either a lower than local level (immediate zone of influence) or negligible ecological importance.
- 7.2.13. Evaluation of habitats which did not reach this scale of significance were otherwise recognised as being of negligible significance or as providing habitat diversity at a site level but not considered to appreciably enrich the habitat resource at a local level.

Determining Effects and Effects

- 7.2.14. The CIEEM guidelines define an impact as an influence on an ecological feature. The effect is the outcome of the influence on the ecological feature. As part of the EclA it is important to assess whether or not an impact is defined as an effect (negative or positive) on the integrity of a defined site or ecosystem and / or the conservation status of a habitat or species within a given geographical area (CIEEM, 2018).
- 7.2.15. Impacts should be identified and understood to be able to determine their likely effect (consequence) of that impact in relation to the ecological feature.
- 7.2.16. As part of the process of determining whether there is likely to be an effect on the status of an ecological feature, the following questions are considered:
- Will any site / ecosystem process be removed or changed?
 - What will be the effect on the nature, extent, structure and function of component habitats?
 - What will be the effect on the average population size and viability of the component species?
- 7.2.17. A description of parameters that are considered when assessing the degree and type of change are detailed in **Table 7.1** below.

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Table 7.1: Parameters used to describe effects

Parameter for describing effects on ecological structure and function	Definition of the parameter
Positive or Negative	Whether the impact has a positive or negative effect
Extent	The area of which the effect occurs
Magnitude	The size or amount of an effect
Duration	The time for which the effect is predicted to last prior to recovery or replacement of the resource or feature
Reversibility	Whether the effect is permanent (i.e. irreversible) or temporary (i.e. reversible)

- 7.2.18. With reference to the duration of an ecological impact, in addition to other uses, for the purposes of the assessment **Table 7.2** defines the timeframes used within the Chapter.

Table 7.2: Definition of timeframes

Term	Definition within this assessment
Short term	1–5 years
Medium term	6–15 years
Long term	16–60 years

Assessment of Significance

- 7.2.19. In addition to considering the effect on the ecological feature an assessment of significance of the residual effect (for the type / nature of change), is provided in **Table 7.3** below.

Table 7.3: Classification of the Significance of the Effects

Classification	Explanation
Significant Negative Effect	Likely to create a significant negative effect, including loss, or long-term or irreversible damage on the status of the ecological feature.
Not Significant Negative Effect	Likely to create a negative effect without causing long-term or irreversible damage to the status of ecological feature.
Neutral	Effects are either absent or such that no overall net change to the ecological feature.
Not Significant Positive Effect	Likely to create a beneficial effect on an ecological feature, or providing a new lower value ecological feature without improving its conservation status.
Significant Positive Effect	The activity is likely to create a significant beneficial effect, including long-term enhancement and favourable conditions for an existing ecological feature.

- 7.2.20. Once an effect is considered to be significant then the scale of effect is assessed on a geographical scale (i.e. international, national, regional, district etc.). For example, the effect may not be significant at a district scale, but significant at a more local scale. It is important to note that effects on features may need to be considered at more than one geographical scale.

Mitigation, Compensation and Enhancement

- 7.2.21. For the purpose of the EcIA, impacts on ecological features are generally assessed without mitigation in place. Although in some situations it is impossible to separate the mitigation as this is embedded into the scheme, in these situations it will be acknowledged and just the residual effects considered.
- 7.2.22. In line with current CIEEM guidelines, a sequential process, known as the 'mitigation hierarchy' should be adopted where negative ecological impacts and effects are expected. This involves:
- avoiding negative ecological effects;
 - reducing negative effects that cannot be avoided (mitigate); and lastly
 - compensate for any remaining significant ecological effects.

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Desk Study

- 7.2.23. In order to compile existing baseline information, relevant ecological information was requested from both statutory and non-statutory nature conservation organisations including:
- Merseyside Biobank (the local biodiversity records centre of North Merseyside); and
 - Multi Agency Geographic Information for the Countryside (MAGIC) website.
- 7.2.24. Inspection of colour 1:25,000 OS base maps (www.ordnancesurvey.co.uk) and aerial photographs from Google Earth (www.maps.google.co.uk) was also undertaken to provide additional context and identify any features of potential importance for nature conservation in the wider countryside.
- 7.2.25. The search area for biodiversity information was related to the significance of sites and species and potential zones of influence, as follows:
- A minimum of 10km around the application area for sites of International Importance (e.g. Special Areas of Conservation [SACs], Special Protection Areas [SPAs], Ramsar sites).
 - A minimum of 2km around the application area for sites of National or Regional Importance (e.g. Sites of Special Scientific Interest [SSSIs]) and species records (e.g. protected, Local Biodiversity Action Plan (LBAP) or notable species).
 - A minimum of 1km around the application-site for sites of County Importance (e.g. Biological Heritage Sites [BHS] or Local Wildlife Sites [LWS]).
- 7.2.26. Further consideration of potential zones of influence in relation to statutory designated sites of International and National importance was made using Natural England's SSSI Impact Risk Zone Tool which outlines the likely zone of influence from impacts for a range of development types.

Field Survey – Habitats

- 7.2.27. Surveyor details for the habitat surveys are included in **Appendix 7.10**.
- 7.2.28. The Site was first surveyed in 2022, when a UKHab Survey was undertaken. The survey was updated on the 8th and 9th May 2025 to confirm the current habitats within the Site and their condition.
- 7.2.29. Survey methods broadly following the UKHab Classification System² with minor departures from this methodology to allow for compatibility with the DEFRA metric, where applicable. The survey comprised a systematic walk over of the Site to classify the broad habitat types and identify any Habitats of Principal Importance (HPI) for the conservation of biodiversity as listed within Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006), and to collate a representative species list for each habitat.

² UKHab Ltd (2024). *UK Habitat Classification Version 4.1*(at <https://UKHab.org>)

- 7.2.30. Habitats were mapped in the field, using the QField app, along with additional notes regarding the current 'condition'³ of the habitat, completed in accordance with the Statutory Biodiversity Metric Condition Assessments⁴.
- 7.2.31. Where feasible, target notes and species lists were compiled for individual areas and assessments of abundance were made using the DAFOR scale. Vascular plant nomenclature follows Stace (2019)⁵. Whilst the species lists collected should not be regarded as exhaustive, sufficient information was gained during the survey to enable classification and assessment of broad habitat types and identify features likely to be of interest.
- 7.2.32. For the grassland habitats, this involved recording the plant species present within a series of 1m x 1m quadrats, which were used to inform the habitat classification selected and the corresponding condition assessment undertaken. Quadrats were placed within what were visually considered to be stands of homogenous vegetation where the vegetation was considered to potentially be representative of a distinct community type. The number of quadrats collected within each community sampled varied between 1-10 based on the size of the community, perceived species richness, distinctiveness or variability within the sward.
- 7.2.33. Within each quadrat, all vascular plant species and common bryophytes were recorded and given a percentage cover. This information was then used to construct 'floristic tables' which include the frequency and abundance range for each species recorded within the sample quadrats. The percentage cover of bare ground and average sward height was also recorded within each quadrat. The floristic tables for the Site can be found in **Appendix 7.8**.
- 7.2.34. The baseline surveys were supplemented by a further survey undertaken on 12th May 2025 to collect detailed botanical information to inform the condition assessments of Howards Pit and Knowles Pit onsite woodlands.
- 7.2.35. Within the MEAS EIA consultation response, as shown in **Table 7.4**, two onsite woodlands and four offsite woodlands were identified as potential ancient semi-natural woodland located. These are either directly adjacent to the Site or within 500m of the Site, and are potentially accessible to the public. The detailed botanical surveys were extended to include a detailed survey to identify the presence of ancient woodland indicator species within the following woodlands, shown on **Figure 7.4**:
- Howards Pits and Knowles's Pits (within the Site)
 - Akers Pits LWS (13m from the Site on the west side of Knowsley Rd)
 - Ash Plantation (adjacent to the Site within Knowsley Park LWS)
 - Little Wood LWS (290m west)
 - The Roughs LWS (390m west)

³ Condition' is one of the measures of the quality of a habitat used within the DEFRA biodiversity metric. It takes into account key physical characteristics and typical species of a particular habitat type.

⁴ Defra (2023). "The Statutory Biodiversity Metric – Technical Annex 1: Condition Assessment Sheets and Methodology" November 2023" Access [online] (Available at: <https://www.gov.uk/government/publications/statutory-biodiversity-metric-tools-and-guides>)

⁵ Stace, C (2019) *New Flora of the British Isles*. 4th edn. C&M Floristics

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7.2.36. Hedgerows were also assessed against the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997 to determine whether they qualified as ‘Important Hedgerows’ under the ecology criteria.

7.2.37. Where species are referred to in the text, the accepted common name is used, with the corresponding scientific name provided in **Appendix 7.8**. Surveyor details and experience are included in **Appendix 7.10**.

Field survey – Fauna

7.2.38. Surveyor details for the faunal surveys are included in **Appendix 7.10**.

7.2.39. Any habitats suitable for, or features with the potential to support, protected or notable species were assessed and recorded during surveys in tandem with the UKHab surveys undertaken initially in 2022, with an update survey on the 8th and 9th May 2025 to inform the scope of the protected species surveys.

7.2.40. During the UKHab surveys, observations, identification and signs of any species protected under the following list of Acts and Regulations (collectively referred to herein as ‘Protected Species’) were recorded:

- Schedule 1 of the Wildlife and Countryside Act 1981 (as amended);
- The Protection of Badgers Act 1992;
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Consideration has also been given to the existence and use of the Site by other fauna listed as one or more of the following (collectively referred to herein as ‘Notable Species’):
 - Species of Principal Importance (SPI) for the conservation of biodiversity in England on the Natural Environment and Rural Communities (NERC) Act, Section 41 (S41);
 - Species listed on any Local Biodiversity Action Plan (LBAP) initiatives; and/or
 - Red Data Book (RDB) species.

7.2.41. The likely presence or absence of protected and notable species has been assessed using several factors including the availability or suitable habitat, connectivity, known species distribution, local records and an understanding of the ecology and habitats requirement of the individual species assessed.

7.2.42. Following the initial assessment of the Site for protected/notable species potential, a series of further surveys were completed in 2024 and 2025. These included:

- GCN presence/likely absence survey;
- wintering bird survey;
- breeding bird survey;
- badger survey;

- bat activity surveys and ground based potential roost assessment (PRA) of trees;
- red squirrel survey; and
- water vole survey.

Great crested newt (GCN)

- 7.2.43. An assessment was undertaken to identify ponds that lie on Site or within 250m of the Site boundary and within connective habitat (i.e., with no significant barriers to dispersal). Those ponds which were accessible were assessed for their suitability to support great crested newts.
- 7.2.44. Presence/likely absence surveys were undertaken on eight onsite and four offsite waterbodies identified as suitable for GCN, via four aquatic surveys carried out in April 2025.
- 7.2.45. GCN surveys considered good practice guidance⁶. Full details are provided in **Appendix 7.2**.

Birds – wintering and breeding

- 7.2.46. Six survey visits were carried out between April to July 2025 to assess use of the Site by breeding birds.
- 7.2.47. Thirteen diurnal and four nocturnal wintering bird surveys were carried out between September 2024 and March 2025.
- 7.2.48. Bird surveys considered good practice guidance⁷. Full details are provided in **Appendices 7.3 and 7.4**.

Badgers

- 7.2.49. Land within the development area was surveyed on the 30th April 2025 and 8/9th May 2025. Surveys followed the methodology outlined by Harris et al (1989)⁸. This involves a walkover of the Site searching for field signs which would indicate the presence of badgers as follows:
- setts: including earth mounds and evidence of bedding and or runways between identified setts;
 - latrines: often located close to setts; at territory boundaries or adjacent to favoured feeding areas;
 - prints and established track or runways;
 - hairs caught on rough wood or fencing;
 - other evidence: including snuffle holes, feeding and playing areas and scratching posts. The identification of these latter signs on their own does not necessarily provide

⁶ English Nature (2001) *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.

⁷ Bird Survey & Assessment Steering Group (2025). *Bird Survey Guidelines for assessing ecological impacts* <https://birdsurveyguidelines.org>.

⁸ Harris, S., Cresswell, P. & Jefferies, D. 1989. *Surveying for badgers*. Occasional Publication of the Mammal Society No.9. Mammal Society, Bristol

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conclusive evidence of the presence of badgers. Several such signs need to be seen in conjunction before badgers can be confirmed as being present.

Bats – roosting and activity surveys

- 7.2.50. There are no structures present within the Site.
- 7.2.51. Trees likely to be impacted by proposals were assessed for potential roosting features (PRF) for bats. Assessments were undertaken from ground level on 8th and 9th May 2025.
- 7.2.52. A Habitat Suitability Assessment was undertaken to identify the suitability of the Site to foraging and commuting bats or areas which may be important for exhibiting various social behaviours.
- 7.2.53. Following this, six static/automated bat detectors were deployed within the Site for a period of no less than five consecutive nights per month. To date, six surveys have been undertaken monthly in September and October 2024, and between April and July 2025 inclusive. One further survey is scheduled for August 2025.
- 7.2.54. Seasonal flight path / night-time bat walkover (NBW) surveys have been undertaken in Autumn (10th October 2024), Spring (16th April 2025) and Summer (3rd July 2025).
- 7.2.55. Bat surveys considered good practice guidance^{9,10}. Full details of the methodologies used are provided in **Appendix 7.5**.

Red Squirrel

- 7.2.56. A detailed search for the presence of squirrel dreys and feeding signs was undertaken in suitable habitats within the Site on 30th April 2025 and 8th and 9th May 2025. Surveys considered good practice guidance¹¹
- 7.2.57. Additional hair tube surveys are scheduled to be undertaken in August 2025 with details to be appended (**Appendix 7.6**) following survey completion in the determination period

Water Vole

- 7.2.58. An assessment of the suitability of the habitats within the Site for water voles was undertaken during the initial Site survey and updated on 9th April 2025. Habitat requirements were based on those detailed in current guidance.¹²
- 7.2.59. Early and late season presence / likely absence surveys took place on 9th April 2025 and 7th July 2025 Surveys were undertaken in accordance with the Water Vole Mitigation Handbook (2016)¹³. Full details are provided in **Appendix 7.7**.

⁹ Bat Conservation Trust, 2023. *Bat Surveys for Professional Ecologists Good Practice Guidelines 4th edition*.

¹⁰ Mitchell-Jones & McLeish (2004) *JNCC Bat Workers Manual*.

¹¹ Cresswell, W.J., Birks, J.D.S., Dean, M., Pacheco, M., Trehella, W.J., Wells, D. and Wray, S. (2012). *UK BAP Mammals: Interim Guidance for Survey Methodologies, Impact Assessment and Mitigation*. The Mammal Society, Southampton

¹² Dean, M. (2021) *Water Vole Field Signs and Habitat Assessment: A Practical Guide to Water vole Surveys*, Pelagic Publishing.

¹³ Dean, M., Strachan, R., Gow, D & Andrews, (2016) *The Water Vole Mitigation Handbook*. The Mammal Society Guidance Series. Eds F. Matthews & P. Chanin. The Mammal Society, London.

Legislative and Policy Framework

7.2.60. The national policies and legislation most relevant are:

- The Environment Act 2021;
- Conservation of Habitats and Species Regulations 2017 (as amended) and Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (The Habitat Regulations);
- The Wildlife and Countryside Act 1981 (WCA) (as amended) in relation to all wild birds (including Schedule 1 species), other animals (notably Schedule 5 species), flora (those listed in Schedules 8 and 9) and Sites of Special Scientific Interest (SSSI);
- Protection of Badgers Act 1992;
- Natural Environmental and Rural Communities (NERC) Act 2006 in relation to various priority species and habitats;
- Hedgerow Regulations 1997 made under Section 97 of the Environment Act 1995;
- National Planning Policy Framework (NPPF) (2024);
- Local planning policy as included within the Knowsley Local Plan: Core strategy and supplementary planning documents;
- Local Nature Reserves (LNR) as designated most recently by the NERC Act 2006;
- Non-statutory protected local sites including County Wildlife Sites (CWS), Sites of Importance for Nature Conservation (SINC), Local Wildlife Sites (LWS) and Ancient Woodland Inventory (AWI) sites;
- Local Biodiversity Action Plans (LBAP); and
- Birds of Conservation Concern (BoCC).

National Planning Policy Framework (December 2024)¹⁴

7.2.61. Of most relevance is Section 15, Conserving and Enhancing the Natural Environment:

- Paragraph 187:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

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

¹⁴ <https://www.gov.uk/guidance/national-planning-policy-framework/15-conserving-and-enhancing-the-natural-environment>

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b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures and incorporating features which support priority or threatened species such as swifts, bats and hedgehogs;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.

- Paragraph 192

“To protect and enhance biodiversity and geodiversity, plans should:

b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

Knowsley Local Plan Core Strategy (Jan 2016)¹⁵

7.2.62. Of most relevance are:

- **Policy CS2 – Development Principles:**

Principle 4: Recognise environmental limits, protect and enhance environmental assets, enhance local character and promote quality of place by:

h) Maintaining or enhancing the quantity and quality of biodiversity and habitats, including potential impacts on nationally and internationally important sites for biodiversity.

- **Policy CS8 – Green Infrastructure states:**

1. Knowsley's existing Green Infrastructure and its beneficial functions will be protected, managed and/or enhanced, primarily to:

b) sustain and promote biodiversity ... in accordance with importance and contribution to ecological networks.

2. To achieve the above, planning powers and other interventions will be used to:

c) Promote effective movement of wildlife through a network of strategic green links, by protecting, maintaining and improving existing and new open spaces, water courses (including water quality) and biodiversity assets;

¹⁵ <https://www.knowsley.gov.uk/sites/default/files/2023-11/knowsley-local-plan-adopted-core-strategy.pdf>.

d) Protect, enhance and/or introduce biodiversity into existing areas of Green Infrastructure, through integration into the design of new development and public realm projects;

g) Work in partnership with other districts and relevant bodies at a landscape scale to minimise the impact of development upon Knowsley's existing biodiversity and geological assets, and sustain the protection afforded to internationally important sites, including supporting habitat, for biodiversity outside of the borough;

6. New development must be served by Green Infrastructure to meet the needs of residents and the local environment, in a manner which will:

c) Seek to protect, maintain and where possible enhance biodiversity within and around new developments according to their designation and significance to provide space for nature;

d) Provide adequate mitigation and/or, as a last resort, compensation for Green Infrastructure or biodiversity loss, in circumstances where harm resulting from the development is otherwise unavoidable.

- **Policy CS19** – Design Quality and Accessibility in New Development

1) To enhance the local distinctiveness, identity and accessibility of places, new development within Knowsley will be expected to:

d) Create spaces and places as a focal point, accommodating social interaction and active lifestyles, including provision and integration of high quality public realm and open spaces, public art (as appropriate); and landscaping which promotes biodiversity and integrates existing local habitats

- **Policy CS21** – Enhancement of Natural and Semi-Natural Greenspace and Tree Protection:

The Council will encourage proposals for new development to incorporate:

a) Retention of existing trees, woodland, vegetation and other habitat features which offer a positive contribution to ... biodiversity/wildlife interest;

b) Appropriate planting of trees, other soft landscaping and installation of habitat features for the benefit of biodiversity; and

c) Adequate replacement provision where tree loss is unavoidable, comprising two additional trees for every tree lost and taking account of species and size.

Supplementary Planning Documents (SPDs)

7.2.63. Of relevance is:

- Trees and Development SPD (2016):¹⁶

¹⁶ Knowsley Borough Council (2016). Trees and Development Supplementary Planning Document (SPD).

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4. Where the Council accepts that tree loss will be unavoidable the applicant will be required to make adequate provision for their replacement, normally including two new trees for each tree lost. Replacement planting will take into account the number; size and species of trees lost and should contribute to the extension of tree and woodland cover across the Borough.

5. All new development should be consistent with the aims and objectives of the Mersey Forest Plan.¹⁷

Knowsley Unitary Development Plan (2006)¹⁸

7.2.64. Saved policies of relevance are:

- **Policy DQ4 – Trees and Development:**

4. Where the Council accepts that tree loss will be unavoidable the applicant will be required to make adequate provision for their replacement, normally including two new trees for each tree lost. Replacement planting will take into account the number; size and species of trees lost and should contribute to the extension of tree and woodland cover across the Borough.

5. All new development should be consistent with the aims and objectives of the Mersey Forest Plan¹⁹.

- **Policy ENV3– Light Pollution**

d) The scheme will not harm wildlife.

EIA Scoping Process

7.2.65. As discussed in Chapter 2, a request for a Scoping Opinion was submitted on behalf of the Applicant to Knowsley Metropolitan Borough Council (KMBC) on 26th March 2025, which set out the proposed scope of assessment for the project (see **Appendix 2.1**). KMBC issued their Scoping Opinion on 21st May 2025 and is summarised in Chapter 2 and included in full at **Appendix 2.2**.

7.2.66. With regards to Ecology matters, pre-app advice was provided on the application and the relevant responses were received from the consultees including Natural England and Merseyside Environmental Advisory Service (MEAS). Comments have been addressed accordingly, as follows in **Table 7.4** below.

¹⁷ <https://merseyforest.org.uk/our-plan/>

¹⁸ Knowsley Borough Council (2006). Knowsley Replacement Unitary Development Plan: Saved Policies.

¹⁹ <https://merseyforest.org.uk/our-plan/>

Table 7.4: Relevant EIA Scoping Consultation Comments

Consultee	Summary of Comment	Response or location within the ES where comments are addressed
Knowsley Metropolitan Borough Council (KMBC) (21/05/2025))	<i>If woodland within and adjacent to the site is deemed ancient woodland then the air quality chapter should also consider these as a receptor in their assessment and this should feed into the ecology chapter.</i>	The detailed woodland surveys identified a low number of ancient woodland indicator ground flora species within the surveyed woodlands. With ancient woodland in England being defined as an area that has been continuously wooded since at least 1600 AD, and due to the proximity of the woodlands to an historic estate which dates to the late 15th century, the recorded woodland has been assumed to be ancient for the purpose of assessment to take a robust and precautionary approach. Therefore, on a precautionary basis, the air quality impacts report includes an assessment of effects on potential AW receptors identified (Appendix 7.9). An assessment of likely ecological impacts to the identified potential AW receptors is included in Section 7.4 to 7.6 of this report.
Knowsley Council – Environmental Sustainability, Landscape (19/05/2025)	<i>Request further information on the biodiversity net gain strategy and how any loss will be compensated for.</i>	A BNG feasibility report has been provided to accompany the application (FPCR 2025).
Merseyside Environmental Advisory Service (MEAS) (02/05/2025)	<i>Should detailed botanical survey confirm existing woodlands on and adjacent / near to the site to be ancient semi-natural woodland then the air quality chapter should also assess impacts on these woodlands and they should be included as a receptor in air quality assessments.</i>	See above.

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Consultee	Summary of Comment	Response or location within the ES where comments are addressed
	<i>This will need to feed into assessment of impacts to ancient semi-natural woodlands (if confirmed) within the ecology and biodiversity chapter.</i>	
Natural England (NE) (17/04/2025)	<i>NE provided their standard advice on EIA Scoping.</i>	N/A

7.2.67. Accordingly, the Assessment considers the potential effects of the development upon the following important ecological features during the construction and operational phase of the development:

- Statutory and non-statutory designated sites;
- The River Alt and M57 Corridor Nature Improvement Area;
- Habitats, including priority habitats and potential ancient woodland;
- Fauna, including protected and notable species;
- Schedule 9 invasive non-native species.

Limitations to the Assessment

7.2.68. This assessment aims to provide baseline ecological data for the Site and as such presents an overview of the habitats and features present. Due to the transient and complex nature of ecosystems, no investigation can provide a complete representation or prediction of the natural environment present, however every effort has been made to ensure an accurate description of the Site is presented following best practice guidance, experience, and professional judgement.

7.2.69. The Baseline Habitats Map (**Figure 7.5**) has been reproduced from detailed field notes and informed by aerial imagery, OS mapping and site maps provided by the Applicant. The accuracy of this figure is therefore ultimately guided by the accuracy of these sources and can only be relied upon to a certain degree of resolution.

7.2.70. Data provided by third party sources collated during the desktop study is generally made up from a wide range of sources including (but not limited to) those submitted by ecological consultancies, wildlife conservation organisations and volunteers. As such, this data is typically focused on areas of known nature conservation, is reliant upon formal surveys having been undertaken within an area or the presence of an expert within the locality (particularly for invertebrate records) and as such this data can never be fully relied upon as a complete ecological dataset for any given area. Rather, this data is used as a guide to likely presence of notable ecological features and can never be relied upon for likely absence.

7.2.71. Surveys for bats and red squirrel are being undertaken but at the time of writing have not yet been fully completed. A preliminary assessment of impacts on these species has been provided within Section 7.4 to 7.6, based on the information gathered to date. The assessment will be updated following the results of further surveys. This is not considered to be a significant constraint for either species. The bat survey data gathered to date is considered sufficient to provide a robust assessment of effects on this species. Should Red Squirrel presence be confirmed during further survey, suitable mitigation as outlined in Section 7.5, is considered achievable within the illustrative layouts provided.

7.2.72. No other specific limitations influenced this assessment.

7.3. Baseline Conditions

Site Description and Context

7.3.1. The Site is approximately 33.75ha in extent and located on the southern border of Knowsley village. It comprises arable fields, priority habitat deciduous woodland, modified grassland, scrub and a number of permanent and temporary waterbodies.

7.3.2. The northern boundary of the Site lies adjacent to Home Farm Road with residential properties beyond, associated with the southern edge of Knowsley. The Site is bordered by Knowsley Lane to the west and beyond this are areas of woodland, including priority woodland and arable land. The M57 motorway runs north to south, 280m from the Site to the west at its closest point.

7.3.3. To the north-east is a small commercial area. The remainder of the east and southern boundaries adjoin woodland areas within Knowsley Park local wildlife site – an extensive area of wood pasture and parkland priority habitat. Multiple ponds and a large lake 850m to the east are also within the park. A high (approx. 2.5m) solid wall divides the Site from the LWS, preventing access and visibility from the Site. Details of priority habitats present within the locality of the Site are included in **Section 7.3**. These include 'good quality semi-improved grassland, traditional orchard, lowland fen, and some additional areas listed as 'no main habitat but additional habitats present' on MAGIC.

Statutory Designated Sites

Internationally Designated Sites

7.3.4. The locations of statutory designated sites referred to in the following section are illustrated on **Figure 7.1**. Details of the designating features, including the scientific names for species referred to in the text are included in **Appendix 7.1**. Together these form part of the Liverpool City Region (LCR) European Sites.

7.3.5. **The Mersey Estuary SPA** is located 10.7km south-south-west of the Site at its closest point. The SPA covers an estuarine area of 50.23 km² including large areas of saltmarsh and extensive intertidal sand and mudflats, with limited areas of brackish marsh, rocky shoreline and boulder clay cliffs, within a rural and industrial environment. The intertidal flats and saltmarshes provide feeding and roosting sites for large populations of waterbirds. During the winter, the SPA is of major importance for ducks and waders. The SPA is also important at a national level during the spring and autumn migration periods, particularly for wader populations moving along the west coast of Britain. The Mersey Estuary SPA is a receptor of **international importance** and is included within the impact assessment.

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- 7.3.6. **The Mersey Estuary Ramsar** covers the same geographical area. Designated for supporting internationally important numbers of wintering waterfowl, including wintering teal, pintail and dunlin, and passage shelduck, black-tailed godwit and redshank. In addition, the site supports nationally important numbers of passage ringed plover, curlew, spotted redshank and common greenshank and wintering wigeon. The Mersey Estuary Ramsar is a receptor of **international importance** and is included within the impact assessment.
- 7.3.7. **The Liverpool Bay SPA** is located 10.7km west of the Site at its closest point. The marine SPA forms a broad arc running roughly from Morecambe Bay to the east coast of Anglesey. The SPA was originally classified in 2010 as an important site during the non-breeding season for red-throated diver, common scoter, and a waterbird assemblage. The SPA was then extended in 2017 to include the most important areas for non-breeding little gull and to protect foraging habitat used by breeding little terns and common terns which are notified features of adjacent coastal SPAs. The original SPA extent was 252,773 ha and the extension has added a further 82,481 ha. The landward boundary of the SPA generally follows the mean low water mark or the boundaries of existing SPAs, whichever is the furthest seaward apart from at Prestatyn and in the River Mersey where it follows mean high water or the boundaries of existing SPAs. Liverpool Bay SPA is a receptor of **international importance** and is included within the impact assessment.
- 7.3.8. **The Mersey Narrows and North Wirral Foreshore SPA** is located 11.2km west of the Site at its closest point, covering an area at the mouths of the Mersey- and Dee estuaries. The SPA comprises intertidal habitats man-made lagoons and extensive intertidal flats. The intertidal flats are internationally important feeding grounds for waders, and the SPA also includes important high tide roost and nesting sites. Qualifying features include non-breeding bar-tailed godwit, little gull and knot. The SPA also supports breeding and non-breeding common tern and an internationally important waterbird assemblage. The Mersey Narrows and North Wirral Foreshore SPA is a receptor of **international importance** and is included within the impact assessment.
- 7.3.9. **The Mersey Narrows and North Wirral Foreshore Ramsar** site covers the same geographical area as the SPA. Designated for supporting internationally important numbers of wintering waterfowl and non-breeding little gulls and common tern, in addition to knot and bar-tailed godwit. The Mersey Narrows and North Wirral Foreshore Ramsar is a receptor of **international importance** and is included within the impact assessment.
- 7.3.10. **The Ribble and Alt Estuaries SPA** lies 11.8km NW from the Site at its closest point. The SPA comprises two estuaries, together with an extensive area of sandy foreshore along the Sefton Coast. The SPA consists of extensive areas of sandflats and mudflats, saltmarsh and coastal grazing marsh. The SPA supports breeding seabirds, in particular large concentrations of common tern and lesser black-backed gull which feed both offshore and inland, outside the SPA. The SPA is of major importance during the winter for duck and wader species and for supporting wader populations moving along the west coast of Britain during the spring and autumn migration periods. The SPA also supports a diverse range of over-wintering or passage waders. The Ribble and Alt Estuaries SPA is considered to be a receptor of **international importance** and is included within the impact assessment.
- 7.3.11. **The Ribble and Alt Estuaries Ramsar** site covers the same geographical area as the SPA but also covers large areas of Sefton Coast SAC too. It is designated for the overwintering and passage bird features shared with the SPA as well as the natterjack toad for which the dunes of Sefton Coast are an important stronghold. The Ribble and Alt Estuaries Ramsar is considered to be a receptor of **international importance** and is included within the impact assessment.

- 7.3.12. **The Dee Estuary SAC** incorporates part of the Mersey Narrows and North Wirral Foreshore SPA/Ramsar and lies 12.1km to the west of the Site at its closest point. The SAC is designated for its coastal habitats including extensive areas of intertidal sand, mudflats and saltmarsh. Annex II species present as a qualifying feature, but not a primary reason for site selection are sea lamprey, river lamprey and petalwort. The Dee Estuary SAC is considered to be a receptor of **international importance** and is included within the impact assessment
- 7.3.13. **Sefton Coast SAC** lies 12.3km from the Site at its closest point, covering an area of approximately 46km². Sefton Coast is a large sand dune system in north-west England stretching over 20 km from Southport in the north (at the mouth of the Ribble estuary) to Crosby in the south (at the mouth of the Mersey). The site overlaps with the Ribble and Alt Estuary SPA and Ramsar. Designated for its dune habitats and species, including the Annex II liverwort – petalwort, which is often found in association with footpaths, where light trampling keeps the ground vegetation sparse. Additionally, pools in the hollows and slacks support a large population of great crested newts. Sefton Coast SAC is considered to be a receptor of **international importance** and is included within the impact assessment.
- 7.3.14. **Martin Mere SPA** is located 18.8km north of the Site and comprises a low-lying complex of open water, marsh and grassland habitats overlying deep peat and occupying part of the former site of a large freshwater lake drained for agriculture in the nineteenth century. The present wetland has been created on an area of rough pasture acquired by the Wildfowl & Wetlands Trust (WWT) in 1974 who manage the area as a nature reserve, with a large visitor centre. Numbers of wintering waterbirds regularly exceed 20,000 individuals and include internationally important numbers of swans, ducks and geese. Martin Mere SPA is a receptor of **international importance** and is included within the impact assessment.
- 7.3.15. **Martin Mere Ramsar** covers the same geographical area as the SPA. Designated for the number of wintering waterfowl in addition to internationally important numbers of passage pink-footed goose and wintering Tundra swan, whooper swan, wigeon and northern pintail. Martin Mere Ramsar is a receptor of **international importance** and is included within the impact assessment.
- 7.3.16. **The Dee Estuary SPA** is one of the largest estuaries in the UK, covering an area of approximately 14ha and at its closest point is 22km from the Site. It is a large, funnel-shaped, sheltered estuary which is of major importance for waterbirds. During the winter the intertidal flats, saltmarshes and fringing habitats including coastal grazing marsh/fields, provide feeding and roosting sites for internationally important numbers of ducks and waders. In summer the site supports nationally important breeding colonies of two species of tern. The SPA is also important during migration periods, particularly for wader populations moving along the west coast of Britain and for Sandwich terns post-breeding. The Dee Estuary SPA is considered to be a receptor of **international importance** and is included within the impact assessment.
- 7.3.17. **The Dee Estuary Ramsar** is designated for its habitats and the wintering bird species it supports, including internationally important numbers of teal, shelduck, oystercatcher, curlew, pintail, grey plover, knot, dunlin, black-tailed godwit, bar-tailed godwit and redshank. Additionally, it supports breeding colonies of the vulnerable natterjack toad. The Dee Estuary Ramsar is considered to be a receptor of **international importance** and is included within the impact assessment

Sites of National Importance

- 7.3.18. No nationally designated sites are located within 2 km of the Site boundary. The closest, Stanley Bank Meadows, is an SSSI and LNR located over 9.5km to the east of the Site. The Site is not located within the SSSI risk zone for Stanley Bank meadows, therefore Stanley Bank Meadows SSSI and LNR is scoped out of further assessment.

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- 7.3.19. The site does not fall within any SSSI risk zones, as shown on MAGIC. Natural England's advice²⁰ states:

"The Impact Risk Zones for Sites of Special Scientific Interest (SSSI IRZs) indicate that at the location selected, the proposed development is unlikely to have a harmful effect on terrestrial Sites of Special Scientific Interest (SSSIs) and the Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites that they underpin.

Therefore, you do not need to consult Natural England on the likely impacts of development on terrestrial SSSIs and the SACs, SPAs or Ramsar sites that they underpin."

Local Nature Reserves

- 7.3.20. No Local Nature Reserves (LNR) are located within 1km. The closest is Croxteth LNR, which is located 1.2 km to the west of the Site, and beyond the M57 motorway. The location of Croxteth LNR is shown on **Figure 7.2**. The LNR is described as woodland, pasture and rough grassland, with ponds and the River Alt at the border. Species of interest include breeding birds and dragonflies, with plants including water dropwort. Due to the distance from Site and lack of obvious hydrological or habitat connectivity, Croxteth LNR is scoped out of further assessment.

Non-Statutory Designated Sites

- 7.3.21. The locations of non-statutory designated sites within 1km of the Site are illustrated on **Figure 7.2**. Details of each site are included in **Table 7.5**. There are six Local Wildlife Sites (LWS) which are considered to be of importance at a **metropolitan area scale**, and are included within the assessment.

Table 7.5: Non-Statutory Designated Sites.

Site Name	Proximity to site (approximate)	Description
Knowsley Park	Adjacent to the eastern and southern border.	A large local wildlife site, of approximately 1182.5 hectares. The LWS is located on the eastern and southern border of the Site, but separated from the development Site by a high stone wall. On MAGIC map, some of the LWS appears to lie within the Site but we consider this is due to inaccuracies with mapping. Public access to the park is controlled via ticketing. Knowsley Park is an ancient parkland and estate, with seven regionally important and five BAP priority habitats on site. Some of the onsite habitats include wood pasture and parkland,

²⁰

[https://irz.geodata.org.uk/IRZ/step3.php?irzcode=0000000000000¬es=&location=417554,424273%20%20\(IRZ%20polygon%20centre\),](https://irz.geodata.org.uk/IRZ/step3.php?irzcode=0000000000000¬es=&location=417554,424273%20%20(IRZ%20polygon%20centre),) accessed 28th July 2025

Site Name	Proximity to site (approximate)	Description
		unimproved acidic and neutral grassland, dams with open water and remnant heath and mire. Populations of bats exist here, alongside other protected species including water voles <i>Arvicola amphibious</i> and red squirrel <i>Sciurus vulgaris</i> (as per LWS citation dated July 2003 – no red squirrel recorded since 2017). There is also one WCA Schedule 8 and plant species of conservation concern: the native bluebell <i>Hyacinthoides non-scripta</i> .
Aker Pits	13m west.	Small mature broadleaf woodland with a deep ditch and ponds. Plants here include native bluebell and the regionally important Northern dock <i>Rumex longifolius</i> . There is no public access to the wood but a public footpath is located on the southern boundary.
Little Wood	290m west.	Broadleaf woodland of 8 hectares with high species diversity and an interesting invertebrate fauna that requires survey. Plants here include native bluebell and regionally important Cyperus sedge <i>Carex pseudocyperus</i> . The wood is managed by the Woodland Trust as a community wood.
The Roughs	390m west.	A mature broadleaf woodland measuring 4.3 hectares. It is thought to have previously been a garden, with a mature broadleaf woodland, a stream, and ponds. Locally rare plant <i>Persicaria lapathifolia</i> recorded. Not publicly accessible.
Meakin's Pits	649m northwest.	A local wildlife site of 2.1 hectares. It consists of a plantation woodland, dominated by Scot's pine <i>Pinus sylvestris</i> and broadleaf trees, split by the M57 Motorway. It has one Priority BAP Habitat, alongside one plant listed as WCA Schedule 8 and another as a species of conservation concern. Not publicly accessible.
River Alt	837m northwest	The River Alt supports a number of interesting plant species on its margins and banks, including Branched Bur-reed, Water-plantain, Meadowsweet and Common Figwort. Small populations of Water Voles are found throughout its length.

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River Alt and M57 Corridor Nature Improvement Area

- 7.3.22. The Liverpool City Region and Lancashire Local Nature Recovery Strategy is currently in development and is not yet published.
- 7.3.23. The River Alt and M57 corridor Nature Improvement Area is described as a wide area measuring 1,131 hectares designated for Nature Improvement at a landscape scale. Its priority is to create habitats such as wetlands, grasslands, and woodland, alongside managing and maintaining the existing habitats. Species currently recorded as present here include water vole, red squirrel, bats, brown hare *Lepus europaeus* and farmland birds. The NIA lies close to the western Site boundary, on the opposite side of Knowsley Lane.
- 7.3.24. The ponds within the Site are identified as 'Stepping Stone Sites' and the boundary hedgerows within the Site are identified as 'Linear Features' on the Liverpool City Region Ecological Network interactive map.
- 7.3.25. The network of biodiverse habitats formed by the Nature Improvement Area is considered to be of importance at a **local scale** and are included within the assessment.

Priority Habitats including potential ancient woodland

- 7.3.26. **Figure 7.4** shows the location of priority habitats within 1km of the Site.
- 7.3.27. The east and south boundary adjoin Knowsley Park LWS (but separated by an approximately 2.5m high stone wall). The LWS is an extensive area of woodpasture and parkland priority habitat. Other priority habitat noted within the LWS include traditional orchard 900m to the south and small areas of lowland fens 800m and 1km south-east of the site.
- 7.3.28. Priority Habitat deciduous woodland is present on Site, adjacent to the south and eastern boundaries and also within several parcels in the surrounding area. These are mostly located within LWS but parcels exist outside of these areas. The closest outside of an LWS is close to the western boundary, to the west of Knowsley Lane and to the south of Akers Pits. This is a 2.4ha area of deciduous woodland, including priority deciduous woodland and an 0.88ha area termed 'no main habitat (NMH) but additional habitats exist'. The woodland as a whole is hereafter called 'The Sanctuary deciduous woodland'.
- 7.3.29. There are some additional areas of NMH habitat within Knowsley Park.
- 7.3.30. None of the woodlands within 1km are currently mapped as ancient woodland on the Multi Agency Geographic Information for the Countryside (MAGIC) website. However, historical mapping and Merseyside Biobank ancient woodland indicator records are forming part of the Natural England update to the Ancient Woodland Inventory. These updates suggest a number of the LWS' and other woodlands within the Site or in close proximity to the Site may be ancient or long established. These are (**see Figure 7.4** for their locations):
- Howards Pits and Knowles' Pits (within the Site);
 - Akers Pits LWS (13m from the Site on the west side of Knowsley Road);
 - Ash Plantation (adjacent to the site within Knowsley Park LWS);
 - Jacks Brow Plantation (within Knowsley Park LWS to the east);

- Little Wood LWS (290m west);
- The Roughs LWS (390m west); and
- Meakins Pits LWS (649m northwest).

7.3.31. To identify any presence of ancient woodland indicator species, a detailed botanical survey was undertaken on 12th May 2025 of those woodlands located either directly adjacent to the Site, or within 500m of the Site and accessible by residents of the Proposed Development. These were:

- Howards Pits and Knowles's Pits
- Akers Pits LWS
- Ash Plantation
- Little Wood LWS
- The Roughs LWS

7.3.32. Jacks Brow Plantation LWS and Meakins Pits LWS were not included in the survey, due to their distance from the Site and lack of public access.

7.3.33. The surveys identified a low number of ancient woodland indicator ground flora species within all of the above surveyed woodlands. Detailed species lists are included in **Appendix 7.8**. With ancient woodland in England being defined as an area that has been continuously wooded since at least 1600 AD, and due to the proximity of the woodlands to an historic estate which dates to the late 15th century, the recorded woodland has been assumed to be ancient for the purpose of assessment to take a robust and precautionary approach.

7.3.34. Priority habitats, including the potential ancient woodlands above, which are located onsite or within the LWS are included as an IEF within the assessment of Site habitats and non-statutory designated sites; therefore, they are not considered separately. Outside of these areas, there are pockets of deciduous woodland and NMH, these habitats are considered important at a **local scale** and are included as IEF within the impact Assessment.

Baseline Habitats on Site

7.3.35. The habitats summarised below in **Table 7.6** correspond to those mapped on **Figure 7.5**. Detailed descriptions of each habitat along with full plant species lists and condition assessments are provided in **Appendix 7.12 – Biodiversity Net Gain Report**.

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Table 7.6: Baseline Habitat Descriptions

Ref	Habitat type	Condition	Description	Photo
Very Low Distinctiveness				
N/A	Artificial unvegetated, unsealed surface	N/A – Poor	Aggregate access track. Not considered to be an important ecological feature and are scoped out of further assessment.	 Photograph 1: Access track
Low Distinctiveness				
C-1	Cereal crops	N/A – Poor	Western field sown with an arable crop with narrow (<1m wide) grassland margins. Species noted within the margins include frequent cock's-foot, creeping thistle and barren brome, other species were noted as occasional or rare and included false oat-grass, cow parsley, common hogweed, ground elder, nettle and bracken. Field margins were not representative of local BAP or priority habitat. Therefore, C-1 is not considered to be an important ecological feature and is scoped out of further assessment. Nevertheless, their value has been accounted for within the Biodiversity Net Gain calculations and any	 Photograph 2: C-1

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Ref	Habitat type	Condition	Description	Photo
			loss will be appropriately compensated for within the wider net gain strategy for the Site.	
G-1	Modified grassland	Poor	The majority of the Site comprises fields of species poor modified grassland managed for silage. Within the three northern fields, the sward is mostly comprised of palatable grasses including abundant perennial rye-grass, Yorkshire fog, meadow foxtail and soft-brome. Cock's-foot was also noted rarely. Creeping buttercup and creeping thistle were locally frequent. Other forbs present at an occasional to rare abundance include white clover, cow parsley, common ragwort, common mouse-ear, meadow buttercup and broad-leaved dock. G-1 was not representative of a priority habitat grassland. Therefore, is not considered to be an important ecological feature and is scoped out of further assessment. Nevertheless, their value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	 Photograph 3: G-1

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Ref	Habitat type	Condition	Description	Photo
G-2	Modified grassland	Moderate	One field in the south of the site has been left fallow and scattered scrub is beginning to develop, becoming denser towards the northeast and southwest of the parcel (see S-2 for description). Species within the sward were similar to G-1 but this field contains a higher species diversity (six species per m²) and a greater number of forbs (four species per m²) than G-1. Conditions are locally damper in small areas with soft rush and creeping thistle noted as locally frequent in damper locations. Creeping buttercup and perennial; rye-grass were abundant locally, with rosebay willowherb locally frequent and Yorkshire-fog and cock's-foot frequent. Occasionally and rarely noted species included cat's ear, common vetch, common sedge. Fleabane, cuckooflower and red clover. Although a number of these species are indicative of neutral grassland, their relative frequency and the overall community composition particularly the dominance of perennial rye-grass led to the classification of modified grassland. G-2 was not representative of a priority habitat grassland. Therefore, is not considered to be an important ecological feature and is scoped out of further	 Photograph 4: G-2

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Ref	Habitat type	Condition	Description	Photo
			assessment. Nevertheless, their value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	
B-1, B-2	Bracken	N/A - Poor	Areas dominated by dense stands of bracken, underlain by moss with abundant common nettle, and bramble and raspberry noted occasionally. Located to the east of W-1 and H-5. This habitat is of limited intrinsic biodiversity value and is not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	 Photograph 5: Bracken east of W-1
R-1	Tall forbs	Moderate	Area to the east of H-5 which is dominated by nettle and cleavers, with locally abundant great willowherb and locally frequent cow parsley. Creeping buttercup was also noted as frequent. Other species were noted as occasional or rare and include broad-leaved dock, ragwort, bramble and elder and willow seedlings.	

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Ref	Habitat type	Condition	Description	Photo
			This habitat is of limited intrinsic biodiversity value and is not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	Photograph 6: Tall Forbs east of H-5
H-1, H-2, H-3, H-4, H-5, H-7, H-8	Native hedgerow	Poor/ Good	All are hawthorn dominant hedgerows, supporting an average of three or less species per 30m section. Sycamore, ash, elder, hazel, horse chestnut, wild cherry and blackthorn were also noted as rare to frequent occurrences. H-2 also contained a number of non-native introductions including cherry laurel, willow leaved cotoneaster rosa sp. and Russian vine. H-1 contains a mature standard Pedunculate Oak. All hedges supported at least 80% native canopy species and therefore met the criteria as Habitats of Principal Importance under the NERC Act 2006. None meet the criteria to be considered important under the Wildlife and Landscape criteria of the Hedgerow Regulations 1997 and are	 Photograph 7: H-3 

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Ref	Habitat type	Condition	Description	Photo
			therefore considered to be of importance at a Local scale and will be assessed as an IEF.	Photograph 8: H-5
H-6,	Native hedgerow with trees	Good	H-6 is a tall and unmanaged overgrown hedgerow, south of W-2. , species noted were hawthorn, pedunculate oak, elder goat willow and horse chestnut. Three standard goat willow trees are present. H-6 is not likely to be considered 'Important' under the ecology sections of Hedgerow Regulations 1997 as it averaged 4 woody species per 30m and did not have four associated features. However, as it supports >80% native species, it would qualify as a Habitat of Principal Importance under NERC Act 2006 are therefore considered to be of importance at a Local scale and will be assessed as an IEF.	 Photograph 9: H-6
Medium distinctiveness				
W-3	Other woodland, broadleaved	Poor	An approx. 15m wide strip of broadleaved woodland at the northern Site extent and adjacent to residential gardens to the north. The canopy comprises Ash with frequent Sycamore within the canopy and understorey. Other species within the shrub layer were noted as occasional or rare and include hawthorn, pedunculate oak, holly elder and lime.	 Photograph 10: W-1

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Ref	Habitat type	Condition	Description	Photo
			The ground flora comprises abundant nettle, bramble, common ivy and hybrid bluebell. There are paths through the woodland, leading to the adjacent residential area and piles of brash, garden prunings and litter were noted W-3 had a low diversity and cover of native canopy species, limited woodland ground flora and lack of veteran trees. It was therefore considered to be an important ecological feature at a Local scale.	 Photograph 11: W-1 Interior
S-1	Bramble scrub	N/A - Poor	The majority of scrub on Site comprises areas dominated by bramble. With the exception of locally frequent raspberry, cleavers and common nettle, other species were noted as occasional or rare and include creeping thistle, cow parsley, rosebay willowherb and seedling oak and elder. Soft brome was noted at the edges. This habitat is of limited intrinsic biodiversity value and is not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be	 Photograph 12: S-1

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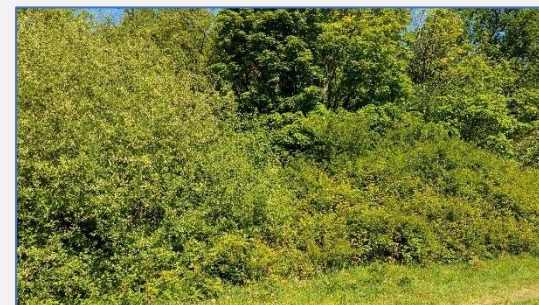
Ref	Habitat type	Condition	Description	Photo
			appropriately compensated for within the wider net gain strategy for the Site.	
S-2	Mixed scrub	Moderate	Within the grassland south of W-1 and W-2 a willow and blackthorn scrub is beginning to develop, becoming denser towards the north and west of the parcel. Scrub species comprise young self-set willow sp, blackthorn, and rarely noted pedunculate oak and silver birch. This habitat is limited in extent and diversity of structure and species. It is therefore not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	 Photograph 13: S-2
S-3	Blackthorn scrub	Poor	Along the northern boundary of the central grass field, along the south of Hedge 2 is an area of blackthorn dominant scrub with an understorey of common nettle and common bramble. No mature shrubs were present. This habitat is limited in extent and diversity of structure and species. It is therefore not considered to be an important ecological feature. It is therefore scoped out of further	 Photograph 14: S-3

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Ref	Habitat type	Condition	Description	Photo
			assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	
S-4	Hawthorn scrub	Poor	A further small area south of H2, where a young hawthorn dominant scrub is developing. Bramble and nettle were also noted as locally frequent. S-4 contains a low number of woody species and a lack of older shrubs and clearings. This habitat is limited in extent and diversity of structure and species. It is therefore not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	 Photograph 15: S-4

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Ref	Habitat type	Condition	Description	Photo
S-5	Mixed scrub	Moderate	Also to the south of W-2, similar species composition to S-2, however, this parcel contained a greater age range of woody species. S-5 was assessed as 'moderate' condition, failing only one criterion relating to the presence of clearings, glades or rides. Due to the limited extent of this habitat, it is not considered to be an important ecological feature. It is therefore scoped out of further assessment. Nevertheless, the habitat value has been accounted for within the Biodiversity Net Gain calculations and any loss will be appropriately compensated for within the wider net gain strategy for the Site.	 Photograph 16: S-5
P-1 P-4 P-5 P-7 P-8	Ponds (non-priority)	Moderate/ poor	At the time of the UKHab survey, five ponds were noted within the Site. All are woodland ponds and located within the central W-1 and W-2. Three further areas within W-1 appear to be seasonally inundated but were dry at the time of the UKHab survey and also during part or all of the GCN surveys. These were therefore not classed as ponds for the purposes of this assessment. Aquatic vegetation was limited to frog-bit within one pond (P-4). Marginals were and present in P-1, P-4 and P-5 only. Yellow iris,	 Photograph 17: P-1

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Ref	Habitat type	Condition	Description	Photo
			hemlock water-dropwort and soft rush were noted within the margins and banks. The. Invasive non-native (INNS) rhododendron was noted at all ponds and was often the dominant bankside vegetation, shading out most other species. Additionally, terrapin and large fish were noted within P-4 during the suite of pond surveys undertaken at the Site. All ponds were turbid and failed condition 1. All ponds also failed condition 6 due to presence of INNS. P-1 and P-4 failed additional conditions relating to surrounding habitat (P-4 is close to the arable field), presence of algae (P-1) and fish (P-4). P1 and P-4 were therefore assessed as 'poor' condition and P-5, P-7 and P-8 were assessed as 'moderate' condition. None meet the description as a priority habitat. Ponds on Site are therefore considered to be of Local value. and will be assessed as an IEF.	 Photograph 18: P-4  Photograph 19: P-7

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Ref	Habitat type	Condition	Description	Photo
T-2 T-3 T-4 T-5 T-7 T-8 T-11 T-12 T-14a T-14b T-14c	Individual trees	Poor/ Moderate/ Good	Eleven trees in total were noted as individuals and not as part of a woodland or hedgerow. These comprise: • One small non-native tree in poor condition (T-7); • Four small non-native trees in Moderate condition (T-2, T-3, T-4, T-5); • Four small native trees in moderate condition (T-12, T14a, T-14b T-14c); • One small native tree in good condition (T-8); and • One medium non-native tree in moderate condition (T-11) Species were mostly sycamore, with some goat willow and ash. Due to their inclusion in local policy, Individual trees are considered to be of Local value. and will be assessed as an IEF.	 Photograph 20: T-2
High distinctiveness				

Ecology and Biodiversity

Ref	Habitat type	Condition	Description	Photo
W-1	Lowland mixed deciduous woodland	Poor	Knowles Pit is the western of two woodland parcels located centrally within the Site. Sycamore was abundant amongst the canopy with pedunculate oak and crack willow as locally frequent associates. An established understorey is present, comprising frequent hazel, dogwood and the invasive non-native species: rhododendron. Other species were noted as a rare or occasional occurrence including downy birch, alder, rowan and grey willow. The ground flora would be broadly characterised as NVC community W10- <i>Quercus robur</i> - <i>Pteridium aquilinum</i> - <i>Rubus fruticosus</i> woodland with locally frequent common ivy and other species occurring at a rare abundance including the ancient woodland indicator species: remote sedge, native daffodil, English bluebell and scaly male fern. Localised areas in the centre of the wood align more closely towards NVC community W6 <i>Alnus glutinosa</i> - <i>Urtica dioica</i> woodland. In these areas there was a greater abundance of species indicative of damp conditions including alder, crack-willow, grey willow and goat willow. Yellow iris and remote sedge occurred frequently in localised areas. Other species were recorded as occasional	 Photograph 21: W-1  Photograph 22: W-1

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Ref	Habitat type	Condition	Description	Photo
			or rare including wood dock, bittersweet, creeping buttercup, bluebell and wild angelica. The ancient woodland indicator species remote sedge was noted at an occasional to frequent abundance. Several ponds were present within the woodland and a network of informal paths run throughout linking the more permanent ponds. W-1 was assessed as 'poor' condition, scoring poorly for presence of INNS, diversity and cover of native species and presence of veteran trees. W-1 is considered representative of Lowland Mixed Deciduous Woodland, a Habitat of Principal Importance under the NERC Act 2006. Additionally, due to the presence of four ground flora species which may be found within ancient woodland this habitat has been classified as ancient woodland. As such, W-1 is considered to be of importance at a Metropolitan Area scale. and will be assessed as an IEF.	

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Ref	Habitat type	Condition	Description	Photo
W-2	Lowland mixed deciduous woodland	Poor	Howards Pit, is the eastern parcel of the two woodlands located centrally within the Site. Canopy species were similar to W-1, broadly in line with NVC community W10-<i>Quercus robur</i> – <i>Pteridium aquilinum</i> – <i>Rubus fruticosus</i> woodland. Sycamore was frequent to abundant throughout, the canopy with pedunculate oak as a frequent associate. The understorey is dominated by the invasive non-native rhododendron with other species noted only rarely including hawthorn, hazel, holly, hybrid black-poplar and blackthorn. The stands of rhododendron are dense and the ground flora is mostly absent beneath. However, some open glades are present where the ground flora is more established. English bluebell, creeping soft grass and remote sedge were noted as occasional. W-2 was assessed as 'poor' condition, scoring poorly for presence of INNS, diversity and cover of native species lack of ground flora and presence of veteran trees. W-2 is considered representative of Lowland Mixed Deciduous Woodland, a Habitat of Principal Importance under the NERC Act 2006. Additionally, due to the	 Photograph 23: W-2  Photograph 24: W-2

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Ref	Habitat type	Condition	Description	Photo
			presence of native bluebell and remote sedge which may be found within ancient woodland ground flora. On a precautionary basis, this habitat has been classified as ancient woodland. As such, W-2 is considered to be of importance at a Metropolitan Area scale. and will be assessed as an IEF.	

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Protected and Notable Species

- 7.3.36. Records of notable or protected species from within 2km of the Site from the last 20 years are shown in **Appendix 7.1** and mapped in **Figure 7.3**. Where species are referred to in the text, the accepted common name is used, with the corresponding scientific name provided in **Appendix 7.1** or the relevant species appendix.

Flowering Plants

- 7.3.37. No plant records were returned within the Site. However, several records of native bluebell were returned within the search radius, including a record from Akers Pits woodland 87m to the west.
- 7.3.38. Native bluebell were noted within all of the woodlands on Site during the habitat surveys. This is a North Merseyside BAP species and is protected from intentional picking, uprooting or destruction under Schedule 8 of the WCA. Native bluebell are included within the assessment as a feature of the woodland habitats on Site and are therefore not considered separately as an IEF.
- 7.3.39. Rhododendron, listed on Schedule 9 of the WCA, was frequently recorded in association with woodland areas. Due to legislative considerations, this INNS is included as an IEF. No other botanical INNS were recorded during the habitat surveys in either the terrestrial or aquatic habitats on Site.
- 7.3.40. All other plants are scoped out of further assessment.

Invertebrates

- 7.3.41. Migrant hawker and southern hawker, both LBAP dragonfly species, have been recorded within Akers pits, 100m to the west of the Site. Suitable habitat is present on Site within the woodland ponds. Both are common and widespread species of dragonfly. No other records for notable species were returned within proximity of the Site.
- 7.3.42. The arable and grassland habitats forming the majority of the Site are unlikely to be of value to invertebrates. Ponds and woodland will provide suitable habitat. These areas will be retained and/or enhanced within proposals. Due to the limited predicted impacts of the scheme upon suitable habitats, it was not considered proportionate to undertake detailed surveys and invertebrates are scoped out of further assessment.

Amphibians

- 7.3.43. **Appendix 7.2:** Great Crested Newt Report provides full details of the GCN surveys undertaken. A summary is provided here.
- 7.3.44. The local records centre returned no amphibian records from within the Site, but seven great crested newt *Triturus cristatus* (GCN) records were returned within a 2km radius. The most recent is dated from 1970. All records were provided with a low resolution grid reference, referring to a 1km grid square located over 1km from the Site to the south east. No ponds within 2km were identified on Magic.gov.uk as having conducted GCN sampling or having had licence returns, and no statutory or non-statutory sites occur within 2km which include GCN populations as part of their designating features.
- 7.3.45. Eleven smooth newt records were returned during the desk study, the majority of which are separated from the Site by the M57 motorway to the west. The nearest record is located within

the Knowsley Oak Plantation, 1km south of the Site. Other amphibian records identified within the Site vicinity include common toad and common frog.

- 7.3.46. Examination of the 1:25000 OS map identified a total of sixteen waterbodies within 250m of the Site. These are shown in **Figure 7.2.1 (Appendix 7.2)**. Four ponds to the south east (P9, P10, P15 and P16) were not surveyed due to the presence of a 2.5m high solid stone wall at the Site boundary which was considered to provide a significant barrier to GCN dispersal towards the Site from these ponds. During the UKHab survey and throughout the aquatic surveys, P2 was found to be dry and was therefore not included in the aquatic surveys.
- 7.3.47. During the presence/likely absence aquatic surveys, no GCN were recorded in any of the ponds. P1, P3, P6, P8 and P14 were initially wet but dried out as the aquatic surveys progressed making these less suitable for use as GCN breeding habitat as they dry out during the breeding season and juvenile GCN phase. Additionally, large fish and terrapin were noted within P4 during the surveys; these are likely to predate juvenile amphibians and make the habitat less suitable for breeding use.
- 7.3.48. Therefore, GCN are considered to be likely absent from the Site and are scoped out of further assessment.
- 7.3.49. No smooth newt or common toad were recorded during the surveys. However, single common frogs were identified during the surveys of ponds P4, P8 and P12, and frogspawn was present in P8. Records show that common frog are widespread in the local area. Amphibians are therefore not considered to be an IEF and are therefore scoped out of further assessment.

Birds

- 7.3.50. No bird records were returned within the Site boundary. However, two records were returned within 1km of the Site, these were for house sparrow and barn owl. 183 records of notable birds were returned at tetrad spatial resolution. These records were of 31 species which appear on one or more of the following and are hereafter referred to as 'notable species':
- Schedule 1 of WCA;
 - BoCC Red or Amber lists;
 - Section 41 of the NERC Act 2006; and / or
 - Local Biodiversity Action Plan.

Breeding Birds

- 7.3.51. **Appendix 7.3.** provides full details of the breeding bird surveys undertaken. A summary is provided here.
- 7.3.52. While no internationally designated sites are located within 10km of the Site boundary, the following sites designated for their ornithological interest were identified within the desk study at a slightly greater distance:
- Liverpool Bay SPA
 - Mersey Estuary SPA and RAMSAR

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- Mersey Narrows and North Wirral Foreshore RAMSAR, SPA and SAC
- Ribble and Alt Estuaries RAMSAR, SPA and SAC
- Martin Mere RAMSAR/SPA
- Dee Estuary RAMSAR/SPA

- 7.3.53. **Appendix 7.1** includes details of the designating features for each of the above sites.
- 7.3.54. Breeding evidence accumulated across all six surveys was used in the assignment of breeding status for each species in the following results.
- 7.3.55. A total of 55 bird species were recorded within the survey area during the six survey occasions. Of these, 24 would be considered as 'notable species'. The majority of bird species recorded on Site are typical of the habitats present in a regional context, with very little connection to the nearby estuarine habitats evident.
- 7.3.56. The actively cropped arable field on the western part of the Site supported a limited assemblage of breeding birds which included lapwing and skylark. Two skylark pairs and one lapwing pair were recorded as probable breeders in the cropland field. A single quail was heard singing from this habitat on the dusk survey but further evidence of breeding was not noted. Small numbers of other notable species including stock dove, woodpigeon, meadow pipit and starling utilised these areas for foraging. Swallow were recorded hawking insects over these fields in summer.
- 7.3.57. The hedgerow and woodland blocks provided suitable breeding and foraging habitat for a range of notable, but also common and widespread, species that are typical of the habitats present. Notable species using the woodland areas were willow warbler, wren, song thrush and mistle thrush. The hedgerows were used by whitethroat, dunnock, bullfinch, greenfinch, linnet and reed bunting.
- 7.3.58. Moorhen was found to be breeding on the woodland ponds, and a small number of mallard and teal were observed during the early season surveys but were assessed as non-breeders.
- 7.3.59. The grassland habitat forming the majority of the Site was not considered to be utilised by any breeding species although it did provide a hunting area for kestrel. Singing male reed buntings held territories in the scrubby section of land south of the arable field.
- 7.3.60. An urban bird assemblage was also recorded to the north of the Site where the cropland field bordered a residential area. This included house sparrow and starling, which were likely breeding offsite and using the onsite habitats as foraging resources.
- 7.3.61. One qualifying species of the Ribble and Alt Estuaries SPA – the lesser black-backed gull – was recorded in limited numbers on two survey occasions. The habitats on Site are unsuitable for this species in terms of breeding; the presence of these birds was in relation to foraging opportunities only. These gulls are opportunistic scavengers, and the Site is not considered to be an important foraging resource. It is more likely to be on the route between the birds' roosting and foraging areas.
- 7.3.62. The breeding bird assemblage on the Site was considered to be important at a **Local scale**.

Wintering birds

- 7.3.63. **Appendix 7.4** provides full details of the wintering bird surveys undertaken. A summary is provided here.
- 7.3.64. Six internationally designated sites cited for their wintering ornithological interest were identified within the desk study. All are over 10km from the Site. None of the non-statutory sites in close proximity to the Site are cited for their wintering bird assemblages.
- 7.3.65. Twenty-six notable species were recorded within the site boundary during field surveys, of which three species are considered as qualifying features or within the waterbird assemblage of either the Mersey Estuary SPA / Ramsar, Ribble and Alt Estuaries RAMSAR/ SPA, Martin Mere Ramsar/SPA and/ or Dee Estuary Ramsar/SPA were recorded within the site boundary: mallard, teal and lapwing.
- 7.3.66. The arable field provides foraging and roosting opportunities for notable skylark and meadow pipit. Towards the end of the survey period, lapwing were also recorded utilising this habitat. The grassland parcels provided foraging opportunities for largely common and widespread species, with some occasional use by meadow pipit and nocturnal use by snipe and woodcock. The grassland and arable fields also provided foraging habitat for notable birds of prey including sparrowhawk and kestrel.
- 7.3.67. Parcels of woodland, scrub and hedgerows supported similar assemblages of notable species, including regular use by house sparrow, song thrush, redwing, greenfinch and wren. Reed bunting were also noted to occasionally use the scrub and hedgerow habitats. The woodland ponds occasionally supported waterbirds such as mallard, teal and moorhen.
- 7.3.68. None of the species recorded reached the thresholds stated within the LWS selection criteria, as such the Site is not considered to qualify as an LWS based on its wintering bird numbers nor is the wintering bird assemblage considered to be of county level importance.
- 7.3.69. The species assemblages were largely concentrated as to farmland or woodland specialists amongst more generalist species utilising the associated habitat types within the Site boundary.
- 7.3.70. The hedgerows and arable compartments were used by declining farmland specialists which included small numbers of linnet and reed bunting, and a peak count of 37 skylark. These species were recorded consistently across the wintering period, however due to the range of the numbers recorded, the county population and availability of further habitat immediately offsite it is considered that the farmland assemblage is of **local** level importance.
- 7.3.71. The woodland and scrub compartments were used by generalist and woodland species and were consistently used by small numbers of song thrush, greenfinch and wren with larger flocks of woodpigeon and occasionally redwing. The generalist and woodland assemblages were considered to be of **local** level importance.

Reptiles

- 7.3.72. No recent records were returned for reptiles. However, the data search returned historical records for common lizard 178m east of the Site within Knowsley Park in 2000 and also for slow worm 1959 whose record description states the location from within Knowsley Park east of the Site, however the grid reference refers to low resolution location north of the Site.

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- 7.3.73. Cropland and modified grassland, which form the majority of habitat on Site, is considered largely unsuitable for reptiles, given the lack of suitable cover and regular management practices of these habitats. Localised areas associated with the margins of the woodland, scrub, bracken and hedgerows do provide some suitable habitat for reptiles however, these areas are primarily retained and enhanced within the proposed design. As such, the habitats within the Site that are largely to be affected by the proposals lack the ideal structural diversity and mosaic of habitats typically required by reptiles for basking, sheltering and foraging in close proximity. Given this, and the lack of recent records in the local area, the presence of reptiles is considered unlikely, and reptiles are scoped out of further assessment. The legislative context is considered separately within Section 7.4 and 7.5.

Badger

- 7.3.74. Badger survey results are confidential and should not be disclosed to the general public or other third parties without prior permission. Therefore, details of badger records have not been included within this report. Badgers are present within the local area. No records were returned from within the Site.
- 7.3.75. No badger setts or other signs of badgers were identified on Site during the badger survey or during the numerous survey visits to the Site. The Site, including the woodland areas, are subject to regular disturbance from the management of the Site and also through frequent recreational use. Badgers are considered absent from the Site and immediate surroundings, and are therefore scoped out of further assessment.
- 7.3.76. Given the transient nature of this species and the suitability of certain habitats on Site, a badger survey update is recommended prior to a detailed planning or reserved matters application to confirm continued absence of badger.

Bats

- 7.3.77. **Appendix 7.5** provides full details of the bat surveys undertaken. A summary is provided here.
- 7.3.78. The desk study returned records for at least eight bat species within 2km. The majority of records are from within Knowsley Park, located over 1km to the South East, where over 20 surveys were undertaken between 2011 and 2016. Here, common-, soprano- and Nathusius' pipistrelle, *Myotis* species including Daubenton's bat, Natterer's bat, and whiskered bat, brown long-eared bat and noctule have been recorded. Records indicate both in flight- and roost records.
- 7.3.79. Nine records refer to the estate buildings offsite but near to the north-east boundary, where brown long-eared bat and common pipistrelle maternity roosts have been recorded. These include two records whose grid reference falls within the Site boundary, but the record description refers to the offsite buildings.

Roosting bats

- 7.3.80. There are no buildings or structures on Site. The majority of trees are retained and buffered within proposals. The woodlands likely contain trees with suitable roosting features for bats, but these are not expected to be impacted by proposals. The ground-based assessment identified no potential roost features within trees likely to be impacted by proposals. All were considered to provide negligible suitable roost features. Impacts to roosting bats are therefore considered unlikely, and roosting bats are scoped out of further assessment.

Foraging and Commuting Habitat

- 7.3.81. Given the variety and extent of habitat types on Site, and connectivity to high quality habitats in the wider landscape, the overall habitat quality was assessed as moderate to high.
- 7.3.82. The most recorded species on Site was common pipistrelle by a significant margin, accounting for 63% of the total bat registrations during the static surveys. This was also the most abundant species on transect and flightlines surveys, during which, this species was observed foraging and commuting. Common pipistrelle are the most common bat species in the UK and are widespread in all geographies.
- 7.3.83. Consistent use of the Site by soprano pipistrelle, *Myotis* spp, brown long-eared bat and noctule was also recorded. These species represented a smaller proportion of the total registrations but were recorded at all locations and during each month of the static surveys, as well as being heard and observed during the nighttime bat walkovers.
- 7.3.84. Occasional passes by Nathusius' pipistrelle were recorded during the static surveys. The infrequency of registrations likely represents intermittent passes by solitary bats and so significant use of the Site by this species has been ruled out. Nathusius' pipistrelle are considered rare in the UK but have long been deemed under-reported.
- 7.3.85. The highest overall bat activity recorded during the static surveys was at Location 1, as shown on **Figure 7.5.4 in Appendix 7.5** sampling woodland, scrub, and urban edge habitat around woodland W3 to the far northeast of the Site. However, this is still considered a generally low level of activity, with periods of moderate activity in the spring and summer.
- 7.3.86. A fairly consistent, low level of foraging and commuting behaviour was recorded along the edges of woodland W1 with a peak of *Myotis* activity in September. A swarming event has been ruled out. Nevertheless, W1 clearly provides a valuable foraging resource for bats. Woodland W2 had the lowest overall activity recorded during the static surveys, however only a small area was sampled, and the woodland may be used by bats to a greater extent in other parts.
- 7.3.87. Hedgerow habitats on Site all support a generally low level of commuting activity, with some higher levels of commuting and foraging activity along H2 and H5 observed during flightlines and recorded on statics. No significant commuting corridors were identified during the surveys.
- 7.3.88. The open grassland and arable field habitats on Site were not observed being used by foraging bats to any significant extent during the flightlines or transect surveys.
- 7.3.89. The species assemblage recorded on Site is typical for the north of England and for the grassland, agricultural and woodland habitat on Site. The species diversity of the bats shown to be using the Site consistently is moderate for the area with at least six species recorded (multiple species of the genus *Myotis* may be present.) The Site supports common and widespread species with sporadic passes of rarer bats. Foraging/commuting bats are therefore considered to be an IEF of **local level** importance.

Red Squirrel

- 7.3.90. The Site lies within a red squirrel alert zone (see **Figure 7.3**). Active protection for red squirrel and exclusion of grey squirrels through monitoring and population control methods is encouraged within these areas.

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- 7.3.91. The desk study returned 21 records for red squirrel, the closest is within Knowsley Park 270m to the southeast. The most recent sighting was in 2017 and no red squirrels have been recorded in the area since then.
- 7.3.92. The woodlands on Site provide suitable habitat for both red and grey squirrel. Surveys of suitable habitat found a single squirrel drey and squirrel feeding remains within W1. Due to the prevalence of grey squirrels in the area, and lack of recent records despite regular monitoring for the presence of red squirrel, it is likely that these signs are due to the presence of grey squirrel rather than reds. Nevertheless, a hair tube survey has been scheduled in August 2025 to confirm the presence or likely absence of red squirrel. Results of the red squirrel survey will be appended upon completion, **in Appendix 7.6.**
- 7.3.93. Given the need for further surveys, red squirrel are scoped into the assessment on a precautionary basis but the scale of their importance has not been assigned. This will be updated during the determination period.

Water vole

- 7.3.94. **Appendix 7.7:** Water Vole Survey Report provides full details of the surveys undertaken. A summary is provided here.
- 7.3.95. Within 2km of the Site, 22 water vole records were returned. The closest are 880m to the north. Additionally, The River Alt LWS, located 837m to the north west is designated for the presence of a small number of water vole. There are no direct hydrological links to the Site from these locations.
- 7.3.96. All ditches on Site were dry at the time of the presence/likely absence surveys.
- 7.3.97. During the habitat suitability assessment, Pond 2, Pond 3 and Pond 6 were considered to provide 'negligible' suitable water vole habitat and as such were not surveyed. Pond 4 was classified as 'good' suitability. Pond 1, Pond 5, Pond 7 and Pond 8 were classified as 'suitable but poor'.
- 7.3.98. No evidence of water vole was found during the survey. It is therefore considered likely that water voles are absent from the Site. Water vole are therefore scoped out of further assessment.

Other mammals

- 7.3.99. No otter records were returned in the desk study and no signs of otter were noted during the water vole and habitat surveys. The Site is not connected to any watercourses and habitats on Site offer limited suitability for otter. Therefore, the presence of otter is considered unlikely and otters are scoped out of further assessment
- 7.3.100. Several brown hare and hedgehog records were returned from the data search. Habitats on Site provide suitable habitat for these species, although none were incidentally recorded on Site during any of the protected species surveys. Hedgehog and brown hare are both Species of Principal Importance under the NERC Act (2006). Brown hare are also a North Merseyside BAP species. Given that both are common and widespread on low ground throughout England and given the minimal legal protection afforded to these species, brown hare and hedgehogs are not considered an important ecological feature and are scoped out of further assessment.

Proposals

Future Baseline

- 7.3.101. Should proposals not proceed, it is considered that habitats on Site would likely remain in the same condition as described. It is reasonable to assume the current use and management of the Site would continue in the absence of development.
- 7.3.102. Without significant changes in habitats, the Site will likely continue to support low numbers of common/widespread bats, breeding and wintering birds and low numbers of common and widespread species.
- 7.3.103. Given the transient nature of badgers, and the suitability of certain habitats on Site for this species, an update badger survey is recommended prior to a detailed planning or reserved matters application to confirm continued absence of badger.
- 7.3.104. Surveys are ongoing to confirm presence or likely absence of red squirrel.
- 7.3.105. It is unlikely that other notable or protected species would colonise the Site given the lack of previous evidence and without changes in the habitat on Site and connective habitat in the local area.

Summary of Important Ecological Features

- 7.3.106. A summary of the ecological features that have been determined as requiring detailed assessment is provided in **Table 7.7**.

Table 7.7: Summary of Important Ecological Features and their Relative Geographical Importance

Ecological Feature	Geographical / Ecological Frame of Reference
Statutory Designated Sites: • The Mersey Estuary Ramsar/SPA • The Liverpool Bay SPA • The Mersey Narrows and North Wirral Foreshore Ramsar/SPA • The Ribble and Alt Estuaries Ramsar/SPA • The Dee Estuary SAC/Ramsar/SPA • Sefton Coast SAC • Martin Mere Ramsar/SPA	International

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Ecological Feature	Geographical / Ecological Frame of Reference
Non-statutory designated sites: • Knowsley Park LWS • Akers Pits LWS • Little Wood LWS • The Roughs LWS • Meakin's Pits LWS • The River Alt LWS	Metropolitan
River Alt and M57 Corridor Nature Improvement Area	Local
Offsite Priority habitats – deciduous woodland and NMH	Local
On Site habitats: Lowland mixed deciduous woodland/potential ancient woodland	Metropolitan
On Site habitats: non-priority other broadleaved woodland, non-priority ponds, individual trees, native hedges.	Local
Breeding birds	Local
Wintering birds	Local
Foraging and commuting bats	Local
Red squirrel	TBC

7.4. Assessment of Likely Significant Effects

Construction

Statutory Designated Sites

- 7.4.1. Whilst a Habitats Regulations Assessment will be conducted by the local authority, an assessment of effects on the National Site Network (former Natura 2000) sites has also been included within this document as the two assessments are subtly different in their scope, particularly in respect of the assessment process.
- 7.4.2. The separate 'information to inform a HRA' (iHRA) (FPCR Environment & Design 2025) has addressed the potential for any significant adverse effects upon the integrity of Sites on the National Site Network. This assessment is without prejudice to the assessment of impacts on the Sites on the National Site Network, as set out in the iHRA.
- 7.4.3. The following statutory designated sites were assessed as having potential impact pathways to the Proposed Development during construction:
- The Mersey Estuary Ramsar/SPA
 - The Liverpool Bay SPA
 - The Mersey Narrows and North Wirral Foreshore Ramsar / SPA
 - The Ribble and Alt estuaries Ramsar/SPA
 - The Dee Estuary SAC/Ramsar/SPA
 - Sefton Coast SAC
 - Martin Mere Ramsar/SPA
- 7.4.4. The closest internationally designated site is located over 10km from the Site. The Site is spatially separated from all of the designated sites by major development. Additionally, the Site does not share direct hydrological connectivity to any of the designated sites, and there will be no direct loss of habitats within any of the designated sites. Due to the distances from the Site, and intervening urban habitats, disturbance, recreational and pollution impacts are considered unlikely within the construction phase.
- 7.4.5. Given the results of the winter and breeding bird surveys undertaken, it is concluded that the Site is not likely to be of importance for the qualifying bird species of any designated sites. Therefore, disturbance impacts to any qualifying features of the internationally designated sites are unlikely during construction.
- 7.4.6. In the absence of mitigation, construction effects are expected to be **Neutral**.
- Non-Statutory Designated Sites and the River Alt and M57 Corridor Nature Improvement Area (NIA)
- 7.4.7. The following non-statutory designated sites were identified as having potential impact pathways to the Proposed Development:

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- Knowsley Park LWS
- Aker Pits LWS
- Little Wood LWS
- The Roughs LWS
- Meakin's Pits LWS
- The River Alt LWS
- The River Alt and M57 Corridor Nature Improvement Area (NIA)

7.4.8. Potential effects on these locally designated sites from the construction phase are summarised in **Table 7.8** below.

Habitat loss

7.4.9. No part of a LWS or NIA falls within the Site boundary. With the exception of Akers Pits LWS, Knowsley Park LWS and the River Alt and M57 NIA, which lie adjacent to the Site, all other LWS are located over 290m from the Site.

7.4.10. Knowsley Park LWS is adjacent to the boundary, however, the development area is located over 17m from the LWS and a 2.5m high solid stone wall forms the boundary between the Site and LWS. Akers Pits, and the River Alt and M57 Corridor NIA are located over 20m from the development area, with Knowsley Road separating these areas from the Site. Direct habitat losses are therefore not expected.

Hydrological impacts

7.4.11. The Site does not share direct hydrological connectivity to any of the LWS or to the NIA. As such, no pathway for hydrological effects during construction have been identified as part of this assessment.

Air quality & dust deposition

7.4.12. The air quality assessment (Chapter 10 and **Appendix 7.9**) concluded that the Proposed Development will not have a significant impact on local roadside air quality as a result of construction traffic emissions, due to the low number of vehicles predicted to access the Site per day.

7.4.13. The construction phase has the potential to increase the amount of airborne dust, particularly in periods of dry weather. In the absence of mitigation, dust deposition could result in damage to vegetation and potentially affect associated fauna.

7.4.14. The Institute of Air Quality Management Guidance on the Assessment of Dust from Demolition and Construction, suggests that effects to potential ecological receptors are unlikely at distances over 50m from the source. As such, with the exception of Akers Pits LWS, Knowsley Park LWS and the River Alt and M57 Corridor NIA, all other sites fall outside this buffer.

7.4.15. The air quality assessment (**Appendix 7.9**) concluded that with embedded mitigation in place, the effects of construction dust will be 'not significant' upon any of the surveyed woodlands.

Noise, light and vibration

- 7.4.16. Lighting, noise and vibration during construction may potentially cause disturbance to species within Knowsley Park LWS. Due to the distance, lack of hydrological connectivity, intervening habitats and designating features for all other LWS it is unlikely that disturbance impacts would be significant.
- 7.4.17. Therefore, in the absence of mitigation, there is potential for a **Not-Significant Negative Effect at a Metropolitan level** on:
- 7.4.18. Knowsley Park LWS, from construction phase dust deposition and from disturbance from noise, light and/or vibration;
- 7.4.19. Akers Pits LWS and the River Alt and M57 Corridor NIA, from construction phase dust deposition.
- 7.4.20. Effects on Little Wood LWS, The Roughs LWS the River Alt LWS and Meakins Pits LWS are expected to be **Neutral**.

Table 7.8: Summary of potential construction effects on locally designated sites.

Ecological Feature	Habitat loss	Hydrological impacts	Dust deposition	Traffic emissions	Disturbance	Potential Effect
Knowsley Park LWS	Unlikely	Unlikely	Possible	Unlikely	Possible	Not-Significant Negative
Aker Pits LWS	Unlikely	Unlikely	Possible	Unlikely	Unlikely	Not-Significant Negative
Little Wood LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
The Roughs LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
Meakin's Pits LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
The River Alt LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
The River Alt and M57 Corridor NIA	Unlikely	Unlikely	Possible	Unlikely	Unlikely	Not-Significant Negative

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'Other' Priority habitat offsite

- 7.4.21. There are no obvious hydrological links to priority habitats. Within the biodiversity air quality assessment (**Appendix 7.9**), roadside air quality impacts have been ruled out during construction. It is unlikely that disturbance impacts would be significant during construction.
- 7.4.22. The closest priority habitat, outside of those included in the previous sections above, is located within 'The Sanctuary woodland' to the west of Knowsley Lane and 10m from the Site boundary. Direct habitat losses are therefore considered unlikely.
- 7.4.23. Parts of Sanctuary Woodland and a deciduous woodland parcel to the northwest of the Site fall within 50m of the development area. In the absence of mitigation, dust deposition could result in damage to vegetation. Construction disturbance may also affect associated fauna within these areas.
- 7.4.24. Therefore, in the absence of mitigation, there is potential for a **Not-Significant Negative Effect at a Local level** on offsite deciduous woodland priority habitat during construction, arising from dust deposition.

On-Site Habitats

Priority habitat lowland mixed deciduous/ancient woodland

- 7.4.25. Proposals will not result in the direct loss of any Lowland Mixed Deciduous Woodland. Woodlands will be retained and a wide buffer (minimum 15metres) has been maintained between woodland and areas of proposed development. At the detailed design stage, establishing improved footpath links through the woodlands may cause localised impacts. However, footpaths shall follow existing informal access tracks through the woodland and will not result in the loss of any woodland habitat function. This impact is therefore not likely to be significant at any scale.
- 7.4.26. Within the embedded mitigation, a wide buffer of natural planting between the retained habitat and development areas will mitigate for potential indirect impacts on the retained woodlands during construction through the accidental physical damage to both above and below ground parts.
- 7.4.27. The Air Quality Assessment report, (**Appendix 7.9**), concludes that without mitigation, the risk of impacts on priority/ancient woodlands from dust deposition is low. Potential effects of traffic emissions during the construction phase were also scoped out due to the low number of vehicles predicted to access the Site.
- 7.4.28. In the absence of mitigation, construction effects are expected to be **Negative, Not-Significant at a Metropolitan Scale**, due to potential impacts from dust deposition.

Native Hedges

- 7.4.29. Proposals will result in the permanent loss of 89m of species-poor hawthorn hedges, primarily to facilitate access. This represents a loss of 6.6% of the existing hedgerow resource recorded within the Site. None meet the criteria to be considered important under the Wildlife and Landscape criteria of the Hedgerow Regulations 1997. Additionally, hedgerows are a common field boundary marker within the local area.

7.4.30. There is a risk of potential indirect effects on the retained hedgerows during construction through root compaction, accidental damage or pollution, or an increase in airborne dust.

7.4.31. As such, prior to the compensation measures secured by the Biodiversity Net Gain condition, which will secure a 10% gain in hedgerow value, and in the absence of mitigation, there is considered to be a **Not Significant Negative Effect at a Local scale**.

Other broadleaved woodland

7.4.32. Proposals will not result in the direct loss of any woodland. As above, there is potential for indirect effects on the retained W-3 during construction through root compaction, accidental damage or pollution or an increase in airborne dust. In the absence of mitigation, there is potential for a **Not Significant Negative Effect at a Local scale**.

Ponds (non-priority)

7.4.33. All ponds are retained and buffered within proposals. As above, there is potential for indirect effects on the retained ponds during construction through accidental physical damage, accidental pollution and dust deposition. In the absence of mitigation, there is potential for a **Not Significant Negative Effect at a Local scale**.

Individual trees

7.4.34. All mature trees will be retained within proposals. There will be a loss of three established goat willow trees from within H-6 in order to facilitate creation of an access road. This represents a small proportion of the total trees within the Site. These trees were not mature and have developed due to a lack of management of the hedge. They were not assessed as providing high biodiversity value and therefore their loss is not considered significant in ecological terms.

7.4.35. As above, there is the risk of potential indirect effects on retained mature trees during construction through accidental damage, root compaction and/or the increase in airborne dust.

7.4.36. Prior to the compensation measures secured by the Biodiversity Net Gain condition, which will secure appropriate compensation for tree losses, this is considered to be a **Not Significant Negative effect at a Local scale**.

Breeding birds

7.4.37. The proposals will require the loss of the area of arable land and the vast majority of the grassland habitats recorded within the Site. The majority of hedgerow and woodland habitats are to be retained, with only some minor losses of hedgerow. This will result in minor losses of breeding habitat for the generalist assemblage recorded, however these will not be significant due to the small-scale losses proposed.

7.4.38. The loss of the arable habitat on site will lead to the loss of breeding habitat for two skylark pairs and one lapwing pair. The proposals do not provide open areas of suitable habitat for either species as such it is considered both species will be lost as breeding species within the Site.

7.4.39. Construction operations have the potential to disturb birds using the development area for breeding, roosting, and foraging. Operations likely to disturb breeding birds include noise and displacement during vegetation clearance, initial ground works and some construction activities. During the breeding season disturbance may lead to nest desertion or the avoidance of the area

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and reduce the suitability of retained nesting areas, such as the retained hedgerows or woodland edge.

- 7.4.40. In the absence of mitigation, it is considered that this will result in a likely **Not-Significant Negative Effect at a Local level**.

Wintering birds

- 7.4.41. The proposals will lead to the loss of all the arable habitat on Site. As such, this will significantly reduce the habitat available for wintering farmland birds utilising the Site such as skylark, reed bunting and meadow pipit. It is considered that the scale of adverse impacts will be reduced by the abundance of further suitable arable habitat in the wider landscape to the Site.
- 7.4.42. The retention of scrub, woodland and hedgerows across the Site will ensure the development continues to provide foraging and roosting opportunities to the generalist and woodland specialist species recorded within the Site, including song thrush, mistle thrush, woodpigeon and dunnock.
- 7.4.43. Construction operations have the potential to disturb birds using the Site for roosting and foraging, if undertaken during the wintering/passage season. Operations likely to disturb wintering birds include noise from vegetation clearance, initial ground works and some construction activities, such as piling, which are of low frequency but high amplitude. Active, high level, infrequent disturbance causes most birds to be displaced for short periods. During the wintering season, disturbance may lead to the avoidance of important foraging habitats. Whilst there is some potential for foraging success to be reduced, this is not expected to affect the local conservation status of the majority of the wintering bird species. No significant impacts to wintering bird species are anticipated.
- 7.4.44. In the absence of mitigation, it is considered that this will result in a likely **Not-Significant Negative Effect at a Local level**.

Foraging/commuting bats – to be updated upon completion of static surveys

- 7.4.45. Proposals will result in the loss of approximately 89m of hedgerows, and three small individual trees. There is also the potential for disturbance from any night-time lighting, which could result in the temporary disruption of flight routes and displacement away from foraging areas.
- 7.4.46. In the absence of mitigation, it is considered that this will result in a likely **Not-Significant Negative Effect at a Local level**.

Red Squirrel – to be updated upon completion of additional survey

- 7.4.47. Lighting, noise and vibration during construction may potentially cause disturbance to red squirrel, if present. Effects will be confirmed following further survey work. However, it is anticipated that any negative impacts during construction could be mitigated via implementation of an industry best practice Construction Environmental Management Plan (CEMP) as detailed in **Section 7.5.11** prior to the commencement of any construction activity. To ensure pre-commencement checks are carried out by a suitably experienced ecologist to avoid impacts to dreys or individual red squirrels.

INNS: rhododendron and terrapin (legislative context only)

- 7.4.48. Rhododendron was noted as frequent within W-1 and dominant in W-2. The species is out competing other shrub species within the woodlands and inhibiting the development of ground flora and woodland regeneration.
- 7.4.49. Rhododendron is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), which imparts a legal obligation for no action to take place which might result in this species being caused to grow in the wild. Furthermore, the presence of this species is undesirable for biodiversity value of the Site.
- 7.4.50. In the absence of mitigation, there is a risk of spreading rhododendron offsite during construction.
- 7.4.51. Terrapin were noted within pond P4 during the surveys. As an animal listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), it makes it an offence to release or allow this species to escape into the wild. This includes the release of animals taken into captivity for welfare reasons. The pond is considered to be suitably buffered during construction and therefore spread of this species offsite during construction is considered unlikely.

Reptiles – common lizard and slow worm (legislative context only)

- 7.4.52. All common reptile species, including grass snake, slow worm, common lizard and adder are partially protected under the WCA. In summary, this legislation protects the species from intentional killing, injury or sale, offering for sale, or possessing, transporting or publishing advertisements for the purposes of sale.
- 7.4.53. Within the Site, the woodland and scrub edges, ponds, hedge bases, bracken and rough grassland offer limited suitable foraging and sheltering habitat for reptile species, should they be present.
- 7.4.54. Given the presence of historical reptile records in the area, if present on Site, there is a residual risk of a killing or injury offence to occur, should clearance of suitable vegetation or refugia be required during construction.

Operation

Statutory Designated Sites

Recreational pressure

- 7.4.55. Given the nature of the development, increased recreational pressure is likely to occur during the operational phase. The screening assessment within the accompanying iHRA identified no likely significant effects from recreational disturbance of the following:
- Sea and river lamprey within the Dee Estuary SAC
 - Petalwort, within the Dee Estuary SAC, the Sefton Coast SAC, and the Ribble and Alt Estuaries Ramsar
 - Great crested newts within the Sefton Coast SAC
 - Natterjack toad in the Dee Estuary RAMSAR

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- 7.4.56. The screening assessment identified that without mitigation, there could be a likely significant effect from recreational disturbance upon:
- The waterbird assemblage and qualifying bird species within the Mersey Estuary SPA and Ramsar, Liverpool Bay SPA, Mersey Narrows and North Wirral Foreshore SPA and Ramsar, the Ribble and Alt Estuaries SPA and Ramsar, Martin Mere SPA and Ramsar & the Dee Estuary SPA and Ramsar
 - Habitats of the Dee Estuary SAC and the Sefton Coast SAC
 - Natterjack toads in the Ribble and Alt Estuaries RAMSAR
- 7.4.57. The Proposed Development is over 10km from the international sites listed above. However, the M57 directly connects the Proposed Development with the Sefton Coast designated sites. Given the distance between the designated sites and the Site, residents may drive to them on occasion, for any recreational activities. The sites most likely to be visited would be the Liverpool Bay, Ribble & Alt Estuaries or the Mersey Estuary, due to the distance and ease of access, given that these would require a 30 minute to 1 hour return trip car journey. Visitor surveys undertaken in 2021-22 on the LCR sites reported the average travel distance of just 5.3km. Therefore, it is not expected that residents from this project would visit the LCR sites regularly.
- 7.4.58. Embedded mitigation to minimise the effect of recreational pressures will be achieved as part of the design of the Proposed Development. The provision of defined open space areas and footpaths through and around the Site will provide alternative opportunities for (dog) walking.
- 7.4.59. The designated sites cover a vast area of 33,850 ha (discounting Liverpool Bay due to its marine status and overlap with other sites), the majority of which is not accessible to the public. As such given the above, it is not considered that the proposals will lead to significant disturbance on the designated sites.
- 7.4.60. Therefore, in the absence of mitigation measures, this could result in a **Not-Significant Negative effect at an International Level.**
- Loss of functionally linked land*
- 7.4.61. The bird surveys have concluded that the Site is unlikely to provide functionally linked land to any of the qualifying species of the SPA/Ramsar sites, due to the low numbers of associated species observed within the Site during the surveys and their irregular use of the Site. As such there will be no impact on qualifying bird features of the SPA/Ramsar as a result of the Proposed Development, and therefore no likely impact on the designated sites.
- Non-Statutory Designated Sites and the River Alt and M57 Corridor NIA
- 7.4.62. Potential effects on these locally designated sites from the operational phase are summarised in **Table 7.9** below.
- Recreational impacts*
- 7.4.63. The Proposed Development will result in an increase in the local population which increases the risk of recreational effects to LWS' and NIA through disturbance, trampling and dog fouling.

- 7.4.64. Within Knowsley Park LWS, access is strictly controlled via ticketing. Additionally, no formal public access is available to Aker's Pits LWS, Meakin's Pits LWS or the Roughs LWS. Impacts on these LWS' are not expected.
- 7.4.65. Public access is available to Little Wood LWS. However, this LWS is actively managed to encourage public access. Given Little Wood LWS is already surrounded by residential development and is actively managed to encourage public access, as part of its Statutory designation, it is expected that in the absence of any additional mitigation, that the resulting negative residual effect would not be significant. Extensive areas of greenspace are proposed within the scheme, encompassing approximately 40% of the Site area, of which 4.1ha comprises dedicated areas of public open space which will provide alternative recreation opportunities, to minimise impacts.
- 7.4.66. There is likely to be an increase in cat predation, associated with an increased number of residents in the area. Residual impacts cannot be ruled out. However, impacts on the LWS within the ZOI are considered unlikely to be significant given the distances from Meakins Pits LWS (649m north west), The Roughs LWS (390m north west) and Little Wood LWS (290m west) to the Site, and additionally the presence of a dual carriageway between the Site and Little Wood LWS and The Roughs LWS. The proposed planting of woodland and scrub within areas adjacent to the Site boundaries will provide increased cover from cat predation for species present within the nearby LWS.
- 7.4.67. The design has sought to strengthen the functionality of the NIA and adjacent Knowsley Park LWS by establishing green infrastructure in areas mapped within or located immediately adjacent to it and providing east to west connectivity across the Site. The detailed design of the Site's green infrastructure, secured and delivered by the Biodiversity Net Gain Condition attached to any planning permission, will focus on creating strong ecological corridors through the planting of medium distinctiveness habitats, connecting the NIA and adjacent LWS. This will provide resilience to the associated species within the NIA and LWS from recreational impacts.

Air quality

- 7.4.68. Within the Biodiversity Air Quality Assessment report (**Appendix 7.9**), Little Wood LWS, The Roughs LWS, and Meakins Pits LWS were scoped out of the assessment as no development traffic will pass within 200m of those.
- 7.4.69. The Air Quality Assessment considered changes to nitrogen oxides (NOx) and ammonia concentrations, as well as changes to nitrogen and acid deposition fluxes that may likely change as a result of the Proposed Development. The result of this assessment concluded that as a result of reductions in the baseline levels, NOx and nitrogen deposition concentrations would show an overall reduction within the predicted model. Ammonia and acid deposition would show an increase, however this was not significantly above the predicted baseline levels in the absence of development. Air quality impacts on the LWS' are therefore discounted.

Lighting

- 7.4.70. Lighting on Site will increase as a result of proposals, this may impact the adjacent Knowsley Park LWS, Akers Pits LWS, and the River Alt and M57 NIA. A 2.5m high wall is present between Knowsley Park LWS and the Site, which will form a barrier to lighting impacts., Additionally, proposed woodland and scrub planting within the embedded mitigation and a wide landscape buffer around the Site boundaries will mitigate for significant effects.

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Pollution

- 7.4.71. Impacts may occur during occupation as a result of dumping of household waste within nearby LWS'. However, the Site is separated from Knowsley LWS via a 2.5m high wall and Akers Pits LWS via Knowsley Lane. No formal public access is available to Knowsley Park, Akers Pits, Meakin's Pits or the Roughts LWS. Additionally, proposed woodland and scrub planting along the boundary between the Site and Knowsley Park LWS will further reduce the accessibility to this LWS. No hydrological impacts are likely.
- 7.4.72. Due to potential recreational impacts, in the absence of mitigation, there is potential for a Not-Significant Negative Effect at a Metropolitan level on Little Wood LWS and the River Alt and M57 NIA.
- 7.4.73. In the absence of mitigation, there is potential for a **Not-Significant Negative Effect** at a **Metropolitan level** on Knowsley Park LWS, Akers Pits LWS and the River Alt and M57 NIA due to a potential increase in pollution, cat predation and lighting impacts.
- 7.4.74. All other effects on LWS are considered to be **Neutral**.

Table 7.9: Summary of potential operational effects on locally designated sites.

Ecological Feature	Air Quality Impacts	Recreational impacts	Cat predation	Lighting	Pollution	Potential Effect
Knowsley Park LWS	Unlikely	Unlikely	Possible	Possible	Possible	Not Significant Negative Effect
Aker Pits LWS	Unlikely	Unlikely	Possible	Possible	Possible	Not Significant Negative Effect
Little Wood LWS	Unlikely	Possible	Unlikely	Unlikely	Unlikely	Not Significant Negative Effect
The Roughts LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
Meakin's Pits LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
River Alt LWS	Unlikely	Unlikely	Unlikely	Unlikely	Unlikely	Neutral
River Alt and M57 Corridor NIA	Unlikely	Possible	Possible	Possible	Possible	Not Significant Negative Effect

Offsite Priority habitats – deciduous woodland and NMH

- 7.4.75. As above, recreational, lighting and pollution impacts may occur following occupation. In the absence of mitigation, there is potential for a **Not-Significant Negative effect at a Local scale**.

Priority habitat Lowland Mixed deciduous/ancient woodland (on Site)

- 7.4.76. As above, the assessment of traffic air quality impacts on W-1 and W-2 concluded that NO_x and nitrogen deposition concentrations would show an overall reduction within both the baseline and predicted model. Ammonia and acid deposition would show an increase, however this was not significantly above the predicted baseline levels in the absence of development.
- 7.4.77. The Proposed Development will result in an increase in the local residential population and therefore increase the risk of disturbance, including compaction and trampling of ground flora and dog fouling. Dumping of household waste may also occur.

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7.4.78. Given the relatively species-poor nature of the ground flora at present, and the existing informal paths present within W-1 and W-2, the resulting effect would be considered **Not-Significant**. Improving the existing informal paths through the woodland and provision of alternative walking routes outside of the woodland as outlined within the embedded mitigation in **Section 7.5**, will further mitigate recreational effects during the operational phase.

7.4.79. Increased lighting on Site following development may impact the woodland habitat and species within. Additional tree, woodland, native scrub and hedgerow planting is proposed which will buffer and connect the retained woodland areas. The planting, as outlined within the embedded mitigation, has been specifically designed to provide a buffer from recreational disturbance and lighting impacts, and provide areas of refuge for species vulnerable to cat predation and/or disturbance. This will enhance the retained woodland habitat and ensure functionality of the woodland will be maintained. The retained woodland will be managed for at least 30 years, in line with the BNG condition.

7.4.80. In the absence of mitigation, there is potential for a **Not-Significant Negative effect at a Metropolitan scale**.

Native hedges/native hedges with trees

7.4.81. Planting of an additional 246m of native species rich hedgerow is proposed. It is anticipated that all new native hedgerows planted within greenspace will be species rich (which are better quality than those lost). The BNG strategy for the Site has demonstrated over 10% net gain in linear biodiversity units can be achieved on Site (see Biodiversity Net Gain Strategy – FPCR 2025). Additional hedge planting is also expected to be incorporated within detailed reserved matters for the outline phases of development. This will result in a **Not-Significant Positive Effect at a local scale** in the longer term.

Other broadleaved woodland

7.4.82. Planting of an additional 0.113 ha of native broadleaved woodland is proposed. Additionally, retained woodland will be managed in line with the BNG condition. This will result in a **Not-Significant Positive Effect at a Local scale** in the longer term.

Ponds (non-priority)

7.4.83. All ponds are retained and buffered within proposals. The Biodiversity Net Gain condition, will ensure the current baseline condition of ponds is monitored and maintained. This will result in a **Neutral Effect** in the longer term.

Individual trees

7.4.84. The design of the Site includes sufficient buffers around retained trees for root protection, and trees are not included within garden boundaries. In addition, roads and footpaths are located to avoid compaction issues.

7.4.85. Planting of an (approx.) additional 202 individual trees is proposed, outside of proposed woodland, scrub and orchard planting. All retained and proposed trees will be managed in line with the BNG condition. This will result in a **Not-Significant Positive Effect at a Local scale** in the longer term.

Breeding birds

- 7.4.86. The proposed green infrastructure includes additional mixed scrub, tree and shrub planting with attenuation features which will provide good habitat for the assemblage of common and widespread generalist, woodland edge and urban species recorded on the Site. Many of these species will also utilise garden habitats as they mature, which will provide further opportunities in the long-term. The enhancement of retained grassland and addition of mixed scrub will benefit a range of the generalist bird species including starling, stock dove and jackdaw.
- 7.4.87. It is reasonable to expect that the increased numbers of people and domestic dogs will result in some disturbance to local breeding bird populations, both within the application Site and in the surrounding area. This disturbance therefore has the potential to decrease breeding success as birds are either predated or temporarily displaced from valuable resources.
- 7.4.88. Research has shown that domestic cats may impact upon wild bird populations, especially locally, within 100m of each cat's home²¹. It is considered likely that areas of suitable bird habitat that are likely to be affected by cat predation would comprise the gardens, hedgerows, woodland, scrub and some areas of countryside in the surrounding landscape.
- 7.4.89. In the absence of mitigation, it is considered this will result in a **Not-Significant Negative Effect at a Local scale**.

Wintering birds

- 7.4.90. The proposals include the creation of species-rich grassland within the green infrastructure scheme and will provide foraging opportunities to a limited number of farmland species such as linnet and reed bunting. The provision of further scrub planting and a community orchard will provide further suitable foraging habitat for the generalist and woodland species present within the Site, such as redwing. Additionally, significant tree and hedgerow planting as well as the creation of large areas of mixed scrub will provide suitable foraging and roosting opportunities for wintering birds. The proposed planting within the green infrastructure of the development will likely result in a **non-significant positive effect for these species in the long term** as the vegetation matures.
- 7.4.91. There is likely to be an increase in cat predation and as a result of changes to residential use of the land. However, the creation of significant areas of mixed scrub as detailed within the embedded mitigation, will provide additional cover for birds. The planting of thorny vegetation will act as a deterrent to domestic cats. Additionally, provision of extensive new habitat will result in increased population sizes which will have a greater capacity to withstand predation pressures.
- 7.4.92. In the absence of mitigation, it is considered that this will lead to a likely **Not-Significant Negative effect** on wintering birds at a local scale.

Foraging/commuting bats

- 7.4.93. Proposals will result in the permanent loss of c. 89m of species-poor hawthorn hedges. These comprise primarily small sections lost to facilitate access. There may be a temporary impact on

²¹ Animal Conservation (2020) The small home ranges and large local ecological impacts of pet cats.

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the commuting habitat along H3, H5, H6 and H7 due to gaps created for roads. However, this will be reinstated over time by the growth of tree canopies over the gaps.

7.4.94. Proposals will increase light levels on Site which would reduce the suitability of retained and created habitats. However, these features are typically buffered via additional planting and greenspace. Therefore, impacts are unlikely to be significant.

7.4.95. In the absence of mitigation this has the potential to result in a **Not-Significant Negative Effect at a Local Scale**.

Red Squirrel (TBC following survey completion)

7.4.96. If present, there is potential for impacts via an increase in cat predation and road casualties. As above, new planting, as outlined within the embedded mitigation, has been designed to buffer the suitable woodland habitat and maintain commuting corridors via the planting of individual trees and scrub, with larger trees allowed to develop a canopy cover over time, in order to link the central woodlands with adjacent habitats. Impacts are therefore predicted to be **Not Significant** at any scale (to be confirmed following completion of surveys).

7.5. Mitigation, Enhancement and Residual Effects

Mitigation by Design

7.5.1. The iterative design process has sought to minimise ecological effects. Use has been made of the Preliminary Ecological Appraisal process, whereby ecological receptors have been taken into account throughout the design process. This iterative approach has ensured that the layout and plans have, as much as possible, been ecology-led to achieve a sympathetic scheme which avoids the occurrence of likely significant effects where possible and seeks to minimise effects, where avoidance is not possible.

7.5.2. The design, which is shown on the Illustrative Landscape Masterplan (**Figure 4.3**) has sought to retain the Site's most important ecological features. Habitats on Site to be retained, and protected during construction include: all pond habitats, all woodland, and the majority of existing scrub, individual trees and hedgerows. Habitats will be retained with an appropriate undeveloped buffer to include the relevant root protection zones.

7.5.3. It is proposed to retain and enhance the majority of scrub and all woodland, and provide a significant increase in additional native scrub, individual trees, species rich grassland, hedgerows and woodland habitats within proposals. These measures will increase the amount and quality of semi-natural habitats in the local area.

7.5.4. Woodland will be enhanced via management to control invasive species, allowing natural regeneration of trees and a more diverse understorey and ground flora to develop. Changes such as thinning to create clearings will likely improve the quality of the foraging habitat for species such as bats and birds by creating more open habitats for feeding and increasing the abundance of prey species.

7.5.5. The Proposed Design has sought to maintain connectivity for wildlife along the boundaries and also from the central woodlands towards offsite habitats to the east and south. New planting as outlined within the embedded mitigation, has been designed to maintain foraging/commuting corridors over time via the planting of individual trees and scrub, with larger trees allowed to develop a canopy cover over time, in order to link the central woodlands with adjacent habitats. The detailed design of the Site's green infrastructure, secured and delivered by the Biodiversity

Net Gain Condition attached to any planning permission, will focus on strengthening these existing corridors, through the creation of additional woodland and scrub.

- 7.5.6. Any habitat losses will be accounted for within the BNG strategy for the Site. As part of the Biodiversity Net Gain Condition, trading rules need to be met, and so the medium distinctiveness habitats lost to proposals require compensation on a like-for-like or like-for-better basis and as such the detailed design of the Site's green infrastructure will include the delivery of a mixture of mixed native scrub, and woodland, a species-rich grassland and native hedgerows. No losses of high distinctiveness habitats are anticipated within the Proposed Design. Full details of the BNG assessment prepared for the Site are provided within the Biodiversity Net Gain Strategy, in **Appendix 7.12**.
- 7.5.7. The Proposed Development has sought to strengthen the functionality of adjacent notable and priority habitats and contribute to Knowsley Strategic Green Links, by establishing significant areas of green infrastructure in areas mapped within or located immediately adjacent to notable habitats and the NIA both onsite and adjacent. The design has also focused on creating strong ecological corridors through the Site to maintain connectivity across the Site and between strategic corridors.
- 7.5.8. New planting has been specifically designed to provide a buffer from disturbance within areas identified as sensitive to effects for priority woodland habitat, red squirrel, bats and breeding birds. To deter encroachment of domestic cats into sensitive areas and also to provide refuges for birds, and potentially red squirrel, the boundaries around the development and central woodland will be strengthened through the planting of native thorny plant species (e.g. blackthorn and hawthorn).
- 7.5.9. Approximately 40% of the Site will comprise greenspace post-construction, including a network of footpaths and 4.52ha of usable public open space which will provide alternative recreational opportunities within the Site to minimise the potential for significant adverse effects on locally designated sites and sensitive habitats.

Additional Mitigation and Compensation

- 7.5.10. The requirement for additional mitigation measures above the intrinsic mitigation has been considered for each of the IEFs where they can reduce the scale of negative effects or where they can result in a positive effect.

Core documents

- 7.5.11. The following lists the core documents that will secure the mitigation and enhancement measures described in the subsequent sections. They can be secured through appropriately worded pre-commencement planning conditions attached to the planning application:

- A detailed Construction and Environmental Management Plan for Ecology (CEMP) will be provided. This document contains the necessary Method Statements to ensure protected species are not unlawfully harmed during ground clearance, earthworks and during construction.

The detailed CEMP will include:

- a. Details on protective measures for retained and created habitats within the Site, informed by an arboricultural report (and ecological information). The CEMP would outline measures to provide protection to the above and below ground elements of

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retained hedgerows, woodland and trees that are present on Site and adjacent. To be based on BS 5837:2012, 'Trees in relation to design, demolition and construction', which comprises the use of protective fencing of root protection areas to restrict damage features during construction;

- b. A programme for the monitoring and management of rhododendron. This will include a requirement for control of these species and working method statements during the construction phase to prevent spread of INNS off site;
 - c. Precautionary measures and procedures in order to minimise the risk of any increase in contaminated surface water run-off and pollution events entering watercourses or sensitive habitats during construction;
 - d. Detailed information on dust control measures which will be implemented during construction;
 - e. Measures to limit the impact of artificial light on retained and created habitats during the construction phase;
 - f. Where appropriate, use of sound and vibration dampening techniques during construction;
 - g. An Ecological Constraints and Mitigation Plan drawing that clearly shows the location of constraints and details of mitigation required, where necessary;
 - h. Method statements for works in order to minimise any harm to protected species during works; and
 - i. Any lighting would be designed to accord with current best practice both for public amenity and safety and in relation to reduction of potential effects on wildlife to direct light onto the road corridors and minimise lateral and vertical light spill.
- An updated BNG Assessment, which will provide updated details of the biodiversity offsetting scheme and associated management and monitoring of retained and created habitats.
 - A Habitat Management and Monitoring Plan (HMMP): this provides planting/landscape information that includes both the landscape and ecology features and their management for an appropriate period. In accordance with the planning practice guidance (PPG) for BNG, this document can be submitted as part of a Biodiversity Gain Plan once full planning permission has been received. This document can also include ecological enhancement and management information as appropriate to demonstrate how the biodiversity net gain measures will be delivered and can also include the final Ecological Mitigation and Enhancement Plan that shows location of wildlife boxes and other proposed features such as hedgehog highways and hibernacula.
 - The detailed lighting scheme for the Site will be designed to minimise light-spill onto habitats both within and adjacent to it that are suitable for bat foraging and/or commuting. It is recommended that the lighting design strategy is reviewed (and if necessary updated) for any new development proposals as part of future Reserved Matters applications, to ensure there are no negative impacts to wildlife from lighting. Lighting strategies should follow the best practice guidance, as set out below:

- the avoidance of direct lighting of woodland edge, scrub and retained trees or proposed areas of habitat creation / landscape planting;
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability;
- a warm white spectrum (ideally <2700 Kelvin) should be adopted to reduce the blue light component;
- light sources should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats;
- column heights should be carefully considered to minimise light spill and glare visibility; and
- lighting levels should be as low as guidelines permit and only used where required for public safety.

Statutory Designated Sites

7.5.12. With reference to the following Sites on the National Site Network listed below, construction effects are expected to be **Neutral**:

- The Mersey Estuary Ramsar/SPA
- The Liverpool Bay SPA
- The Mersey Narrows and North Wirral Foreshore Ramsar / SPA
- The Ribble and Alt estuaries Ramsar/SPA
- The Dee Estuary SAC/Ramsar/SPA
- Sefton Coast SAC
- Martin Mere Ramsar/SPA

7.5.13. During the operational phase, in order to address the potential risk of an increased recreational pressure on the above Sites and to comply with MEAS' pre-application guidance, it is recommended that a copy of MEAS' informative leaflet "Respecting Nature in Knowsley"²² is distributed in the sale pack of the properties. The leaflet:

- Sets out the value, importance and sensitivity of the European protected sites;
- Identifies the potentially damaging operations;
- includes measures residents should take to minimise or prevent impacts i.e. advising the need to keep dogs on leads and keeping to the footpaths for example;

²²https://eas.merseysidebiobank.org.uk/wp-content/uploads/2024/01/lcr_leaflet_knowsley.pdf

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- Identifies particularly sensitive times of year; and
- Identifies alternative locations for recreation / dog walking, away from the sensitive areas.

7.5.14. A Habitats Regulations Assessment (HRA) will be required to complete an assessment of impacts. An iHRA has been completed to accompany this assessment.

Non-statutory designated sites, priority habitat offsite, and the River Alt and M57 Corridor NIA

7.5.15. Mitigation for construction phase impacts would be secured by provision of a detailed CEMP, as outlined above.

7.5.16. Information packs should be distributed to new residents informing the public of the ecological value of priority habitats, the NIA and LWS, and appropriate codes of conduct to minimise or prevent impacts from recreational use and cat predation.

On Site retained habitats: lowland mixed deciduous/ancient woodland – other broadleaved woodland, ponds (non-priority), individual trees and hedgerows.

7.5.17. During construction, appropriate precautions will be incorporated into a CEMP, as outlined in **Section 7.5.11**, which will be implemented to prevent impacts during construction. This would include details of protection of retained habitats.

7.5.18. The Environmental Statement is accompanied by a Biodiversity Net Gain Report (FPCR 2025) (**Appendix 7.12**) which provides a detailed appraisal of the baseline biodiversity value of the Site, as determined through detailed UKHab survey and condition assessment and by use of the Statutory Biodiversity Metric. The BNG report goes on to provide an illustrative Biodiversity Net Gain Calculation which demonstrates that the delivery of a 10% net gain and satisfaction of the Trading Rules is feasible for the Proposed Development via provision onsite and some offsite units. This would be secured by the Biodiversity Net Gain Condition, attached to any planning permission for the Proposed Development. This would ensure that all habitats lost to proposals, would be appropriately compensated for with the creation or enhancement of like-for-like or like-for-better habitats.

7.5.19. Signage boards should be erected on the edge of retained woodland and at pedestrian access points, informing the public of its value to wildlife and the need to manage it appropriately. Dog waste bins shall also be placed at access points of the woodland, to promote picking up of waste and therefore reduce the impact of dog fouling.

Breeding and Wintering Birds

7.5.20. During construction, appropriate precautions will be incorporated into a CEMP, as outlined in **Section 7.5.11**, which will be implemented to control the works. To include details of protection of retained habitats during construction.

7.5.21. To avoid disturbance to breeding birds, ground clearance and vegetation removal will be undertaken outside of the breeding bird season (March to August, inclusive), wherever possible. If this is not possible, the area will be checked prior to removal of vegetation or ground works by an experienced ecologist. If active nests are found, they will be left untouched and suitably buffered from works until all birds have fledged. Birds can nest at any time during the year, therefore specific advice will be provided prior to undertaking vegetation clearance. This would be a statutory requirement due to the protection of all nesting birds and their nests under the WCA. A suitably qualified ecologist would supervise this.

- 7.5.22. Retained habitats should be suitably buffered from construction activities to prevent desertion of active nests. A buffer of five meters should be kept from the woodland edge and hedgerows to be retained during construction works undertaken in the bird breeding season (March to August, inclusive).
- 7.5.23. Disturbance to breeding and wintering birds would be minimised through:
- Where appropriate, use of sound and vibration dampening techniques during construction; and
 - Establishing works exclusion zones where any active nests discovered close to construction activity.
- 7.5.24. Appropriate signage should be used in woodland and non-amenity areas to encourage residents to stick to marked paths in order to reduce disturbance. Any additional measures could be secured as part of the BNG condition, within the Habitat Management and Monitoring Plan (HMMP), or alternatively within the Landscape Management Plan (LMP).
- 7.5.25. To compensate for the loss of breeding habitat for ground nesting species alternative habitat should be provided offsite. There are two different options available to mitigate for this.
- One option is for the conversion of arable land to meadow grassland or the enhancement of existing grassland to support ground nesting birds. This habitat should be managed to ensure a varied sward, with a shorter sward available for breeding lapwing between March and June. It is recommended that this area is in close proximity to the Site and is an open area away from trees and hedgerows, damper soils are preferable to provide suitable foraging for lapwing, with a varied sward also providing invertebrate foraging opportunities for skylark.
 - Alternatively, enhancement will be made to existing offsite farmland by way of creating skylark plots. Skylark plots are areas of set aside within a crop which provides suitable foraging habitat which in turn will increase breeding success. Plots will be located at least 50m from any field boundaries and margins.

Foraging and commuting bats

- 7.5.26. During construction, appropriate precautions will be incorporated into a CEMP as outlined in **Section 7.5.11** which will be implemented to control the works. To include details of measures to mitigate potential impacts on bats.
- 7.5.27. A detailed lighting design strategy should be conditioned, to ensure there are no negative effects to bats from operational lighting. The detailed lighting strategy for the Site will take into account the best practice guidance set out by the Bat Conservation Trust and the Institute of Lighting Professionals in 2023, 'Bats and Artificial Lighting in the UK'ⁱ to ensure that existing and new habitat resources are not negatively affected by artificial lighting during the operational phase.

Red Squirrel

- 7.5.28. Any requirement for further mitigation will be confirmed following completion of the red squirrel surveys.

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7.5.29. If required, mitigation to maintain connectivity from the central woodlands to Ash Plantation woodland (within Knowsley Park LWS) should be implemented via inclusion of a canopy road crossing in the south-east part of the Site.

7.5.30. Additionally, if required, road signs should be placed in appropriate locations to warn drivers to the presence of red squirrel.

INNS (legislative context only)

7.5.31. During construction, appropriate precautions will be incorporated into a CEMP as outlined in **Section 7.5.11**, which will be implemented to control the works. The CEMP would include a programme for the monitoring and management of INNS and a requirement for control of these species and working method statements during construction to prevent spread off Site.

7.5.32. The Habitat Management and Monitoring Plan (HMMP), secured by the BNG condition will include strategies for the monitoring and eradication or control of rhododendron during operation.

Reptiles (legislative context only)

7.5.33. During construction, appropriate precautions will be incorporated into a CEMP as outlined in **Section 7.5.11** which will be implemented to prevent intentional killing or injury which would be a breach of the WCA. This would include a method statement for clearance works in suitable habitat. The method statement would set out appropriate measures which could include:

- Timing: works in suitable habitat to be undertaken during the active season for reptiles (which runs March to October);
- Hand searching for refuge features;
- Vegetation management;
- Destructive search, under the supervision of an Ecological Clerk of Works (ECow) and
- Relocation of any individuals found to suitable (new or existing) habitats outside the active construction site.

Enhancements

7.5.34. In line with NPPF, it is recommended that the development of the Site results in a gain in value for wildlife by incorporating biodiversity in and around the development via the use of ecological enhancement measures. In addition to the recommendations with respect to individual species and habitats outlined above, opportunities exist within the scheme for general biodiversity enhancements to be undertaken; the following are recommended for this Site:

- Soft landscaping using native and ecologically valuable species would enhance the Site, avoid using non-native species with overly complex flower structure or those of an invasive nature such as cotoneasters. Provision of native, flower and fruit bearing species of local origin will provide an optimal foraging resource for a range of species;
- A variety of bird boxes could be installed within and on new buildings and trees adjacent to retained and created open space to increase availability of roosting and nesting sites; Whilst not recorded onsite, the county is known to support red listed willow tit as such it

is not recommended that small hole nest boxes (26mm and 32mm) are provided onsite, due to the chance of increased competition from species typically bolstered by the provision of these types of nest boxes (i.e. blue tits), should willow tit be present in the wider area;

- Integrated bat boxes should be installed in new buildings. Additionally, suitable long-lasting external bat boxes should be installed on trees within woodlands W1, W2 and W3. These should be installed at a minimum of 3m and maximum of 5m height and on the north, southeast and southwest aspects to maximise a variety of internal roost conditions;
- Deadwood piles could be created in areas of retained open space/ woodland to provide a habitat niche for amphibians and small mammals as well as deadwood for invertebrates such as saproxylic beetles; and
- Hedgerows are recommended as garden boundaries. Where fencing is used around gardens, hedgehog gaps should be included to provide a corridor through the built development.

7.5.35. The additional native broadleaved woodland, mixed scrub tree and hedgerow planting and management of retained and created habitats in accordance with guidance in the Biodiversity Net Gain Report submitted alongside this Ecology Chapter (**Appendix 7.12**) will provide an overall gain in the Biodiversity value of on Site habitats and will buffer priority habitats both on Site and adjacent and improve connectivity within and across the Site.

7.5.36. A summary of recommended mitigation measures is included in **Table 7.10.** overleaf.

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Table 7.10: Summary of Mitigation Measures

Ref	Measure to avoid, reduce or manage any adverse effects and/or to deliver beneficial effects	How measure would be secured		
		By Design	By S.106	By Condition
1	Provision of a Construction and Environmental Management Plan (CEMP).			X
2	Provision of a Biodiversity Impact Assessment (BIA).			X
3	Provision of a Habitat Management and Monitoring Plan (HMMP).			X
4	Provision of a detailed lighting strategy for the Site.			X
5	Provision of a planting buffer for and connective habitat to priority woodlands adjacent and/or onsite.	X		
6	Provision of a planting buffer for and connective habitat to nearby LWS' and NIA.	X		
7	Provision of a minimum 10% Biodiversity Net gain.	X	X	X
8	Provision of Information packs to new residents including information on nearby Statutory and non-Statutory sites and priority woodlands and codes of conduct.			X
9	Provision of signage boards and dog waste bins.		X	X
10	Provision of offsite breeding bird compensatory habitat for skylark and Lapwing.		X	
11	Timing restrictions on vegetation clearance and/or pre-works check.			X
12	Provision of habitat features for bats, breeding birds (and red squirrel, if required).			X

Residual Effects

During Construction

- 7.5.37. Residual effects on Wintering birds are predicted to be **Negative, not-Significant at a Local Scale** due to unmitigated loss of Arable habitat.
- 7.5.38. For all other IEF, potential impacts during construction have been appropriately mitigated by the measures outlined above and the residual effects on all IEF are predicted to be at least **Neutral**.

During Operation

- 7.5.39. A **Negative, not-Significant** residual effect **at a Metropolitan Scale** is predicted on Knowsley Park LWS, Akers Pits LWS and The River Alt and M57 Corridor NIA due to increased cat predation and pollution/air quality impacts.
- 7.5.40. A **Negative, not-Significant** residual effect **at a Metropolitan Scale** is predicted on onsite Lowland Deciduous and potential ancient woodland due to potential pollution/air quality impacts.
- 7.5.41. A **Negative, not-Significant** residual effect **at a Local Scale** is predicted on The Sanctuary Priority woodland, due to potential pollution/air quality impacts.
- 7.5.42. Residual effects on Red Squirrel will be confirmed on completion of additional surveys. However, effects are predicted to be **Neutral**
- 7.5.43. For all other IEF, potential impacts during operation have been appropriately mitigated by the measures outlined above and the residual effects on all IEF are predicted to be at least **Neutral**.

7.6. Cumulative and In-Combination Effects

- 7.6.1. Of the schemes for consideration listed in Chapter 2, those considered to have potential to result in cumulative effects on ecology and nature conservation receptors due to their proximity and/or similarity of habitat coverage and loss are:
- 22/00348/FUL- Land bounded by East Lancashire Road, Ormskirk Road and Knowsley Lane: Erection of 3 no. commercial units (use class B2 or B8) including mezzanine floor, ancillary office and welfare floorspace together with service yard, loading bays, car and cycle parking, electric vehicle charging points, drainage infrastructure and landscaping together with improvements to public rights of way linking Ormskirk Road and Knowsley Lane including the diversion of the public right of way and other pedestrian accessibility works.
 - 22/00163/FUL-Land bounded by Villiers Road & Penrhyn Road: Erection of a industrial/commercial building (use classes B2/B8 and E (g) (iii) including mezzanine ancillary office space together with the construction of 2 no. new vehicular accesses to Villiers road, service yards, car/cycle parking, landscaping and other associated works. This is built and operational and is therefore considered as part of the existing baseline.
 - 18/00062/HYB - Land at Knowsley Lane, Huyton: Detailed application for 4,180 sqm of employment floor space (use class B1), 3,275 sqm ancillary floor space (use classes A1/A4/C1/SUI generis), 154 residential dwellings, improvement to Lord Derby Playing

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Fields/Oak Plantation and associated landscaping and infrastructure including a dedicated 500kVA substation for the residential neighborhood and a 1000kVA substation for the eastern employment area and the demolition of Knowsley Lane Farm. Outline application for up to 26,350 sqm of employment flood space (use classes B1) and associated landscaping and infrastructure.

- 19/00243/OUT – Vacant Land at Junction Of Moorgate Road/M57 Slip Road And School Lane Reserved matters (RM) application 21/00929/REM Outline application for the erection of petrol filling station of up to 476 sqm, a drive thru unit of up to 225 sqm and erection of 3 No. industrial units up to 3,827 sqm

7.6.2. Only those receptors considered likely to experience significant cumulative effects are included in this assessment. Receptors that are considered unlikely to experience significant effects have been scoped out. The important ecological features considered in relation to cumulative effects are those subject to a significant or not significant residual effect as a result of the project being assessed. For this application, this is limited to:

- Loss of arable habitat in relation to wintering farmland birds.
- Potential increases in cat predation in relation to Knowsley Park LWS, Aker Pits LWS The River Alt and M57 Corridor NIA –
- Pollution and air quality in relation to Knowsley Park LWS, Aker Pits LWS and The River Alt and M57 Corridor NIA , The Sanctuary woodland, and onsite Lowland Deciduous and potential ancient woodland..

Loss of Arable habitat

7.6.3. Within all of the ecological information provided with the above planning applications, impacts on wintering birds were considered unlikely. All of the additional sites were assessed as providing generally unsuitable habitat for wintering birds, due to their small size and/or location and/or habitats present. Cumulative effects on wintering birds are therefore considered unlikely to be significant.

Cat predation

7.6.4. The only application considered which includes proposed residential development, and therefore likely to increase the number of cats within the locality, is application 18/00062/HYB. The location of this proposed development is approximately 1.6km south of the Site. The M57 motorway provides a significant barrier between this location and the Knowsley Park LWS, Aker Pits LWS The River Alt and M57 Corridor NIA Cumulative effects due to increases in cat predation on these IEF are therefore considered unlikely to be significant.

Pollution and air quality

7.6.5. Residual pollution impacts are limited to potential littering and dumping of household waste and increased air pollution from cars.

7.6.6. Given the restricted access to Knowsley Park LWS, and distance from the additional sites, increases in littering and road traffic impacts are considered unlikely. Additionally, the additional sites are unlikely to contribute to any additional dumping of waste/rubbish, or increased road traffic within the Site. Cumulative impacts to Knowsley Park LWS and onsite Lowland Deciduous and potential ancient woodland receptors are therefore considered unlikely to be significant.

- 7.6.7. In consideration of cumulative effects on Aker Pits LWS, The River Alt and M57 Corridor NIA and The Sanctuary Priority woodland with regards to pollution and air quality, the ecological assessments submitted with the applications 22/00348/FUL and 22/00163/FUL found that impacts to locally designated sites were considered unlikely. Both applications are for small, commercial/industrial developments. The ecological assessment submitted with application 19/00243/OUT rules out pollution and air quality impacts to Akers' Pit LWS and Knowsley Park LWS due to distance and lack of connectivity. It can therefore be considered likely that effects on the adjacent Sanctuary woodland and NIA can also be ruled out. No impacts on sensitive ecological receptors were identified within the air quality assessment report submitted with application 18/00062/HYB. Cumulative impact pathways from these proposals have therefore been scoped out of assessment.

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7.7. Summary

Introduction

- 7.7.1. FPCR have undertaken an Ecological Impact Assessment on behalf of Hallam Land Management Limited, in relation to the Proposed Development of Land east of Knowsley Lane, Knowsley as described in **Chapter 4**
- 7.7.2. The Site is approximately 33.75ha in extent and located on the southern border of Knowsley village. It comprises arable fields, priority habitat deciduous woodland, modified grassland, scrub and a number of permanent and temporary waterbodies.
- 7.7.3. To inform this assessment, a suite of ecological surveys were carried out, including detailed habitat surveys as well as species-specific surveys for great crested newts, foraging/commuting bats, water vole breeding and wintering birds and red squirrel. Biodiversity Net Gain calculations were also undertaken, in order to assess changes in the biodiversity value of the site as a result of proposals.

Baseline Conditions

- 7.7.4. The following IEF were identified as requiring detailed ecological assessment:
- Statutory Designated Sites: The Mersey Estuary Ramsar/SPA, The Liverpool Bay SPA, The Mersey Narrows and North Wirral Foreshore Ramsar/SPA, The Ribble and Alt Estuaries Ramsar/SPA, The Dee Estuary SAC/Ramsar/SPA, Sefton Coast SAC and Martin Mere Ramsar/SPA
 - Non-statutory designated sites: Knowsley Park LWS, Akers Pits LWS, Little Wood LWS, The Roughs LWS, Meakin's Pits LWS and The River Alt LWS and the River Alt and M57 Corridor Nature Improvement Area
 - Priority habitats – deciduous woodland and NMH offsite and Lowland mixed deciduous woodland/potential ancient woodland onsite.
 - On Site habitats: non-priority other broadleaved woodland, non-priority ponds, individual trees, native hedges.
 - Fauna: breeding birds, Wintering birds, Foraging and commuting bats and Red squirrel

Mitigation and Compensation

- 7.7.5. Mitigation through design has been utilised to avoid impacts on IEF wherever possible. Habitats of biodiversity value have been retained and buffered from impacts. The Proposed Design has sought to maintain connectivity for wildlife along the boundaries and also from the central woodlands towards offsite habitats to the east and south. Approximately 40% of the Proposed Development comprises greenspace, including a network of footpaths and a dedicated 4.52ha of public open space which will provide alternative recreation opportunities, to minimise the potential for significant adverse effects on locally designated sites and sensitive habitats.
- 7.7.6. Any habitat losses will be accounted for within the BNG strategy for the Site which will ensure that an overall 10% BNG is provided as part of the Biodiversity Net Gain Condition. Additionally, features on Site will be enhanced and created that will benefit biodiversity, particular fauna species, although these are not necessarily represented with the net gain metric. The delivery,

management and monitoring of habitats will be subject to the implementation of a detailed Biodiversity Management Plan, secured by condition.

- 7.7.7. Construction impacts will be minimised through careful control of operational activities through an industry best practice CEMP.
- 7.7.8. Provision of a detailed lighting design strategy will ensure there are no negative impacts to wildlife from lighting.
- 7.7.9. A Habitats Regulations Assessment (HRA) will be required to complete an assessment of impacts on Designated Sites. An iHRA has been completed to accompany this assessment.
- 7.7.10. In order to address the potential risk of an increased recreational pressure on Statutory Designated Sites within the Zol and to comply with MEAS' pre-application guidance, it is recommended that a copy of MEAS' informative leaflet "Respecting Nature in Knowsley" is distributed in the sale pack of the properties.
- 7.7.11. Additional Information should be distributed to new residents informing the public of the ecological value of nearby priority habitats, the NIA and LWS, and appropriate codes of conduct to minimise or prevent impacts from recreational use and cat predation. Additionally, Information signage boards and dog waste bins should be erected in suitable locations on the edge of retained woodland onsite.
- 7.7.12. Alternative habitat for ground nesting bird species should be provided offsite

Residual Effects

- 7.7.13. Residual effects on Wintering birds are predicted to be **Negative, not-Significant** at a **Local Scale** due to unmitigated loss of Arable habitat.
- 7.7.14. A **Negative, not-Significant** residual effect at a **Metropolitan Scale** is predicted on Knowsley Park LWS, Akers Pits LWS and The River Alt and M57 Corridor NIA due to increased cat predation and pollution/air quality impacts.
- 7.7.15. A **Negative, not-Significant** residual effect at a **Metropolitan Scale** is predicted on onsite Lowland Deciduous and potential ancient woodland due to potential pollution/air quality impacts.
- 7.7.16. A **Negative, not-Significant** residual effect at a **Local Scale** is predicted on The Sanctuary Priority woodland, due to potential pollution/air quality impacts.
- 7.7.17. Residual effects on Red Squirrel will be confirmed on completion of additional surveys. However, effects are predicted to be **Neutral**
- 7.7.18. For all other IEF, potential impacts during operation have been appropriately mitigated by the measures outlined above and the residual effects on all IEF are predicted to be at least **Neutral**.
- 7.7.19. It is not considered that Cumulative impacts would increase the scale of significance beyond that which has already been identified within the Ecological Impact Assessment

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Enhancements

- 7.7.20. Soft landscaping using native and ecologically valuable species and provision of native, flower and fruit bearing species of local origin.
- 7.7.21. Provision of a variety of bird boxes within and on new buildings and trees. It is not recommended that small hole nest boxes (26mm and 32mm) are provided onsite.
- 7.7.22. Integrated bat boxes should be installed in new buildings. Additionally, suitable long-lasting external bat boxes should be installed on trees within retained woodlands.
- 7.7.23. Deadwood piles could be created in areas of retained open space/ woodland.
- 7.7.24. Hedgerows are recommended as garden boundaries. Where fencing is used around gardens, hedgehog gaps should be included to provide a corridor through the built development.
- 7.7.25. Management of retained and created habitats in accordance with guidance in the Biodiversity Net Gain Report submitted alongside this Ecology Chapter (**Appendix 7.12**) will provide an overall gain in the Biodiversity value of on Site habitats and provide an enhancement to adjacent priority habitats.

Conclusion

- 7.7.26. **Table 7.11** provides a summary of effects, mitigation and residual effects.

Table 7.11: Summary of Effects, Mitigation and Residual Effects

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Construction								
Knowsley Park LWS Aker Pits LWS The River Alt and M57 Corridor NIA	Dust deposition	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Measures to be outlined within a CEMP	Neutral
Knowsley Park LWS	Disturbance (noise/vibration/lighting)	Temporary / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Measures to be outlined within a CEMP.	Neutral
Offsite Priority habitat deciduous woodland and NMH	Pollution/air quality /dust deposition Disturbance (noise/vibration/lighting)	Permanent / Direct Temporary/ Direct	N/A	N/A	Local	Not-significant - negative	Measures to be outlined within a CEMP	Neutral

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
On Site Priority habitat Lowland Mixed deciduous woodland/potential ancient woodland	Pollution/air quality /dust deposition Accidental damage	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Measures to be outlined within a CEMP	Neutral
On Site habitats:– non-priority other broadleaved woodland, non- priority ponds, individual trees, native hedges.	Habitat loss Pollution/air quality /dust deposition Root compaction Accidental damage/pollution	Permanent / Direct Permanent/ Indirect	N/A	N/A	Local	Not-significant - negative	BNG condition will ensure management and monitoring to achieve a 10% biodiversity gain. Measures to be outlined within a CEMP	Not significant-positive

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Breeding birds	Loss of breeding habitat (hedgerow and arable field) Disturbance (noise/vibration/lighting)	Permanent / Direct Temporary / Indirect	N/A	N/A	Local	Not-significant - negative	Offsite habitat provision to be provided for ground nesting birds. Provision of integral nest boxes - equal to the number of new dwellings Method statement for works to be outlined within a CEMP	Neutral
Wintering birds	Loss of habitat (arable field)	Permanent / Direct	N/A	N/A	Local	Not-significant - negative	Method statement and protective measures for works to be outlined	Not-significant - negative due to loss of arable habitat

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
	Disturbance (noise/vibration/lighting)	Temporary / Indirect					within a CEMP	
Foraging and commuting Bats	Loss of habitat (hedgerow) Disturbance (lighting)	Permanent / Direct	N/A	N/A	Local	Not-significant – negative	Provision of integrated bat boxes on at least 30% of the new dwellings Method statement and protective measures for works to be outlined within a CEMP Detailed lighting strategy to be provided.	Neutral

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							Enhancement of Foraging habitat as secured by BNG condition	
Red Squirrel (If present – To be confirmed following further survey).	Disturbance (noise/vibration/lighting)	Temporary / Indirect	N/A	N/A	Local	Not-significant – negative	Method statement and protective measures for works to be outlined within a CEMP	Neutral (To be confirmed following further survey)
Operation								
The Mersey Estuary Ramsar/SPA The Liverpool Bay SPA The Mersey Narrows and North Wirral	Recreational disturbance upon; • The waterbird assemblage and qualifying	Permanent / Direct	N/A	N/A	International	Not-significant – negative	Provision of significant onsite greenspace including 4.1ha of POS as embedded mitigation.	Neutral

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Foreshore Ramsar/SPA The Ribble and Alt estuaries Ramsar/SPA The Dee Estuary SAC/Ramsar/SPA Sefton Coast SAC Martin Mere Ramsar/SPA	bird species of the SPA/Ramsar - Habitats of the Dee Estuary SAC and the Sefton Coast SAC - Natterjack toads in the Ribble and Alt estuaries RAMSAR						MEAS informative leaflet to be provided to new residents. Habitats Regulations Assessment (HRA) to be undertaken.	
Little Wood LWS The River Alt and M57 Corridor NIA	Recreational impacts (disturbance, trampling and dog fouling).	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Provision of significant onsite greenspace including 4.52ha of	Neutral

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							POS as embedded mitigation. Information pack on LWS to be distributed to residents	
Knowsley Park LWS Aker Pits LWS The River Alt and M57 Corridor NIA	Cat predation	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant – negative	Information pack on responsible cat ownership to be distributed to residents Buffer planting as detailed in embedded mitigation and provision of wildlife corridor.	Not-significant – negative

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Knowsley Park LWS The River Alt and M57 Corridor NIA	Lighting disturbance	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Buffer planting as detailed in embedded mitigation . Provision of a detailed lighting scheme at reserved matters.	Neutral
Knowsley Park LWS Aker Pits LWS The River Alt and M57 Corridor NIA	Pollution/air quality	Permanent / Direct	N/A	N/A	Metropolitan	Not-significant - negative	Provision of planting buffer between Site and notable habitats.	Not-significant - negative
On Site Lowland Mixed Deciduous and potential ancient woodland.	Recreational damage and disturbance Lighting disturbance	Permanent/ Direct	N/A	N/A	Metropolitan	Not-significant - negative	Provision of information packs as outlined above.	Not-significant – negative due to air quality

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
	Pollution/air quality						Detailed lighting scheme to be provided at reserved matters. Provision of planting buffer between Site and notable habitats.	
Offsite Priority habitats deciduous woodland and NMH (the Sanctuary woodland).	Recreational damage and disturbance Lighting disturbance Pollution/air quality	Permanent/ Direct	N/A	N/A	Local	Not-significant – negative	Provision of information packs as outlined above. Detailed lighting scheme to be provided at reserved matters. Provision of planting	Not-significant – negative due to air quality

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
							buffer between Site and notable habitats.	
Breeding and wintering birds	Recreational disturbance Cat predation	Permanent or Temporary / Direct or Indirect	N/A	N/A	Local	Not-significant – negative	Provision of information packs as outlined above. Appropriate signage in woodland and non-amenity areas Buffer planting will provide refuge. Provision of a range of new nesting opportunities	Neutral

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Foraging and commuting Bats	Lighting disturbance	Permanent or Temporary / Direct or Indirect	N/A	N/A	Local	Not-significant - negative	Detailed lighting scheme to be provided at reserved matters.	Neutral
Red Squirrel – TBC following further survey	Habitat isolation Cat predation Road casualties	Permanent or Temporary / Direct or Indirect	N/A	N/A	TBC following survey	Not-significant - negative	TBC following survey– If required, mitigation to maintain connectivity from the central woodlands to Ash Plantation woodland and provision of road signs within the Site.	TBC following further survey, however predicted on evidence to date to be Neutral
Cumulative and In-Combination								

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
Wintering birds	Loss of arable habitat	Permanent or Temporary / Direct or Indirect	N/A	N/A	Local	Not-significant - negative	N/A	Not-significant - negative
Knowsley Park LWS, Aker Pits LWS The River Alt and M57 Corridor NIA	Cat predation	Permanent or Temporary / Direct or Indirect	N/A	N/A	Metropolitan	Not-significant - negative	N/A	Not-significant - negative
Knowsley Park LWS, Aker Pits LWS and The River Alt and M57 Corridor NIA ,and onsite Lowland Deciduous and potential ancient woodland..	Pollution/air quality	Permanent or Temporary / Direct or Indirect	N/A	N/A	Metropolitan	Not-significant - negative	N/A	Not-significant - negative

Environmental Statement

Ecology and Biodiversity

Receptor / Receiving Environment	Description of Effect	Nature of Effect	Sensitivity Value	Magnitude of Effect	Geographical Importance	Significance of Effects	Mitigation / Enhancement Measures	Residual Effects
The Sanctuary woodland,	Pollution/air quality	Permanent or Temporary / Direct or Indirect	N/A	N/A	Local	Not- significant - negative	N/A	Not- significant - negative