

Land at the Former All Saints School, Cherryfield Drive, Kirkby L32 5TQ

APPENDIX 12.2: ECOLOGICAL SURVEY AND ASSESSMENT

ERAP (Consultant Ecologists) Ltd Reference: 2021-296

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Document Control

Survey Type:	Surveyors ¹	Survey Date(s)
Phase 1 Habitat Survey	Victoria Burrows and Rachel Platt	4 th November 2021
	Brian Robinson and Rachel Platt	7 th February 2023
	Brian Robinson and Rachel Brown	8 th March 2023
Breeding Bird Survey	Chris Swindells	21 st July 2022
Reporting	Personnel	Date
Author	Brian Robinson B.Sc. (Hons) MCIEEM Senior Ecologist	14 th March 2023
Signature(s)	 Brian Robinson B.Sc. (Hons) MCIEEM Senior Ecologist	
Checked	Victoria Burrows B.Sc. (Hons) M.Sc. CEnv MCIEEM	6 th September 2023
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¹ Licence reference numbers

Bats

Victoria Burrows, Natural England Class Survey Licence (bats, Level 2) Registration Number 2015-10390-CLS-CLS

Brian Robinson Natural England Class Survey Licence (bats, Level 2) Registration Number 2015-13161-CLS-CLS

SUMMARY

Introduction and Scope

- i. This ecological survey and assessment presents the ecological, biodiversity and nature conservation status of Land at the Former All Saints School, Cherryfield Drive, Kirkby L32 5TQ. The assessment was requested in connection with proposals to develop the site to housing.
- ii. This report presents the results of a desktop study, data search, extended Phase 1 Habitat Survey and a preliminary bat survey carried out between November 2021 and March 2023. The scope of survey undertaken is appropriate to identify potential ecological constraints, the remit of mitigation required and opportunities for biodiversity associated with the development proposals.
- iii. The approximately 22.96 hectare site is located within a suburban area and comprises an area of plantation woodland, areas of scrub and tree lines, coarse, infrequently mown grassland, regularly managed amenity grassland, hard standing with areas of colonising vegetation and an area of recently cleared ground at the south-eastern end of the site, which is recolonising to scrub and grassland. Buildings are also present within the site, located along Cherryfield Drive Road and at the north-western end of the site.

Results of Survey and Assessment

- iv. The site is located within proximity to Kirkby Brook LWS; the LWS is located 30 metres to the west of the site. Unsuitable construction techniques during the construction phase of the proposed development have the potential to directly pollute the brook, and an unsuitable site layout has the potential to increase post-development impacts to the brook. Recommendations relating to site layout to ensure the mitigation hierarchy is followed by the design of the site are presented at **Section 5.2**. Suitable measures to be employed to ensure the LWS is protected during the construction phase of the proposed development are presented at **Section 5.3**. Otherwise it is considered that the proposals will have no adverse direct or indirect effect on statutory or non-statutory designated sites for nature conservation.
- v. Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. The NVC communities present are typical of the geographical area and conditions present.
- vi. No Priority Habitats were identified within the site. It is not considered that the areas of CBA grassland located at the north-western end of the site in accordance with the Liverpool City Region Ecological Network are representative of any grassland Priority Habitat and they do not form part of any designated site for nature conservation. The areas of hard standing with colonising ruderal vegetation are not indicative of Open Mosaic Habitat on Previously Developed Land Priority Habitat (OMH).
- vii. In terms of each habitat's importance in a geographical context, the plantation woodland, tree lines, scrub and areas of unmanaged grassland are considered to be of local importance, as they support habitats of value to nesting birds and foraging birds and bats, will contribute as wildlife links across the wider area, and contribute to the diversity of habitats within the local area. The areas of amenity grassland and vegetation colonising hard standing are of 'site' value only, and the areas of hard standing with no colonising vegetation are not considered to hold any importance in terms of a geographical context.
- viii. Recommendations relating to site layout and the retention (where feasible) of the plantation woodland, tree lines, scrub and grassland are presented at **Section 5.2**. Recommendations relating to the protection of retained features are presented at **Section 5.3**. It is recognised that the proposals will require the removal of habitat to facilitate development, and measures to compensate for the losses of habitat associated with the proposed development are presented at **Section 5.5**.
- ix. The presence of Japanese Rose and Montbretia, both invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) has been detected within the site. It is considered that the proposals present an opportunity for the eradication of both species as part of the proposed development. Further guidance is presented at **Section 5.4** of this report.

- x. Habitats within and adjacent to the site are suitable for foraging and commuting bats. The proposals have the potential to remove the suitable habitat due to inappropriate design and degrade retained habitat within the site and off-site habitats via inappropriate lighting. The recommendations relating to site layout at **Section 5.2** will ensure that the proposals retain areas considered to provide suitable habitat for use by foraging and commuting bats, and that the site design creates compensatory habitat as part of the Public Open Space within the site for foraging and commuting bats. Measures to ensure appropriate lighting is adopted by the proposed development for wildlife including bats are also presented at **Section 5.2**.
- xi. The site supports suitable features for nesting birds and sheltering hedgehog. Measures for the protection of wildlife during the construction phase of the proposed development are presented at **Section 5.4**. Measures to enhance retained and proposed habitats for wildlife associated with housing developments, including enhancements for roosting bats, nesting birds and foraging hedgehog, are presented at **Section 5.5**.
- xii. No other protected species have been detected.

Recommendations

- xiii. The recommendations in **Section 5.0** outline all the mandatory measures and additional actions to be applied to ensure compliance with wildlife legislation, the National Planning Policy Framework (NPPF) and best practice.
- xiv. The proposals will secure an opportunity to implement beneficial measures such as habitat management and habitat creation that will safeguard habitats for wildlife such as birds and bats, with the aim of providing a net gain in biodiversity in accordance with the principles of the NPPF.

Conclusion

- xv. This ecological assessment has demonstrated that, provided suitable landscape planting and POS are incorporated into the site design, a residential development at the site is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework.
- xvi. It is possible to implement reasonable actions for the protection and long-term conservation of fauna such as foraging and commuting bats, nesting birds and hedgehog associated with the site. Measures to conserve the habitat connectivity through the site are entirely feasible.
- xvii. Development at the site will provide an opportunity to secure ecological enhancement for fauna typically associated with residential areas such as breeding birds and roosting bats.

1.0 INTRODUCTION

1.1 Background and Rationale

1.1.1 ERAP (Consultant Ecologists) Ltd was commissioned by Barratt & David Wilson Homes North West to carry out an ecological assessment of land at the former All Saints School, Cherryfield Drive, Kirkby L32 5TQ (hereafter referred to as the 'site'). The Ordnance Survey (OS) grid reference at the centre of the 22.96 hectares site is SJ 41100 98404. An aerial image of the site and its surrounding habitats is appended at **Figure 1** (source image: ESRI World Imagery).

1.1.2 The assessment was requested in connection with a planning application to develop the site to housing.

1.2 Scope of Works

1.2.1 The scope of ecological works undertaken in November 2021 and February 2023 comprised:

- a. A desktop study and data search for known ecological information at the site and the local area;
- b. An Extended Phase 1 Habitat Survey and assessment;
- c. Assessment of the ecological value of the habitats within the site with the use of the National Vegetation Classification (NVC) and the Ratcliffe criteria, as presented in *A Nature Conservation Review* (Ratcliffe, 1977);
- d. Survey and assessment of all habitats for relevant statutorily protected species¹ and other wildlife including badger (*Meles meles*), barn owl (*Tyto alba*), bird species and reptiles;
- e. An initial inspection of the buildings and trees to determine their suitability for use by roosting bats and an assessment of the habitat suitability of the site for foraging and commuting bats;
- f. The identification of any potential ecological constraints on the proposals and the specification of the scope of mitigation and ecological enhancement required in accordance with wildlife legislation, planning policy guidance and other relevant guidance; and
- g. The identification of any further surveys or precautionary actions that may be required to inform the progression of the site through the planning process or prior to the commencement of any construction activities.

¹ In accordance with *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact on the Planning System* (Ministry of Housing, Communities & Local Government, 2005) developers should not be required to undertake surveys for protected species unless there is reasonable likelihood of the species being present and affected by the development. In this instance there are no ponds within an unobstructed 500 metre radius of the site, and no water bodies or water courses within or adjacent to the site; there has been no requirement to consider great crested newt (*Triturus cristatus*), water vole (*Arvicola amphibius*) or otter (*Lutra lutra*) as part of this assessment.

2.0 METHOD OF SURVEY

2.1 Desktop Study and Data Search

2.1.1 The following sources of information and ecological records were consulted:

- MAGiC Maps: A web-based interactive map which brings together geographic information on key environmental schemes and designations, including details of statutory nature conservation sites;
- Merseyside BioBank (MBB); and
- North Merseyside Biodiversity Action Plan (BAP).

2.2 Vegetation and Habitats

2.2.1 An Extended Phase 1 Habitat Survey of the site was carried over several dates, as outlined at **Table 2.1**.

Table 2.1: Phase 1 Habitat Survey Dates, Surveyors and Weather Conditions

Date	Surveyor(s)	Weather Conditions
4 th November 2021	Victoria Burrows and Rachel Platt	Dry and sunny with an air temperature of 2°C and a light air (Beaufort scale 1).
7 th February 2023	Brian Robinson and Rachel Platt	Dry and overcast with an air temperature of 8°C and a light air (Beaufort scale 1).
8 th March 2023	Brian Robinson and Rachel Brown	Dry and overcast with an air temperature of 3°C and a light air (Beaufort scale 1).

2.2.2 A habitat and vegetation map was produced for the site and the immediate surrounding area at a scale of 1:3,500 and is appended at **Figure 2**. The mapping is based on the Joint Nature Conservation Committee Phase 1 Habitat Survey methodology (JNCC, 2010) with minor adjustments to illustrate and examine the habitats with greater precision.

2.2.3 On site habitat mapping was assisted via use of GPS technology and QField on-site mapping software, using *Combined Topo Survey.dwg*, *Cherryfield Drive, Kirkby: Tree Constraints Plan Drawing Ref 1321-TCP-001-B (Overview)* (SEED Arboriculture Ltd, 2022) and ESRI World Imagery as base plans.

2.2.4 The plant species within the site boundary were determined with estimates of the distribution, ground cover, abundance and constancy of individual species. The estimation of abundance was based on the DAFOR system, where D = Dominant, A = Abundant, F = Frequent, O = Occasional and R = Rare, this being a widely used and accepted system employed by ecological surveyors. The terms L = Locally and V = Very were additionally used to describe the plant species distributions with greater precision.

2.2.5 Stands of vegetation and habitats were described and evaluated using the National Vegetation Classification (NVC). The NVC provides a systematic and comprehensive analysis of British vegetation and is a reliable framework for nature conservation and land-use planning.

2.2.6 Habitats within the site were assessed in accordance with the UK Habitats Classification / UKHab (Butcher, et al., 2020). The UKHab has been designed to function at two scales: fine scale (25m² or 5 metres length) and large scale (400m² or 20 metres length). It has been considered for the purposes of this survey that the fine scale of 25m² or 5 metres length is appropriate.

2.2.7 Searches were made for uncommon, rare and statutorily protected plant species, those species listed as protected in the *Wildlife and Countryside Act 1981* (as amended) and species which are indicators of important and uncommon plant communities. Plant nomenclature follows *New Flora of the British Isles 3rd Edition* (Stace, 2010).

- 2.2.8 Searches were carried out for the presence of invasive species, including those listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended), including Japanese Knotweed (*Fallopia japonica*), Indian Balsam (*Impatiens glandulifera*) and Giant Hogweed (*Heracleum mantegazzianum*).

2.3 Animal Life

Badger

- 2.3.1 The survey area for badger covered the site (as annotated on **Figure 2**) and extended to accessible land within a radius of 50 metres from the site boundary. Private gardens / land were excluded from the survey.
- 2.3.2 The survey was conducted in accordance with guidance presented within *Badgers and Development* (Natural England, 2007) and *Badgers: surveys and mitigation for development projects* (Natural England, 2015).
- 2.3.3 The following signs of badger activity were searched for:
- Sett entrances, e.g. entrances that are normally 25 to 35cm in diameter and shaped like a 'D' on its side;
 - Large spoil heaps outside sett entrances;
 - Bedding outside sett entrances;
 - Badger footprints;
 - Badger paths;
 - Latrines;
 - Badger hairs on fences or bushes;
 - Scratching posts; and
 - Signs of digging for food.
- 2.3.4 Habitats within and surrounding the site were assessed in terms of their suitability for use by foraging and sheltering badger in accordance with their known habitat preferences as detailed in current guidance and *Badger* (Roper, 2010).

Bat Species

Daylight Survey

Survey Personnel

- 2.3.5 The site was assessed for its suitability to support roosting bats by Victoria Burrows, Natural England Class Survey Licence WML CL18 (Bat Survey Level 2), Registration Number is 2015-13161-CLS-CLS. The surveyor's qualifications and experience meet the criteria as defined in the *Technical Guidance Series Competencies for Species Survey: Bats* (CIEEM, 2013).

Buildings

- 2.3.6 No internal access was possible to the buildings within the site boundary. Otherwise the surveys were carried out in accordance with standard methodology including the *Bat Mitigation Guidelines* (Mitchell-Jones, 2004), the *Bat Workers' Manual 3rd Edition* (Mitchell-Jones & Mcleish, 2004) and *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins, J. (ed), 2016).
- 2.3.7 An inspection of the external surfaces, walls and roofs of the buildings was carried out to find potential bat roosting habitat or accesses into internal areas where roosts may be present. Searches for evidence of bat presence in the form of droppings, urine stains, feeding signs, grease marks and other evidence were also carried out.

- 2.3.8 The suitability of each building has been initially assessed in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016), taking into account any presence of gaps suitable for access by bats, features suitable for use by roosting bats within the building (including crevice dwelling species and species which can roost in the open in roof voids), and the suitability of the surrounding habitats for use by foraging and commuting bats.

Trees

- 2.3.9 A preliminary assessment of the trees within the site was conducted to assess their suitability for use by roosting bats, and to inform whether further surveys or precautionary measures were required.
- 2.3.10 Trees were assessed from the ground using binoculars and a high-powered torch. Each tree was searched for the presence of the following features:

Woodpecker holes, rot holes, hazard beams, other vertical or horizontal cracks or splits in stems and branches, partially decayed platey bark, knot holes, man-made holes, tear-outs, cankers in which cavities have developed, other hollows or cavities, including butt-rots, double-leaders forming compression forks with included bark, gaps between overlapping stems or branches, partially detached Ivy (Hedera helix) with stem diameters in excess of 50mm and bat, bird or dormouse (Muscardinus avellanarius) boxes.

- 2.3.11 Terms used to describe any features present follow (where possible) those outlined and described in *Bat Tree Habitat Key, 2nd Edition* (Andrews, H (ed), 2013) and *Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-care and Ecology Professionals* (BTHK, 2018).

Habitat Assessment for Commuting / Foraging Bats

- 2.3.12 Habitats within and adjacent to the site were assessed for their value and suitability for commuting and foraging bats in accordance with Table 4.1 of *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*, (Collins, J. (ed), 2016). Reference has been made to the categories and descriptions / examples, presented at **Table 2.2**, below.

Table 2.2: Consideration of Suitability of Foraging and Commuting Habitat for Bats

Suitability	Commuting Habitat	Foraging Habitat
Negligible	Negligible habitat features on site likely to be used by commuting bats.	Negligible habitat features on site likely to be used by foraging bats.
Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated i.e. not very well connected to the surrounding landscape by other habitat.	Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree or patch of scrub.
Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.	Habitat that is linked to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	Continuous, high-quality habitat that is well connected to the wider landscape and is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. Habitats close to and connected to known roosts.	High-quality habitat that is well-connected to the wider landscape and is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Habitats close to and connected to known roosts.

Bird Species

- 2.3.13 Bird species observed and heard during the Phase 1 Habitat surveys were recorded.
- 2.3.14 Habitats throughout the site and in the immediate surrounding area were assessed for their value to roosting, feeding and nesting birds, as indicated by the amount of shelter, feeding value, woody vegetation structure and species diversity of tree and shrub species in the site.

- 2.3.15 A single breeding bird survey was conducted by Mr. Chris Swindells on the morning of 21st July 2022. The weather conditions were sunny and dry with an air temperature of 18°C and a light air (Beaufort scale 1).
- 2.3.16 All visible and audible birds were recorded during the site survey following the standard recording methodology and codes of the *British Trust for Ornithology (BTO) Common Birds Census* (Marchant, 1983).

Reptile Species

- 2.3.17 The site and its surroundings were assessed in terms of their suitability for use by reptile species using the important characteristics for reptiles outlined in the draft document '*Reptile Mitigation Guidelines*' (Natural England, 2011), and the *Reptile Habitat Management Handbook* (Edgar, et al., 2010). These habitat characteristics are outlined in **Table 2.3**, below.

Table 2.3: Important Habitat Characteristics for Reptiles

1. Location (in relation to species range)	7. Connectivity to nearby good quality habitat
2. Vegetation Structure	8. Prey abundance
3. Insolation	9. Refuge opportunity
4. Aspect	10. Hibernation habitat potential
5. Topography	11. Disturbance regime
6. Surface geology	12. Egg-laying site potential

Other Wildlife

- 2.3.18 Evidence of other wildlife (including Priority Species) observed whilst on site (but for which specific surveys were not made) was recorded and has been included in this report where it is considered of relevance to the planning application.

2.4 Survey and Reporting Limitations

- 2.4.1 The Phase 1 Habitat Surveys were completed when plant species would be in a state of senescence or dormant; the surveyors are experienced in identifying plant species from their vegetative characteristics however, and a reliable assessment of the habitats present was possible.
- 2.4.2 No internal access has been possible to the buildings within the site. This has been taken into account when assessing the requirement for further bat surveys at the buildings.
- 2.4.3 The single bird survey was completed late in the breeding season. It is considered that the surveys conducted to date contribute to the overall assessment of habitat suitability for nesting birds at the site. As discussed at Section 4.4 the requirement for further surveys will be considered following formalisation of the proposals at the site.
- 2.4.4 All measurements within this report are approximate only, and have been either measured (using QField) or estimated whilst on site or calculated using mapping software (QGIS) or internet-based mapping services such as MAGiC Maps and Google Earth.

2.5 Evaluation Methods

- 2.5.1 The habitats, vegetation and animal life were evaluated with reference to standard nature conservation criteria as described in *A Nature Conservation Review* (Ratcliffe, 1977) and *Guidelines for the Selection of Biological SSSIs* (Bainbridge, et al., 2013). These are size (extent), diversity, naturalness, rarity, fragility, typicality, recorded history, position in an ecological or geographical unit, potential value and intrinsic appeal.
- 2.5.2 Habitats have been assessed to determine whether they meet those described in *UK Biodiversity Action Plan: Priority Habitat Descriptions* (Maddock, A (ed), 2008); these lists are used to help draw up the statutory lists of Priority Habitats, as required under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006*. Where suitable, the ecological value of the habitats present has been assessed using

the terms outlined in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018).

- 2.5.3 Government advice on wildlife, as set out in the *National Planning Policy Framework* (Ministry of Housing, Communities and Local Government, 2021) and associated government circulars has been taken into consideration. Legislation relating to protected species, such as those listed under Schedules 1, 5, 6 and 8 of the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019*, is referenced where applicable, and any impacts to protected species are evaluated in accordance with current guidance.
- 2.5.4 The presence of any Priority Species, as listed under Section 41 of the *Natural Environment and Rural Communities (NERC) Act 2006* is noted, and habitats are assessed in terms of their suitability and value for these species. The presence of habitats and / or species listed by the North Merseyside BAP.

3.0 SURVEY RESULTS

3.1 Desktop Study and Data Search

Statutory Designated Sites for Nature Conservation and SSSI Impact Risk Zones

- 3.1.1 The site is not and does not form part of any statutory designated site for nature conservation. The site is located within a SSSI Impact Risk Zone for the overlapping
- 3.1.2 The site lies within a Site of Special Scientific Interest (SSSI) Impact Risk Zone for the following statutory designated site for nature conservation, hereafter referred to as the 'statutory designated sites':
- Liverpool Bay Special Protection Area (SPA), located 8.76 kilometres to the north-west of the site;
 - Mersey Narrows & North Wirral Foreshore SPA and Ramsar and Mersey Narrows SSSI located 9.04 kilometres to the west of the site;
 - Ribble & Alt Estuaries Ramsar located 9.6 kilometres to the north of the site;
 - Ribble & Alt Estuaries SPA located 9.6 kilometres to the north of the site;
 - Sefton Coast SSSI located 9.6 kilometres to the north-west of the site;
 - Sefton Coast SAC located 9.63 kilometres to the north-west of the site; and
 - Mersey Estuary SPA, Ramsar site and SSSI located 12.83 kilometres to the south of the site.
- 3.1.3 The above estuarine sites are typically designated for their importance to seabirds and wintering wildfowl and passage migrants with the Sefton Coast SSSI and SAC of value for its sand dune habitats and the presence of Petalwort (*Petalophyllum ralfsii*) and great crested newt.
- 3.1.4 The SSSI Impact Risk Zone requires the Local Planning Authority to consult with Natural England on likely risks from the following development categories (Ordnance Survey, 2024):
- Airports, helipads and other aviation proposals.
 - Solar schemes with footprint greater than 0.5ha, all wind turbines.
 - Livestock and poultry units with a floorspace greater than 500m², slurry lagoons and digestate stores greater than 4000m².
 - General combustion processes greater than 50 megawatts energy input. Includes energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis / gasification, anaerobic digestion, sewage treatment works and other incineration / combustion.
 - Landfill. Includes inert landfill, non-hazardous landfill and hazardous landfill.
 - Any discharge of water or liquid waste of more than 20m³ per day to ground (i.e. to seep away) or to surface water, such as a beck or stream.
- 3.1.5 The proposals do not match any of the development categories which would require further consultation with Natural England in relation to potential risks to the statutory designated sites from the proposed development.

Non-statutory Designated Sites for Nature Conservation

- 3.1.6 The site is not and does not form part of any non-statutory designated site for nature conservation, termed Local Wildlife Site (or 'LWS') in Merseyside.
- 3.1.7 17 LWS are located within 2 kilometres of the site and are summarised at **Table 3.1**.

Table 3.1: LWS Within a 2 Kilometre Radius from the Centre of the Site

LWS Name	Distance and Direction from the Site
Meadow, Kirkby (Mill) Brook, South of Old Hall Lane	30 metres to the north-west
Kirkby Brook	50 metres to the south-west
Kirkby Brook, including Mill Brook	190 metres to the north
Knowsley Brook	950 metres to the south
Mill Brook, Westvale	990 metres to the north
River Alt, Kirkby	1.08 kilometres to the west
River Alt & adjacent sites through Gilmooss including Fazakerley WwTW	1.12 kilometres to the south-west
Croxteth Brook	1.15 kilometres to the south
Simonswood Brook	1.22 kilometres to the north
Wango Lane Wetland	1.33 kilometres to the west
Land e of canal, n of Wango Lane, Waddicar	1.39 kilometres to the west
Kirkby Brook, Northwood	1.4 kilometres to the north-east
Kraft Operational Land	1.4 kilometres to the south-east
Otis Meadow	1.46 kilometres to the south-east
Northwood Forest Hills	1.62 kilometres to the north-east
Croxteth Park, River Alt and adjacent sites through Croxteth	1.68 kilometres to the south
Fazakerley Sidings, Aintree	1.95 kilometres to the west

3.1.8 The presence of the LWS within the wider area is considered further at **Section 4.2** below.

Liverpool City Region Ecological Network

3.1.9 Two areas at the north-western end of the site are labelled as Core Biodiversity Area (CBA) grassland; these areas comprise 'designated sites and Priority Habitats' in accordance with *Liverpool City Region Ecological Network Report - Final* (Bennett, 2015). The presence of the CBA grassland is considered further at **Section 4.3** below, and the areas identified within the site at CBA grassland are presented at **Figures 1 and 2**.

3.1.10 Land adjacent to the western site boundary lies within the River Alt and M57 Corridor Nature Improvement Area (NIA).

Priority Habitats Inventory

3.1.11 The Priority Habitats Inventory² was checked via MAGiC Maps. No Priority Habitats are reported for the site.

Protected and Notable Species

3.1.12 MBB hold a record of six common pipistrelle (*Pipistrellus pipistrellus*) for the site from 2010 (note that the record is also labelled as 'Kirkby Town Centre') and therefore may not be from the site itself).

3.1.13 Records of protected and notable species for a 2 kilometre radius of the site are summarised at **Table 3.2**.

Table 3.2: Records of Protected Species Within a 2 Kilometre Radius of the Centre of the Site

Taxon Group	Species Name and Designations ¹ and Notes
Amphibians	Great crested newt (<i>Triturus cristatus</i>): EPS, WCAs5, PS and NMBAP. 3 records, dated between 2011 and 2014. The closest record is 865 metres to the north-west of the site, and from 2011.
	Common toad (<i>Bufo bufo</i>): PS. 2 records, dated 2008 and 2010. The closest record is 1610 metres to the north of the site, and from 2008.
	Common frog (<i>Rana temporaria</i>): WCAs5 (sale only). 17 records, dated between 1982 and 2021. The closest record is 70 metres to the north-west of the site, and from 2017.
	Smooth newt (<i>Lissotriton vulgaris</i>): WCAs5 (sale only). 8 records, dated between 1982 and 2017. The closest record is 1565 metres to the south-east of the site, and from 2017.

² A spatial dataset that describes the geographic extent and location of Natural Environment and Rural Communities Act (2006) Section 41 habitats of principal importance.

Taxon Group	Species Name and Designations ¹ and Notes
Birds – WCAs1 Species	Barn owl (<i>Tyto alba</i>): WCAs1. 3 records, dated between 1997 and 2000. The records are held to tetrad level only (tetrads SD30V, SJ39Y and SJ49D). Peregrine (<i>Falco peregrinus</i>): WCAs1. 1 record from 2002, 1400 metres to the south-west of the site. Marsh Harrier (<i>Circus aeruginosus</i>) WCAs1. 1 record from 1998. The record is held to tetrad level only (tetrad SD40A).
Birds – PS and NMBAP Species	PS & NMBAP: Corn bunting (<i>Emberiza calandra</i>), grey partridge (<i>Perdix perdix</i>), house sparrow (<i>Passer domesticus</i>), lapwing (<i>Vanellus vanellus</i>), skylark (<i>Alauda arvensis</i>), song thrush (<i>Turdus philomelos</i>) and starling (<i>Sturnus vulgaris</i>). PS Only: Bullfinch (<i>Pyrrhula pyrrhula</i>), cuckoo (<i>Cuculus canorus</i>), dunnoek (<i>Prunella modularis</i>), grasshopper warbler (<i>Locustella naevia</i>), lesser redpoll (<i>Acanthis cabaret</i>), linnet (<i>Linaria cannabina</i>), reed bunting (<i>Emberiza schoeniclus</i>), spotted flycatcher (<i>Muscicapa striata</i>), tree sparrow (<i>Passer montanus</i>), willow tit (<i>Poecile montanus</i>), yellow wagtail (<i>Motacilla flava</i>) and yellowhammer (<i>Emberiza citrinella</i>). NMBAP Only: House martin (<i>Delichon urbicum</i>) and swift (<i>Apus apus</i>).
Bony Fish	European eel (<i>Anguilla anguilla</i>): PS. 2 records, both from 2015. The closest record is 170 metres to the south-west of the site.
Flowering Plants – WCAs8 Species Flowering Plants – PS and NMBAP Species	Bluebell (<i>Hyacinthoides non-scripta</i>) WCAs8 and NMBAP. A total of 5 records dated between 1981 and 2009 the closest is 140m from the site. PS & NMBAP: Purple Ramping-fumitory (<i>Fumaria purpurea</i>). PS Only: Annual Knawel (<i>Scleranthus annuus</i>) and Cornflower (<i>Centaurea cyanus</i>).
Invertebrates – Butterflies	Small heath (<i>Coenonympha pamphilus</i>): PS. 6 records, dated between 1977 and 2014. The closest record is 805 metres to the north-east of the site, and from 1977. Wall (<i>Lasiommata megera</i>): PS. 7 records, dated between 1982 and 1994. The closest record is 1330 metres to the north-west of the site, and from 1992.
Invertebrates – Dragonfly	NMBAP Azure damselfly (<i>Coenagrion puella</i>), banded demoiselle (<i>Calopteryx splendens</i>), black darter (<i>Sympetrum danae</i>), blue-tailed damselfly (<i>Ischnura elegans</i>), broad-bodied chaser (<i>Libellula depressa</i>), brown hawker (<i>Aeshna grandis</i>), common blue damselfly (<i>Enallagma cyathigerum</i>), common darter (<i>Sympetrum striolatum</i>), common hawker (<i>Aeshna juncea</i>), emerald damselfly (<i>Lestes sponsa</i>), emperor dragonfly (<i>Anax imperator</i>), four-spotted chaser (<i>Libellula quadrimaculata</i>), large red damselfly (<i>Pyrrhosoma nymphula</i>), migrant hawker (<i>Aeshna mixta</i>), red-eyed damselfly (<i>Erythronma najas</i>) and southern hawker (<i>Aeshna cyanea</i>).
Invertebrates – Moth	Buff ermine (<i>Spilosoma lutea</i>): PS. 8 records, all from 1968. The closest record is 1045 metres to the north-west of the site.
Reptile	Common lizard (<i>Zootoca vivipara</i>): WCAs5, PS and NMBAP. 6 records, dated between 1986 and 1996. The closest record is 1640 metres to the south-east of the site, and from 1986.
Terrestrial Mammal	Brown long-eared bat (<i>Plecotus auritus</i>): EPS, WCAs5, PS and NMBAP. 2 records, dated 2002 and 2003. The closest record is 1395 metres to the south of the site, and from 2002. Noctule bat (<i>Nyctalus noctula</i>): EPS, WCAs5, PS and NMBAP. 1 record from 2013; an accurate estimation of distance of the record to the site cannot be made due to the locational data being less than a six figure grid reference Soprano pipistrelle (<i>Pipistrellus pygmaeus</i>): EPS, WCAs2, PS and NMBAP. 8 records, dated between 2007 and 2019. The closest record is 10 metres to the south-west of the site, and from 2007. Bat (Order <i>Chiroptera</i>): EPS, WCAs5 and NMBAP. 7 records, dated between 1989 and 2017. The closest record is 940 metres to the north of the site, and from 2010. Common pipistrelle (<i>Pipistrellus pipistrellus</i>): EPS, WCAs5 and NMBAP. 19 records, dated between 1987 and 2019. The closest record is within the site and from 2010. Natterer's bat (<i>Myotis nattereri</i>): EPS, WCAs5 and NMBAP. 1 record from 2010, located 1695 metres to the south-west of the site. Pipistrelle bat species (<i>Pipistrellus</i> sp.): EPS, WCAs5 and NMBAP. 11 records, dated between 1988 and 2016. The closest record is 235 metres to the west of the site, and from 2016.

Taxon Group	Species Name and Designations ¹ and Notes
	European water vole (<i>Arvicola amphibius</i>): WCAs5, PS and NMBAP. 97 records, dated between 1980 and 2017. The closest record is 70 metres to the north-west of the site, and from 1999.
	Eurasian red squirrel (<i>Sciurus vulgaris</i>): WCAs5& NMBAP. 18 records, dated between 1967 and 2013. The closest record is 125 metres to the south of the site, and from 2008.
	West European hedgehog (<i>Erinaceus europaeus</i>): PS. 23 records, dated between 1970 and 2020. The closest record is 5 metres to the south of the site, and from 2019.
	Brown hare (<i>Lepus europaeus</i>): PS and NMBAP. 9 records, dated between 1970 and 2011. The closest record is 265 metres to the north of the site, and from 2008.
¹ Key to Designation Codes: EPS = European Protected Species under the <i>Conservation of Habitats and Species Regulations 2017</i> (as amended). WCAs1 = Species receives full protection under Schedule 1 of the <i>Wildlife and Countryside Act 1981</i> (as amended). WCAs5 = Species receives full protection under Schedule 5 of the <i>Wildlife and Countryside Act 1981</i> (as amended). PS = Priority Species listed under Section 41 of the NERC Act 2006 NMBAP = Species listed on the North Merseyside Biodiversity Action Plan	

- 3.1.14 The presence of these protected and notable species within the wider area has been taken into account throughout this report.

3.2 Vegetation and Habitats

General Description

- 3.2.1 The approximately 22.96 hectare site is located within a suburban area and comprises a plantation woodland, areas of scrub and tree lines, coarse, infrequently mown grassland, regularly managed amenity grassland, hard standing with areas of colonising vegetation and an area of recently cleared ground at the south-eastern end of the site, which is recolonising to scrub and grassland. Buildings are also present within the site, located along Cherryfield Drive Road and at the north-western end of the site.
- 3.2.2 The northern site boundary is defined by Cherryfield Drive, beyond which lies Kirkby town centre. The eastern site boundary is partially defined by Cherryfield Drive and partially defined by fencing, playing fields and hard standing associated with Kirkby Leisure Centre. The southern site boundary is defined by fencing, beyond which lies Bewley Drive and the rear gardens of the housing associated with Whinberry Drive. The southern end of the western site boundary is defined by fencing, beyond which lies amenity grassland and scrub associated with Kirkby Brook. The northern end of the western site boundary is defined by fencing beyond which lies Valley Road.
- 3.2.3 Investigation of Google Earth historical imagery demonstrates that the site formerly supported Knowsley Community College – Kirkby Campus at its north-western end, residential dwellings at its northern end (associated with Cherryfield Crescent) and the former All Saints School at its south-eastern end; all of these developments have been demolished between 2010 and the present day. Kirkby Leisure Centre was constructed to the east of the site circa 2010.
- 3.2.4 A Phase 1 Habitat Survey map is appended at **Figure 2**, and can be referred to for all habitat descriptions. Photographs are appended at **Section 8.2**.

3.3 Vegetation and Habitat Descriptions

Woodland and Scrub

Plantation Woodland A (AIA Reference G1 and G2)

- 3.3.1 Refer to **Photos 1 to 3**. The plantation woodland is located at the north-western end of the site. The woody species are characterised by frequent Ash (*Fraxinus excelsior*) and Hazel (*Corylus avellana*), occasional and locally frequent Goat Willow (*Salix caprea*) and Silver Birch (*Betula pendula*), occasional Holly (*Ilex aquifolium*) and locally abundant garden exotics. Garden Privet (*Ligustrum ovalifolium*), Pedunculate Oak (*Quercus robur*) and Wild Cherry (*Prunus avium*) are locally frequent.

3.3.2 The ground flora is characterised by constant and frequent Bramble (*Rubus fruticosus* agg.), Cleavers (*Galium aparine*) and Common Nettle (*Urtica dioica*), frequent Cow Parsley (*Anthriscus sylvestris*) and Ivy (*Hedera helix*) and occasional and locally frequent Cock's-foot (*Dactylis glomerata*), occasional Dandelion (*Taraxacum officinale* agg.), False Oat-grass (*Arrhenatherum elatius*) and Perennial Rye-grass (*Lolium perenne*) and very locally frequent Wood Avens (*Geum urbanum*), Spanish Bluebell (*Hyacinthoides hispanica*) and Daffodil (*Narcissus pseudonarcissus*). A plant species list is appended at **Table 8.1**.

3.3.3 The plantation woodland is not typical of any NVC community, and is described by the UKHab as w1h5 other woodland; mixed; mainly broadleaved with the secondary code 36 plantation.

Scrub A (AIA Reference G3 and G4)

3.3.4 Refer to **Photo 4**. The scrub is located at the north-western end of the site and is located to the north of Amenity Grassland A.

3.3.5 The vegetation is characterised by constant and abundant Goat Willow, occasional and very locally frequent Bramble and Silver Birch, very locally frequent Dogwood (*Cornus sanguinea*) and rare Dog-rose (*Rosa canina*), Fir species (*Abies* sp.) and Norway Maple (*Acer platanoides*).

3.3.6 The habitat is described by the UKHab as h3h mixed scrub - no secondary codes were noted.

Scrub B (Includes AIA Reference G12, T10 and T11)

3.3.7 Refer to **Photo 5**. Scrub B is located at the base of Tree Line C and extends to the north of the tree line dividing Amenity Grassland B and Vegetation Colonising Hard Standing A.

3.3.8 The vegetation (not including the trees associated with Tree Line C) is characterised by constant and abundant Bramble with locally abundant Goat Willow.

3.3.9 The vegetation is typical of a *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) of the NVC, and is described by the UKHab as h3d Bramble scrub with the secondary codes 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Scrub C (Includes AIA Reference G9, G10 and T12, T13 and T14)

3.3.10 Refer to **Photo 6**. Scrub C is located at the northern margin of Grassland B and the southern margin of Vegetation Colonising Hard Standing A.

3.3.11 The scrub is characterised by constant and abundant garden exotics with frequent and locally abundant Bramble and occasional Rowan (*Sorbus aucuparia*), Sycamore (*Acer pseudoplatanus*) and Wild Cherry.

3.3.12 The vegetation is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary codes 11 scattered trees, 48 non-native and 77 neglected (unmanaged for 3 to 10 years).

Scrub D (Includes AIA Reference T20, T21, T23 and T24)

3.3.13 Refer to **Photo 7**. Scrub D is located adjacent to a footpath near the southern end of Grassland B.

3.3.14 The scrub is characterised by constant and abundant Bramble with occasional and locally abundant Goat Willow, locally abundant Japanese Rose (*Rosa rugosa*) and very locally abundant Canadian Fleabane (*Conyza canadensis*).

3.3.15 The vegetation holds characteristics of a *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) of the NVC and is described by the UKHab as h3d Bramble scrub with the secondary code 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Scrub E (AIA Reference G16)

- 3.3.16 Refer to **Photo 8**. Scrub E is located at the north-eastern end of Grassland B and lies adjacent to Tree Line E.
- 3.3.17 The vegetation is characterised by constant and abundant Bramble with constant and frequent Goat Willow.
- 3.3.18 The vegetation holds characteristics of a *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) and is described by the UKHab as h3h mixed scrub with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years).

Scrub F (AIA Reference G50 and G51)

- 3.3.19 Refer to **Photos 9 and 10**. Scrub F is located at the margins of the southern end of Grassland D, where the grassland lies to the immediate east of the gardens associated with Pondwater Close.
- 3.3.20 The self-seeded scrub is characterised by constant and frequent Silver Birch, Italian Alder (*Alnus cordata*), Goat Willow, Norway Maple and Wild Cherry.
- 3.3.21 The vegetation is not characteristic of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary code 77 neglected (unmanaged for 3 to 10 years).

Scrub G (AIA Reference G30)

- 3.3.22 Refer to **Photo 11**. Scrub G is located to the immediate north-east of Scrub F and to the north-west of Scrub H.
- 3.3.23 The scrub is characterised by planted Norway Maple, Wild Cherry, Cherry Plum (*Prunus cerasifera*) and Common Whitebeam (*Sorbus aria*).
- 3.3.24 The scrub is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years).

Scrub H (Includes AIA References G40 and G41)

- 3.3.25 Refer to **Photo 12**. Scrub H is located at the south-eastern end of the site and beneath Tree Line G.
- 3.3.26 The scrub is characterised by constant and abundant Bramble and locally abundant self-seeded Field Maple (*Acer campestre*), Norway Maple, Sycamore, Alder (*Alnus glutinosa*), Silver Birch, Wild Cherry, Pedunculate Oak and Goat Willow.
- 3.3.27 The vegetation supports areas characteristic of *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) and is described by the UKHab as h3h mixed scrub with the following secondary codes: 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Scrub I (Includes AIA Reference G42)

- 3.3.28 Refer to **Photos 13 and 14**. Scrub I is located at the eastern and northern margins of the area of partially cleared ground at the south-eastern end of the site.
- 3.3.29 The vegetation is characterised by dense self-seeded young trees and shrubs characterised by constant and frequent Alder, Silver Birch and Goat Willow with occasional and locally frequent Norway Maple and Sycamore.
- 3.3.30 The vegetation is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary codes 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Scrub J (Includes AIA Reference T38, T39, G31 and G42)

- 3.3.31 Refer to **Photo 15**. Areas of scrub characterised by abundant Bramble and locally frequent Silver Birch and Goat Willow shrubs are located at the northern and western margins of the area of cleared ground at the south-eastern end of the site.
- 3.3.32 The vegetation holds characteristics of a *W24 Bramble – Yorkshire-fog underscrub* (Rodwell, 1991) of the NVC and is described by the UKHab as h3d Bramble scrub with the secondary code 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Scrub K (AIA Reference G34)

- 3.3.33 Refer to **Photo 16**. Scrub K comprises a small group of planted Wild Plum (*Prunus domestica*) shrubs within an area of previously cleared scrub.
- 3.3.34 The vegetation is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary code 77 neglected (unmanaged for 3 to 10 years).

Scrub L (AIA Reference G28 and G29)

- 3.3.35 Refer to **Photos 17 and 18**. Two areas of planted shrubs characterised by Wild Cherry and Swedish Whitebeam (*Sorbus intermedia*) shrubs and frequent Bramble.
- 3.3.36 The vegetation is not typical of any NVC community and is described by the UKHab as h3h mixed scrub with the secondary code 77 neglected (unmanaged for 3 to 10 years).

Tree Lines

Tree Line A (AIA Reference G5)

- 3.3.37 Refer to **Photo 19**. Tree Line A is located at the north-western end of the site, at the northern end of Amenity Grassland B.
- 3.3.38 Tree Line A is a row of planted Ash. The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 56 young trees - planted and 77 neglected (unmanaged for 3 to 10 years).

Tree Line B (AIA Reference G7)

- 3.3.39 Refer to **Photo 20**. Tree Line B is located at the north-western end of the site, at the eastern edge of Amenity Grassland B.
- 3.3.40 Tree Line B is a row of planted Scots Pine (*Pinus sylvestris*). The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 56 young trees – planted and 77 neglected (unmanaged for 3 to 10 years).

Tree Line C (AIA References T15, T16 and T17)

- 3.3.41 Refer to **Photo 21**. Tree Line C is located between Grassland A and Grassland B. Scrub B forms part of its ground flora and extends to the north and south of the tree line. The tree line comprises occasional Sycamore and Silver Maple (*Acer saccharinum*).
- 3.3.42 The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 48 non-native, 56 young trees - planted and 77 neglected (unmanaged for 3 to 10 years).

Tree Line D (AIA References G14, G15, T25, T26 and T27)

- 3.3.43 Refer to **Photo 22**. Tree Line D is located at the north-eastern end of Grassland B and to the immediate east of Tree Line E. The tree line is characterised by abundant mature Lombardy Poplar (*Populus nigra x italica*), Grey Poplar (*Populus x canescens*) and locally abundant Goat Willow.
- 3.3.44 The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 48 non-native and 77 neglected (unmanaged for 3 to 10 years).

Tree Line E (AIA Reference G46)

- 3.3.45 Refer to **Photos 23 and 24**. Tree Line E is located at the eastern end of the site and to the south of Vegetation Colonising Hard Standing B.
- 3.3.46 The tree line comprises constant and abundant Leyland Cypress (*X Cuprocyparis leylandii*) with occasional Silver Birch, Scots Pine (*Pinus sylvestris*) and Wild Cherry.
- 3.3.47 The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 48 non-native and 77 neglected (unmanaged for 3 to 10 years).

Tree Line F (AIA References G17, G20, G21, G22, T19, T28, T29, T30 and T33)

- 3.3.48 Refer to **Photo 25**. Tree Line F is located at the south-eastern end of the site and partially defines the site boundary.
- 3.3.49 The tree line is characterised by occasional White Poplar (*Populus alba*) with very locally frequent Hawthorn (*Crataegus monogyna*) and Goat Willow and rare Silver Birch.
- 3.3.50 The tree line is not indicative of any NVC community and is described by the UKHab as w1g6 line of trees with the secondary codes 48 non-native and 77 neglected (unmanaged for 3 to 10 years).

Tree Line G (AIA References G40, T50, T51, T52, T53, T54, T55 and T56)

- 3.3.51 Refer to **Photo 26**. Tree Line G is located at the south-eastern site boundary, to the immediate south of the area of cleared ground.
- 3.3.52 The tree line is characterised by frequent Pedunculate Oak, Alder and Sycamore with very locally frequent Crab Apple (*Malus sylvestris*).
- 3.3.53 The tree line is not typical of any NVC community and is described by the UKHab as w1g6 line of trees with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years) and 154 open grown trees.

Tree Line H (AIA References T46 and G39)

- 3.3.54 Refer to **Photo 27**. Tree Line H is located at the south-eastern end of the site within the area of cleared ground.
- 3.3.55 The tree line is characterised by frequent Italian Alder, Manna Ash (*Fraxinus ornus*) and Silver Birch.
- 3.3.56 The tree line is not typical of any NVC community and is described by the UKHab as w1g6 line of trees with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years) and 154 open grown trees.

Tree Line I (AIA References G36, G37, G38 and T44)

- 3.3.57 Refer to **Photo 28**. Tree Line I is located at the south-eastern end of the site within the area of cleared ground.

3.3.58 The tree line is characterised by frequent Common Lime (*Tilia x europaea*), Italian Alder, Alder, Silver Birch and locally frequent Hazel, Wild Cherry, Rowan, Horse-chestnut (*Aesculus hippocastanum*), Norway Maple and Manna Ash.

3.3.59 The tree line is not typical of any NVC community and is described by the UKHab as w1g6 line of trees with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years) and 154 open grown trees.

Tree Line J (AIA References G32 and G33)

3.3.60 Refer to **Photo 29**. Tree Line J is located at the towards the western end of the middle of the area of cleared ground at the south-eastern end of the site.

3.3.61 The tree line comprises young, planted Field Maple, Silver Birch and Common Whitebeam, all of which are of occasional occurrence, with a ground flora of frequent Bramble.

3.3.62 The tree line is not typical of any NVC community and is described by the UKHab as w1g6 line of trees with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years) and 154 open grown trees.

Tree Line K (AIA References G24, G25, G26, T35, T36 and T37)

3.3.63 Refer to **Photo 30**. Tree Line K is located at the northern end of the area of cleared ground at the south-eastern end of the site.

3.3.64 The tree line comprises young, planted trees characterised by locally frequent Norway Maple, Alder, Wild Cherry and rare Rowan and Swedish Whitebeam.

3.3.65 The tree line is not typical of any NVC community and is described by the UKHab as w1g6 line of trees with the following secondary codes: 77 neglected (unmanaged for 3 to 10 years) and 154 open grown trees.

Grassland Areas

Grassland A

3.3.66 Refer to **Photos 31 and 32**. Grassland A is located at the north-western end of the site, to the immediate east of Grassland B.

3.3.67 The grassland is characterised by constant and frequent Yorkshire-fog (*Holcus lanatus*), frequent Creeping Cinquefoil (*Potentilla reptans*), Common Bent (*Agrostis capillaris*) and Creeping Bent (*Agrostis stolonifera*), occasional and locally frequent Red Fescue (*Festuca rubra*) and Meadow Vetchling (*Lathyrus pratensis*) and occasional False Oat-grass, Cock's-foot, Carrot (*Daucus carota*), Broad-leaved Dock (*Rumex obtusifolius*), Broom (*Cytisus scoparius*), Common Couch (*Elytrigia repens*), Common Knapweed (*Centaurea nigra*) and Common Mouse-ear (*Cerastium fontanum*). Bramble, Black Medick (*Medicago lupulina*) and Oxeye Daisy (*Leucanthemum vulgare*) are locally frequent. A plant species list is appended at **Table 8.2**.

3.3.68 The grassland is indicative of an *MG1 False Oat-grass grassland* (Rodwell, 1992) and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the following secondary codes: 10 scattered scrub, 11 scattered trees, 14 scattered rushes, 160 sward type mosaic and 77 neglected (unmanaged for 3 to 10 years).

Grassland B

3.3.69 Refer to **Photos 33 and 34**. Grassland B is located at the northern end of the site to the south of Vegetation Colonising Hard Standing A and to the north of Amenity Grassland C.

3.3.70 The grassland is characterised by abundant Cock's-foot, Common Couch and False Oat-grass, frequent Rough Meadow-grass (*Poa trivialis*) and occasional Broad-leaved Dock (*Rumex obtusifolius*), Bush Vetch (*Vicia sepium*), Common Vetch (*Vicia sativa*), Hogweed (*Heracleum sphondylium*), Meadow Buttercup

(*Ranunculus acris*), Mugwort (*Artemisia vulgaris*), Red Clover (*Trifolium pratense*), Ribwort Plantain (*Plantago lanceolata*), Spear Thistle (*Cirsium vulgare*), Tufted Vetch (*Vicia cracca*) and Yarrow (*Achillea millefolium*). Common Nettle and Rosebay Willowherb (*Chamerion angustifolium*) are locally abundant. A plant species list is appended at **Table 8.3**.

- 3.3.71 The grassland is indicative of an *MG1 False Oat-grass grassland* (Rodwell, 1992) and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the following secondary codes: 10 scattered scrub, 11 scattered trees, 14 scattered rushes, 16 tall herb and 77 neglected (unmanaged for 3 to 10 years). "

Grassland C

- 3.3.72 Refer to **Photo 35**. Grassland C is located at the south-eastern corner of Amenity Grassland C.
- 3.3.73 The grassland is characterised by constant and abundant Red Fescue, frequent Yorkshire-fog, occasional and locally frequent Broad-leaved Dock and Mugwort and occasional Broom, Bramble, Cock's-foot , Carrot, False Oat-grass, Hairy Sedge (*Carex hirta*), Reed Canary-grass (*Phalaris arundinacea*), Ribwort Plantain and Meadow Vetchling.
- 3.3.74 The grassland is indicative of an *MG1 False Oat-grass grassland* (Rodwell, 1992) and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the following secondary codes: 10 scattered scrub, 160 sward type mosaic and 77 neglected (unmanaged for 3 to 10 years). A plant species list is appended at **Table 8.4**.

Grassland D

- 3.3.75 Refer to **Photos 36 to 38**. Grassland D is located at the south-eastern corner of the site.
- 3.3.76 The grassland is characterised by constant and abundant Red Fescue, constant and frequent Yorkshire-fog and Creeping Bent, occasional and locally abundant Bramble, Reed Canary-grass, Ribbed Melilot (*Melilotus officinalis*) and Great Willowherb (*Epilobium hirsutum*), and occasional and locally frequent Common Bent (*Agrostis capillaris*), Goat Willow, Silver Birch, Cock's-foot , False Oat-grass (*Arrhenatherum elatius*), Common Knapweed (*Centaurea nigra*), Glaucous Sedge (*Carex flacca*) and Hairy Sedge (*Carex hirta*). A plant species list is appended at **Table 8.5**.
- 3.3.77 The grassland is indicative of an *MG1 False Oat-grass grassland* (Rodwell, 1992) and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the following secondary codes: 10 scattered scrub, 11 scattered trees, 14 scattered rushes, 160 sward type mosaic and 76 recent management (i.e. within 3 years).

Grassland E

- 3.3.78 Refer to **Photo 39**. Grassland E is located at the northern end of the site between the hard standing car park and its access road.
- 3.3.79 The grassland is characterised by constant and frequent Creeping Bent (*Agrostis stolonifera*), Red Fescue (*Festuca rubra*), Yorkshire-fog (*Holcus lanatus*) and Perennial Rye-grass (*Lolium perenne*), occasional and locally frequent Cock's-foot and Mugwort (*Artemisia vulgaris*) and occasional Bramble , Broad-leaved Dock (*Rumex obtusifolius*), Common Ragwort (*Senecio jacobaea*), Creeping Buttercup (*Ranunculus repens*), Dandelion, False Oat-grass (*Arrhenatherum elatius*), and Gorse (*Ulex europaeus*). A plant species list is appended at **Table 8.6**.
- 3.3.80 The grassland is indicative of an *MG1 False Oat-grass grassland* (Rodwell, 1992) developing at an area of *MG7 Perennial Rye-grass ley grassland* (Rodwell, 1992) due to lack of management. The habitat is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the secondary code(s) 77 neglected (unmanaged for 3 to 10 years).

Grassland F

- 3.3.81 Refer to **Photo 40**. Grassland F is located at north-eastern end of the site, to the east of the access road to the car park.
- 3.3.82 The grassland is characterised by frequent and locally abundant Creeping Bent (*Agrostis stolonifera*), frequent False Oat-grass (*Arrhenatherum elatius*), occasional and locally abundant Mugwort (*Artemisia vulgaris*), occasional and locally frequent Cock's-foot and Yorkshire-fog (*Holcus lanatus*) and occasional Butterfly-bush (*Buddleja davidii*), Common Ragwort (*Senecio jacobaea*), Common Vetch (*Vicia sativa*), Creeping Buttercup (*Ranunculus repens*), Dandelion and Hedge Mustard (*Sisymbrium officinale*). A plant species list is appended at **Table 8.7**.
- 3.3.83 The habitat is typical of an *MG1 False Oat-grass* grassland (Rodwell, 1992), and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the secondary code(s) 16 tall herb, 10 scattered scrub and 77 neglected (unmanaged for 3 to 10 years).

Grassland G

- 3.3.84 Refer to **Photo 41**. Grassland G is located at the north-eastern end of the site, to the north of Amenity Grassland E.
- 3.3.85 The grassland is characterised by constant and frequent Creeping Bent (*Agrostis stolonifera*), occasional and locally abundant Bramble, Hedge Mustard (*Sisymbrium officinale*) and Creeping Thistle (*Cirsium arvense*), occasional and locally frequent False Oat-grass, Mugwort, Great Willowherb (*Epilobium hirsutum*) and Perennial Rye-grass, occasional Colt's-foot (*Tussilago farfara*), Creeping Buttercup, Lesser Burdock (*Arctium minus*), Selfheal (*Prunella vulgaris*) and Wild Teasel (*Dipsacus fullonum*) and locally frequent Butterfly-bush. A plant species list is appended at **Table 8.8**.
- 3.3.86 The grassland is typical of the *MG1 False Oat-grass* grassland (Rodwell, 1992) of the NVC and is described by the UKHab as g3c5 Arrhenatherum (Oat-grass) neutral grassland with the secondary code(s) 10 scattered scrub, 16 tall herb and 77 neglected (unmanaged for 3 to 10 years).

Amenity Grassland A

- 3.3.87 Refer to **Photo 42 and 43**. Amenity Grassland A is located at the north-western corner of the site.
- 3.3.88 The vegetation is characterised by constant and frequent Springy Turf-moss (*Rhytidiadelphus squarrosus*), Creeping Cinquefoil, Perennial Rye-grass and Yorkshire-fog and occasional and locally frequent Creeping Buttercup, Dove's-foot Crane's-bill (*Geranium molle*) and Red Fescue. A plant species list is appended at **Table 8.9**.
- 3.3.89 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary codes 10 scattered scrub, 11 scattered trees, 75 active management and 66 frequently mown.

Amenity Grassland B

- 3.3.90 Refer to **Photo 44**. Amenity Grassland B is located at the northern end of the site, and to the immediate west of Vegetation Colonising Hard Standing A.
- 3.3.91 The vegetation is characterised by constant and abundant Springy Turf-moss, constant and frequent Perennial Rye-grass and Red Fescue, occasional and locally frequent Creeping Buttercup, Common Mouse-ear, Common Vetch and Ribwort Plantain and occasional Black Medick, Common Knapweed and Creeping Cinquefoil. A plant species list is appended at **Table 8.10**.
- 3.3.92 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary codes 11 scattered trees and 77 neglected (unmanaged for 3 to 10 years).

Amenity Grassland C

- 3.3.93 Refer to **Photos 45 and 46**. Amenity Grassland C forms the southern end of the site.
- 3.3.94 The vegetation is characterised by constant and abundant Perennial Rye-grass, occasional and locally frequent Annual Meadow-grass (*Poa annua*) and occasional Creeping Buttercup, Daisy (*Bellis perennis*), Dandelion, Wavy Bitter-cress (*Cardamine flexuosa*) and White Clover (*Trifolium repens*).
- 3.3.95 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary codes 75 active management and 66 frequently mown.

Amenity Grassland D

- 3.3.96 Refer to **Photo 47**. Grassland D is located at the north-eastern end of the site, to the south of the car park.
- 3.3.97 The amenity grassland is characterised by constant and abundant Perennial Rye-grass and occasional Ribwort Plantain, Cock's-foot, Common Ragwort (*Senecio jacobaea*), Dandelion, Mugwort, Red Fescue and White Clover.
- 3.3.98 The habitat is described by the UKHab as g4 modified grassland with the secondary code(s) 75 active management and 66 frequently mown.
- 3.3.99 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary codes 11 scattered trees, 75 active management and 66 frequently mown.

Amenity Grassland E

- 3.3.100 Refer to **Photo 48**. Grassland E is located at the eastern end of the site, to the to the immediate south of Grassland G and to the north of Kirkby Leisure Centre.
- 3.3.101 The amenity grassland is characterised by constant and abundant Perennial Rye-grass with occasional and locally frequent Creeping Bent, Yorkshire-fog and Daisy, occasional Common Mouse-ear, Common Ragwort, Creeping Buttercup and Ribwort Plantain and very locally frequent Yarrow.
- 3.3.102 Locally frequent Hawthorn shrubs and a single Sycamore tree are present within the grassland.
- 3.3.103 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary code(s) 11 scattered trees, 75 active management and 66 frequently mown.

Amenity Grassland F

- 3.3.104 Refer to **Photo 49**. Grassland D is located at the north-western end of the site, at the verges of the car park area associated with the Knowsley Community College buildings.
- 3.3.105 The amenity grassland is characterised by constant and abundant Perennial Rye-grass, constant and frequent Yorkshire-fog, occasional and locally frequent Red Fescue, Daisy and Silverweed (*Potentilla anserina*), and occasional Cow Parsley, Creeping Buttercup, Dandelion and Ribwort Plantain.
- 3.3.106 The grassland is typical of an *MG7 Perennial Rye-grass leys and related grasslands* (Rodwell, 1992) community of the NVC, and is described by the UKHab as g4 modified grassland with the secondary code(s) 75 active management and 66 frequently mown.

Hard Standing and Colonising Vegetation

Vegetation Colonising Hard Standing A

- 3.3.107 Refer to **Photos 50 to 52**. The area of Vegetation Colonising Hard Standing A is located at the northern end of the site and is associated with the former Cherryfield Crescent.
- 3.3.108 The vegetation is characterised by frequent Red Fescue, occasional and locally abundant Great Willowherb, occasional Broad-leaved Dock, Cat's-ear (*Hypochaeris radicata*), Common Evening-primrose (*Oenothera biennis*), Common Vetch, Cow Parsley, Dandelion, Dog-rose and Sycamore, locally abundant False Oat-grass and locally frequent and very locally abundant Butterfly-bush. A plant species list is appended at **Table 8.11**.
- 3.3.109 The vegetation is not typical of any NVC community. The habitat is described by the UKHab as u1b6 other developed land with the secondary code(s) 10 scattered scrub, 11 scattered trees, 17 ruderal/ephemeral and 77 neglected (unmanaged for 3 to 10 years).

Vegetation Colonising Hard Standing B

- 3.3.110 Refer to **Photos 53 to 54**. The area of Vegetation Colonising Hard Standing B is located at the north-eastern end of the site and is partially enclosed by Tree Line E.
- 3.3.111 The vegetation is characterised by occasional and locally abundant Bramble, occasional and locally frequent Butterfly-bush, Goat Willow, Creeping Bent and Dove's-foot Crane's-bill, occasional Common Ragwort, Daisy, Dandelion, Groundsel (*Senecio vulgaris*), Hard Rush (*Juncus inflexus*), Herb-Robert (*Geranium robertianum*), Red Fescue, Spear Thistle (*Cirsium vulgare*) and Yorkshire-fog, and very locally frequent Biting Stonecrop (*Sedum acre*), Colt's-foot, Dogwood, Ivy, Perennial Rye-grass and Wilson's Honeysuckle (*Lonicera nitida*). A plant species list is appended at **Table 8.12**.
- 3.3.112 The vegetation is not typical of any NVC community. The habitat is described by the UKHab as u1b6 other developed land with the secondary code(s) 10 scattered scrub, 17 ruderal/ephemeral and 77 neglected (unmanaged for 3 to 10 years).

Previously Cleared Ground at the South-eastern Corner of the Site

- 3.3.113 Refer to **Photo 56**. An area of cleared ground, which previously supported scrub vegetation, is located at the south-eastern corner of the site.
- 3.3.114 The vegetation recolonising this area is characterised by constant and frequent Bramble, occasional and locally frequent Alder saplings, Cleavers, Cock's-foot, Goat Willow saplings and Yorkshire-fog, occasional Butterfly-bush, Dandelion and Tufted Hair-grass (*Deschampsia cespitosa*), locally frequent Creeping Bent, Daisy, Herb-Robert, Ivy, Lime species (*Tilia* sp.) saplings and Ribbed Melilot and very locally frequent Field Maple saplings. A plant species list is appended at **Table 8.14**.
- 3.3.115 The vegetation is not currently typical of any NVC community and is described by the UKHab as u1c artificial unvegetated; unsealed surface with the secondary codes 10 scattered scrub, 17 ruderal / ephemeral, 76 recent management (i.e. within 3 years), 64 mown and 73 bare ground.

Other Areas of Hard Standing within the Site

- 3.3.116 Refer to **Photo 57**. An area of hard standing is located at the southern end of the site to the immediate east of Tree Line H. The asphalt hard standing supports a sparse coverage of mosses and herbs typical of species colonising from the adjacent Grassland D.
- 3.3.117 Refer to **Photo 58**. An asphalt car park with areas of compacted stone is present at the north-eastern end of the site. The hard standing does not support any significant assemblages of colonising herbs. A further area of asphalt hard standing is located to the south of the Kirkby Community College buildings.

3.3.118 These areas are described by the UKHab as u1b6 other developed land.

3.3.119 Buildings are described in terms of their suitability for use by roosting bats at **Section 3.4** below. The buildings are described by the UKHab as u1b5 buildings.

Invasive Plant Species

3.3.120 No Japanese Knotweed is present at the site. As illustrated on **Figure 2**, stands of Japanese Rose and Montbretia were detected within the site. These species are listed on Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended); it is an offence to spread or cause their spread in the wild. This is considered further at **Section 4.3** below.

3.4 Animal Life

Badger

3.4.1 No badger or signs of badger were detected within the site or within the access 50 metres around the site. The presence of badger is reasonably discounted.

Bat Species

Daylight Survey: Buildings

Building 1

3.4.2 Refer to **Photos 59** and **60**. Building 1 is a detached single-storey electricity sub-station constructed from walls of mortared brick and which supports a curved roof of corrugated metal sheeting. Corrugated metal soffits are present at each elevation.

3.4.3 The building is considered to be of 'low' suitability for use by roosting bats.

Building 2

3.4.4 Refer to **Photos 61** and **62**. Building 2 is a detached single-storey disused former gatehouse which is constructed from walls of mortared brick and which supports a single-pitched roof of metal. Metal soffits are also present.

3.4.5 The building appears to be well sealed externally; no gaps suitable for access by bats were detected at the building's exterior.

3.4.6 The building is considered to be of 'negligible' suitability for use by roosting bats.

Building 3

3.4.7 Refer to **Photo 63**. The building is a detached single-storey plant building constructed from walls of mortared brick which supports a flat metal roof.

3.4.8 The building is well sealed externally (the louvred doors are meshed behind and do not provide suitable access for roosting bats). No gaps suitable for access by bats were detected at the at the building's exterior.

3.4.9 The building is considered to be of 'negligible' suitability for use by roosting bats.

Building 4

3.4.10 Refer to **Photos 64** to **66**. Building 4 is a detached two-storey office building with panelled walls on a mortared brick base. The building supports a curved roof of metal sheeting with metal soffits at the northern and southern elevations.

3.4.11 The building is well sealed externally and no gaps suitable for access by bats were detected at the at the building's exterior.

3.4.12 The building is considered to be of 'negligible' suitability for use by roosting bats.

Building 5

3.4.13 Refer to **Photos 61** and **62**. Building 5 is a detached single-storey storage building constructed from walls of corrugated metal sheeting and which supports a pitched roof of corrugated metal sheeting.

3.4.14 The building is well sealed externally and gaps suitable for access by bats were detected at the at the building's exterior.

3.4.15 The building is considered to be of 'negligible' suitability for use by roosting bats.

Structures 1 to 4

3.4.16 Refer to **Photos 69** to **72**. Structures 1 to 4 comprise a metal shipping container, a small brick structure, an open fronted and dilapidated former outbuilding and a fire damaged and metal -boarded brick structure. No bats or signs of bats were detected at the external areas of any of the structures, and it is not considered that any features suitable for use by roosting bats are present at the structures.

3.4.17 The structures are considered to be of 'negligible' suitability for use by roosting bats.

Trees

3.4.18 Refer to **Photos 67** and **68**. Tree Lines D and G support mature trees with a dense cover of Ivy³. These trees are considered to be of 'low' suitability for use by roosting bats.

3.4.19 No further trees within the site were assessed to support features suitable for use by roosting bats.

Habitat Assessment for Commuting and Foraging Bats

3.4.20 The plantation woodland, scrub, tree lines and areas of unmanaged grassland are suitable for use by foraging bats, and the trees lines and scrub provide habitat connectivity across the site.

3.4.21 The site is connected to the wider area via Kirkby Brook, which is located to the west of the site, and the habitats present are suitable for and are likely to contribute to the wider foraging area of common species of edge-feeding foraging bats, such as common pipistrelle (*Pipistrellus pipistrellus*). A diverse range of species is considered unlikely at the site owing to the urbanised nature of the site, however.

3.4.22 The areas of hard standing and amenity improved grassland within the site are unlikely to provide an abundance or diversity of invertebrate prey, and are therefore considered to be of low suitability for use by foraging bats. Overall the site is assessed to be of moderate suitability for use by foraging and commuting bat due to the presence of a range of suitable habitats over an extensive area within the wider urban landscape.

3.4.23 Potential impacts to foraging bats as a consequence of the proposed development are considered further at **Section 4.4** below.

³ It is recognised that Ivy is anecdotally thought to provide potential roosting habitat for low numbers / individual crevice dwelling bat species, however in accordance with *Bat Roosts in Trees - A Guide to Identification and Assessment for Tree-Care and Ecology Professionals* (BTHK, 2018) actual evidence of bat roosting behind Ivy is rare, with only two confirmed roosts known in the UK and suggests Ivy is not typically used by roosting bats.

Summary of Results

3.4.24 A summary of the survey results presented above is provided at **Table 3.3** below. The results are evaluated at **Section 4.4** below.

Table 3.3: Summary of Bat Survey Results

Building/Tree Ref	Suitability for Use by Roosting Bats	Requirement for Further Survey
Building 1	Low	Sub-station building to be retained. No further survey required at this stage.
Buildings 2, 3, 4, and 5	Negligible	No further survey required to comply with survey guidelines.
Structures 1, 2 and 3	Negligible	No requirement for further survey.
Trees Lines D and G	Low	No requirement for further survey, appropriate procedures must be followed during any works to the trees.

Bird Species

3.4.25 Birds detected in the site on 21st July 2022 are listed in **Table 3.4**, below and provided in greater detail at the appended **Table 8.14**. The location of birds detected within the site and area surrounding the site are presented at the appended **Figure 3**.

Table 3.4: Bird Species Detected on 21st July 2022

Common Name	Times Observed	Total Number Seen	Birds Displaying Breeding Behaviour	Birds Not Displaying Breeding Behaviour	BOCC Status ¹
Blackbird	14	18	9	9	Green
Blackcap	8	8	8	0	Green
Black-headed gull	1	2	0	2	Green
Blue tit	6	6	6	0	Green
Carrion crow	5	6	4	2	Green
Chaffinch	8	8	8	0	Green
Chiffchaff	4	4	4	0	Green
Coal tit	2	2	2	0	Green
Dunnock	7	7	7	0	Amber
Feral pigeon	1	20	0	20	Green
Goldcrest	1	1	1	0	Green
Goldfinch	3	15	1	14	Green
Great tit	3	4	3	1	Green
Herring gull	2	5	0	5	Red
House sparrow	3	10	2	8	Red
Kestrel	1	1	0	1	Amber
Lesser black-backed gull	14	22	0	22	Amber
Long-tailed tit	3	3	3	0	Green
Magpie	9	17	4	13	Green
Pied wagtail	1	2	0	2	Green
Robin	22	22	22	0	Green
Treecreeper	1	1	1	0	Amber
Whitethroat	1	1	1	0	Amber
Willow warbler	2	2	2	0	Amber
Wood pigeon	24	38	13	25	Green
Wren	13	13	13	0	Green

¹BOCC: Birds of Conservation Concern (Stanbury, et al., 2021).

Priority Species are highlighted in **Bold**

3.4.26 The plantation woodland, scrub, tree lines and grassland provide suitable habitat for foraging and nesting birds detected, including the Priority Species dunnock and house sparrow. It is considered that the site is unsuitable for nesting herring gull, but may be used by this species for foraging.

3.4.27 It is considered that the site does not provide favourable habitat ground nesting birds as it is too regularly disturbed by pedestrian access such as dog walkers and sporting activities. The site does not support suitable habitat for foraging or sheltering wintering birds such as pink-footed goose; the site's located within a wider urban landscape and regular pedestrian disturbance create unsuitable conditions for wintering wildfowl.

3.4.28 Impacts of the proposals to the bird species associated with the site and wider area are considered at **Section 4.4** below.

Reptiles

3.4.29 The regularly disturbed habitats within the site provide poor quality habitat for sheltering, basking and hibernating reptiles. The site is not adjacent or linked to any areas of favourable habitat for reptile species, and there are no records of reptile for the site or the wider area. The species-poor habitats within the site are reasonably unlikely to support a large population or a variety of invertebrate prey.

3.4.30 The presence of reptiles within the site is reasonably discounted.

Other Wildlife

3.4.31 The site supports suitable habitat for foraging and sheltering hedgehog (*Erinaceus europaeus*), a Priority Species associated with urban areas and detected within the wider area. Potential impacts to hedgehog are considered further at **Section 4.4** below.

4.0 EVALUATION AND ASSESSMENT

4.1 Introduction and Description of Proposals

4.1.1 It is proposed to develop the site to housing, associated roads and hard standing, with associated public open space.

4.1.2 This report has been prepared to inform the site design in order that the site proposals are in accordance with the mitigation hierarchy can be followed and that impacts to the ecological factors identified are avoided, mitigated for where avoidance is not possible, and compensated for where required.

4.1.3 **Section 4.2** provides an assessment of any impacts of the proposed development on the designated sites for nature conservation present in the wider area. The ecological value of habitats within the site at **Section 4.3**, and protected and notable species are considered at **Section 4.4**.

4.2 Designated Sites for Nature Conservation

4.2.1 The site is located within proximity to Kirkby Brook LWS; the LWS is located 30 metres to the west of the site. Unsuitable construction techniques during the construction phase of the proposed development have the potential to directly pollute the brook, and an unsuitable site layout has the potential to increase post-development impacts to the brook. Recommendations relating to site layout to ensure the mitigation hierarchy is followed by the design of the site are presented at **Section 5.2**.

4.2.2 Suitable measures to be employed to ensure the LWS is protected during the construction phase of the proposed development are presented at **Section 5.3**.

4.2.3 It is considered that the site is sufficiently distant from all statutory and non-statutory designated sites for nature conservation that the proposed residential development will have no adverse direct or indirect effect upon them.

4.3 Vegetation and Habitats

- 4.3.1 Only common and widespread plant species were found. None of the habitats present are representative of semi-natural habitat. The NVC communities present are typical of the geographical area and conditions present.
- 4.3.2 No Priority Habitats were identified within the site. It is not considered that the areas of CBA grassland located at the north-western end of the site in accordance with the Liverpool City Region Ecological Network are representative of any grassland Priority Habitat and they do not form part of any designated site for nature conservation. The areas of hard standing with colonising ruderal vegetation are not indicative of Open Mosaic Habitat on Previously Developed Land Priority Habitat (OMH); a full assessment of these areas of habitat in accordance with the OMH Priority Habitat description is appended at **Section 8.3, Table 8.15**.
- 4.3.3 In terms of each habitat's importance in a geographical context⁴, the plantation woodland, tree lines, scrub and areas of unmanaged grassland⁵ are considered to be of 'local' importance as they support habitats of value to nesting birds and foraging birds and bats, will contribute as wildlife links across the wider area, and contribute to the diversity of habitats within the local area. The areas of amenity grassland and vegetation colonising hard standing are of 'site' value only, and the areas of hard standing with no colonising vegetation are not considered to hold any importance in terms of a geographical context.
- 4.3.4 Recommendations relating to site layout and the retention (where feasible) of the plantation woodland, tree lines, scrub and grassland are presented at **Section 5.2**. Recommendations relating to the protection of retained features are presented at **Section 5.3**. It is recognised that the proposals will require the removal of habitat to facilitate development, and measures to compensate for the losses of habitat associated with the proposed development are presented at **Section 5.5**.
- 4.3.5 The presence of Japanese Rose and Montbretia, both invasive plant species listed under Schedule 9 of the *Wildlife and Countryside Act 1981* (as amended) has been detected within the site. It is considered that the proposals present an opportunity for the eradication of both species as part of the proposed development. Further guidance is presented at **Section 5.4** of this report.

4.4 Protected Species and Other Wildlife

- 4.4.1 Habitats within and adjacent to the site are suitable for foraging and commuting bats. The proposals have the potential to remove the suitable habitat due to inappropriate design and degrade retained habitat within the site and off-site habitats via inappropriate lighting.
- 4.4.2 The recommendations relating to site layout at **Section 5.2** will ensure that the proposals retain areas considered to provide suitable habitat for use by foraging and commuting bats, and that the site design creates compensatory habitat as part of the Public Open Space within the site for foraging and commuting bats. Measures to ensure appropriate lighting is adopted by the proposed development for wildlife including bats are also presented at **Section 5.2**.

⁴ Using the terms presented at Section 4.7 of *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018), i.e. International and European, National, Regional, Local Authority-wide area, River Basin District, Estuarine system / Coastal cell or Local. The term 'site' value is additionally used to highlight ecological features considered to be of importance in the context of the wider site habitats, but which are of negligible value in the context of the local area.

⁵ Whilst the large expanse of unmanaged grassland at the site is not species-rich or indicative of a semi-natural habitat, it is considered to be of 'local' value due to its context; the relatively large expanse of grassland within a wider landscape characterised by housing and gardens will increase its importance to local populations of invertebrates, bird species and foraging bats.

- 4.4.3 Measures to protect bats during any works proposed at Tree Lines D and G (both assessed to be of low suitability for use by roosting bats) are presented at **Section 5.3**.
- 4.4.4 The proposals present an opportunity to create new habitat suitable for roosting bats across the site; recommendations for features to enhance habitats for roosting bats at the site are presented at **Section 5.5**.
- 4.4.5 The trees, shrubs and buildings provide suitable foraging and nesting habitat for the species of birds detected within the site and the wider area via the records search (including house sparrow and dunnock, both Priority Species). The proposed development of the site has the potential to disturb nesting birds during the construction phase of the proposed development and remove suitable habitat for nesting birds. The recommendations relating to site layout at **Section 5.2** are suitable to ensure that habitats across the site remain suitable for use by foraging and breeding birds. Measures for the protection of nesting birds during the construction phase of the proposed development are presented at **Section 5.4**. Suitable measures to create new habitats for nesting birds as part of any proposed development at the site are presented at **Section 5.5**.
- 4.4.6 The site supports suitable habitat for use by foraging and sheltering hedgehog. The proposals have the potential to kill and injure hedgehog during the construction phase of the proposed development, and to remove suitable habitat for foraging and sheltering hedgehog via inappropriate site design. The measures outlined at **Section 5.2** will ensure that suitable habitat remains present at the site for hedgehog, and the measures outlined at **Section 5.3** will ensure that reasonable measures are taken for the protection of hedgehog (and other wildlife) during the construction phase of the proposed development. The measures outlined at **Section 5.5** will ensure that hedgehog can retain movement across the site and access suitable habitats created by the proposals, including garden habitats.

5.0 RECOMMENDATIONS AND ECOLOGICAL ENHANCEMENT

5.1 Introduction

- 5.1.1 These recommendations aim to ensure that the development is implemented in accordance with relevant wildlife legislation, Natural England guidance, the principles of the National Planning Policy Framework (NPPF), local planning policy and best practice.
- 5.1.2 In accordance with Chapter 15, paragraph 180(d) of the NPPF:
'opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate'.
- 5.1.3 Where possible, opportunities to enhance the ecological interest and habitat connectivity and seek biodiversity gain through appropriate landscape planting and habitat creation have been identified.
- 5.1.4 All recommendations are appropriate to the geographical area, the habitats in the wider area, the wildlife present in the local area (and likely to use the site post-construction) and take into consideration the end use of the site as a residential development.

5.2 Recommendations in Relation to Site Layout

- 5.2.1 It is recommended that the site design is informed by the following recommendations which seek to be in accordance with the mitigation hierarchy⁶

⁶ A sequential process should be adopted to avoid, mitigate and compensate negative ecological impacts and effects (CIEEM, 2018)

- a. Retaining the area of plantation woodland and tree lines within the site will ensure that the diversity of habitats within the site is retained and retain habitats suitable for use by foraging and commuting bats and foraging and nesting birds;
- b. Areas of Public Open Space (POS) should be created within the site as these will decrease the impact of any increased recreational impacts to the nearby LWS as a consequence of the proposals and allow for the provision of compensatory habitat and habitat enhancements as part of the proposed development at the site;
- c. Providing areas of POS along the south-western site boundary (i.e. adjacent to the habitats which line Kirkby Brook LWS) will help retain habitat connectivity across the site and the connectivity of the site to the wider area, as well as providing habitats complementary to those present at the LWS;
- d. Ensuring areas of POS are joined up and provide wide, green routes through the site will retain habitat connectivity across the site and ensure habitats remain suitable for use by foraging bats and birds;
- e. Planting tree lines and hedgerows within areas of POS will establish and enhance wildlife links and compensate for unavoidable losses of these habitats within the site in the long-term;
- f. Appropriate use of lighting should be considered at the site to ensure that the off-site Kirkby Brook LWS and retained and created habitats are suitable for use by wildlife and not impacts by inappropriate lighting (further detail is provided below);
- g. Creating swales of wildflower grassland and areas of native scrub across the POS within the site will compensate for losses of grassland and scrub habitat associated with the proposed development and ensure the site retains features suitable for use by nectaring invertebrates, and foraging birds and hedgehog;
- h. Provision of nesting bird boxes and bat boxes within the residential development will compensate for losses of nesting habitat associated with the proposals and increase the availability of suitable roosting habitat for bats within the site. Suitable bird boxes for nesting house sparrow, a Priority Species identified within the site, will create additional nesting habitat for this species;
- i. Ensuring that garden fencing is permeable to wildlife will ensure that hedgehog, a Priority Species, will have access to suitable foraging and sheltering habitat created by the proposals (i.e. gardens).

5.2.2 Paragraph 185(c) in Chapter 15 (conserving and enhancing the natural environment) of the NPPF states that development should:

'limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.'

5.2.3 Any lighting to be used at the site during construction should be directional and screened where possible, this specification should be included within a Construction Environment Management Plan (CEMP), or similar.

5.2.4 The lighting scheme to be implemented at the developed site must involve the use of appropriate products and screening, where necessary, to ensure no excessive artificial lighting shines over any retained habitats, Kirkby Brook LWS and any proposed ecological enhancements and landscape planting, as lighting overspill may deter use by wildlife such as foraging bats.

5.2.5 The lighting scheme will be designed with reference to current guidance, namely:

- a. Guidance Note 08/23: Bats and Artificial Lighting at Night (Institution of Lighting Professionals & Bat Conservation Trust, 2023);;
- b. *Bats and lighting: Overview of current evidence and mitigation guidance* (Stone, 2014).

5.3 Control of Invasive Plant Species

- 5.3.1 It is an offence under the *Wildlife and Countryside Act 1981* (as amended) to cause the spread of Japanese Rose and Montbretia in the wild. It is recommended that both species are grubbed out by the roots during site clearance and disposed of either by burying on site or removal to a suitable tip.

5.4 Protection of Existing Vegetation and Wildlife

Protection of Kirkby Brook LWS

- 5.4.1 Fencing will be installed at the south-western site boundary to clearly demarcate the working area of the site and to ensure works do not encroach onto the habitats to the south-west of the site which lead to Kirkby Brook LWS.
- 5.4.2 In the absence of updated guidance, the following Pollution Prevention Guidelines (PPG) will be adhered to at any works near the watercourse:
- PPG1: Basic good environmental practices (Environment Agency, 2013);
 - PPG5: Works in, near or over watercourses (Environment Agency, 2014);
 - PPG6: Construction and demolition sites (Environment Agency, 2012); and
 - PPG7: Operating refuelling sites (Environment Agency, 2011).

Protection of Plantation Woodland, Trees, Tree Lines and Scrub

- 5.4.3 During the construction phase, temporary protective demarcation fencing will be used to protect the trees, shrubs and hedgerows to be retained. The fencing must extend outside the canopy of the retained trees and must remain in position until all areas have been developed to ensure protection is provided throughout the construction phase.
- 5.4.4 The fencing will be in accordance with BS5837:2012 *Trees in Relation to Design, Demolition and Construction: Recommendations* (BSI, 2012).

Protection of Roosting Bats

- 5.4.5 In accordance with *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)* (Collins, J. (ed), 2016) it is essential that the following actions are applied during any works to Tree Lines D or G:
- The optimal time for tree removal is between September and late February inclusive to avoid the nesting bird season;
 - Trees should be carefully section felled. The sectioning must avoid cutting through or close to any cavities (this is likely to involve climbing the tree);
 - Cut sections will be lowered to the ground with the use of ropes;
 - Once on the ground any cavities will be inspected by the licensed bat surveyor and guidance issued; and,
 - All felled sections will be left to lie on the ground for 24 hours before removing ivy and snedding (removing side branches);
 - If at any time during the works a bat is discovered or suspected all contractors must withdraw from the area and ERAP (Consultant Ecologists) Ltd (01772 750502) or the Bat Conservation Trust must be contacted for further guidance.

Protection of Nesting Birds

- 5.4.6 All wild birds are protected under the *Wildlife and Countryside Act 1981* (as amended) while they are breeding. It is advised that any works such as vegetation clearance that will affect habitats suitable for use

by nesting birds are scheduled to commence outside the bird nesting season. Commencement of works in the nesting season must be informed by a pre-works nesting bird survey, carried out by a suitably experienced ecologist. The bird breeding season typically extends between March to August inclusive (Natural England, 2015).

- 5.4.7 If breeding birds are detected the ecologist will issue guidance in relation to the protection of the nesting birds in conjunction with the scheduled works. This may involve cordoning off an area of the site until the young birds have fledged.

Protection of Hedgehog

- 5.4.8 It is recommended that the following Reasonable Avoidance Measures (RAMs) are adopted during the construction phase of the proposed development. The RAMs should be printed out and be made accessible in the site office (i.e. pinned to a site information board or similar within the site office):
- All site personnel must be made aware of this RAMs, and the RAMs should be made part of the site induction for all personnel involved in soil strip, ground clearance, or other relevant activities;
 - Prior to any soil strip, vegetation will be strimmed to a height of no less than 0.15 metre and all arisings removed;
 - During construction, any holes, trenches or other pits which hedgehog (or other wildlife) could fall into will be covered overnight, or have sloped banks or ramps top allow escape;
 - If any wildlife species (such as hedgehog) is detected, it must be carefully picked up (using gloves), placed in a clean bucket and moved to an area of suitable habitat beyond the development area.

5.5 Enhancement and Management of Retained Habitats and Landscape Planting

Management of the Retained and Proposed Habitats

- 5.5.1 It is recommended that any retained habitats and areas of POS are brought into active management for biodiversity and to promote the longevity of the habitats. A Habitat Management Plan will be prepared covering the proposed objectives of each retained / proposed habitat, what management operations are proposed, and the monitoring protocols proposed to ensure that the management objectives are met.

Landscape Planting and Areas of POS

- 5.5.2 It is recommended that the landscape planting and plating of areas of POS within the residential site is composed from native species and species known to be of value for the attraction of wildlife.
- 5.5.3 Swathes of wildflower grassland should be incorporated into the POS areas to compensate for losses of unmanaged grasses associated with the proposals and to ensure that habitats are favourable for a variety of nectaring invertebrates and foraging birds.
- 5.5.4 It is recommended that trees which support blossom and fruit which will attract insects are incorporated into the landscape planting. Suitable species are presented at **Table 5.1**, below.

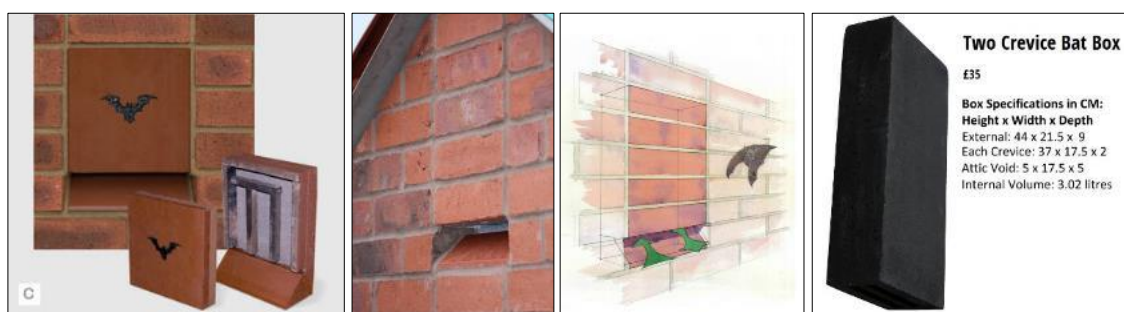
Table 5.1: Suitable Native Species for Tree and Shrub Planting

Scientific Name	Common Name	Scientific Name	Common Name
<i>Acer campestre</i>	Field Maple	<i>Prunus spinosa</i>	Blackthorn
<i>Corylus avellana</i>	Hazel	<i>Rosa arvensis</i>	Field Rose
<i>Crataegus monogyna</i>	Hawthorn	<i>Rosa canina</i>	Dog-rose
<i>Ilex aquifolium</i>	Holly	<i>Sambucus nigra</i>	Elder
<i>Malus sylvestris</i>	Crab Apple	<i>Sorbus aucuparia</i>	Rowan
<i>Prunus avium</i>	Wild Cherry	<i>Ulmus glabra</i>	Wych Elm
<i>Prunus padus</i>	Bird Cherry	<i>Viburnum opulus</i>	Gelder Rose

- 5.5.5 The understorey and ground cover planting design should be prepared to optimise the attraction of invertebrates such as feeding bumblebees and butterflies. Where possible the use of native species should be maximised but where necessary non-native species known to be attractive to invertebrates should be used.
- 5.5.6 Planting schemes that include flowering species such as *Viburnum*, *Ceanothus*, *Hebe*, *Lavandula*, *Lonicera*, *Potentilla*, *Rosmarinus* and *Vinca* can maximise opportunities for feeding invertebrates and for the attraction of foraging bats and birds.
- 5.5.7 For further plants suitable for the attraction of pollinators please refer to the *Perfect for Pollinators Plant List* (Royal Horticultural Society, 2012). It is recommended that the selection of plant species at the site ensures that a variety of flowering species are available throughout the year.

Enhancing Habitats for Roosting Bats

- 5.5.8 It is recommended that the development incorporates the installation of bat access panels at the new buildings.
- 5.5.9 The bat access panels should be sited at least 4 metres above ground level, ideally facing or close to areas of landscape planting or existing linear features. The access panels should not be positioned over windows or doorways where bat droppings may become a nuisance. Once the development layout has been finalised, an ecologist should advise on appropriate positions for the bat access panels. Suitable bat access panels are available from NHBS Ecology (www.nhbs.com), Wild Care (www.wildcare.co.uk) and / or Greenwood's Ecohabitats (<https://www.greenwoodsecohabitats.co.uk>) and are presented at **Insert 1**, below:



Insert 1: Examples of integrated bat access panels and an externally mounted box⁷

- 5.5.10 It is recommended that bat boxes are erected onto suitable retained mature trees within the site and within the plantation woodland. An ecologist will advise on the siting of the bat boxes.
- 5.5.11 Bat boxes should be installed to the following guidelines (Bat Conservation Trust, 2016):
- At least 4 metres above the ground (where safe installation is possible);
 - Sheltered from strong winds and exposed to the sun for part of the day (usually south or south-west). Ideally several bat boxes will be installed to provide a variety of different thermal options for bats. Grouping a number of boxes each with a different aspect can achieve this; while a number of boxes is preferable to one, a single box is still viable and may be used by roosting bats;
 - Located close to unlit linear features, such as lines of trees or hedgerows; and
 - Installed where the bat box entrance is not cluttered or impeded by branches, or accessible to predators (such as cats) by large branches underneath them.

⁷ Left to right: IBstock Enclosed Bat Box 'c' (left); Habitat Bat Access Panels (centre left and centre right) and Greenwood's Ecohabitats' two crevice bat box (right). Products with a brick face are illustrated, however the Habitat bat access panels can be supplied unfaced to enable the addition of matching material.

- 5.5.12 Suitable bat boxes are the Schwegler 1FF, Greenwood Ecohabitat's single or double cavity boxes and Schwegler 1FD, see **Insert 2**, below.



Insert 2: Schwegler 1FF, Greenwood Ecohabitat's single cavity and Schwegler 1FD bat boxes

Enhancing Habitats for Nesting Birds

House Sparrow

- 5.5.13 House sparrows are associated with suburban areas. Monitoring suggests a severe decline in the UK house sparrow population, estimated as halving in rural areas, and dropping by 60% in towns and cities since the mid-1970's (RSPB, 2018).
- 5.5.14 The installation of house sparrow terrace nest boxes is recommended at the proposed new housing. The boxes will not be positioned over windows or doorways where droppings may become a nuisance. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest.
- 5.5.15 Such bird boxes are available from the NHBS (www.nhbs.com) or Wild Care (www.wildcare.co.uk). ERAP (Consultant Ecologists) Ltd will advise on the siting of bird boxes.
- 5.5.16 An example of a suitable house sparrow bird box is given below at **Insert 3**:



Insert 3: Schwegler 1SP House Sparrow Nesting Terrace

Swift

- 5.5.17 The swift (*Apus apus*) has recently been added to The Birds of Conservation Concern Red list (Stanbury, et al., 2021) owing to the recorded recent declines and its identified status as a high conservation priority.
- 5.5.18 The construction of the residential properties provides an opportunity for the installation of additional nesting opportunities for swift to assist their conservation. Suitable swift nest boxes are illustrated at **Insert 4** below.



Insert 4: Examples of swift nest boxes⁸

Other Passerine Species

5.5.19 Bird boxes associated with a variety of passerine (i.e. perching) bird species are to be installed at any retained mature trees and plantation woodland within the site. An ecologist will advise on the siting of the woodland bird boxes whilst on site. RSPB advice states that boxes should ideally be sited facing north to east, to avoid exposure to direct sunlight, which may cause overheating of chicks in the nest. The boxes should be at least 4 metres from ground level.

5.5.20 A variety of the boxes presented at **Insert 5**, below, will be used.



Insert 5: Schwegler 3S, Schwegler 1N, Schwegler 2M and Schwegler 2H bird boxes, suitable for a variety of woodland birds.

Maintenance of Habitat Connectivity Throughout the Developed Site

5.5.21 To ensure habitat connectivity is maintained as part of the development proposals, gaps within the proposed fencing to allow access by other wildlife (including hedgehog) should be incorporated across the site; example accesses are presented at **Insert 6**, below, as reproduced from *Hedgehogs and Development* (British Hedgehog Preservation Society / PTES, 2019). It is recommended that appropriate wildlife gaps (at least 0.1 metre tall and 0.15 metre wide) are installed at suitable intervals around the base of the proposed fencing.

⁸ From left to right No. 17A Schwegler Swift Nest Box (Triple Cavity) as installation (centre), Manthorpe Swift Nesting Box (right) and Ibstock Eco-habitat for Swift (right), all available from www.NHBS.com and / or Wild Care (www.wildcare.co.uk).



Insert 6: Showing wildlife access gap within fencing

6.0 CONCLUSION

- 6.1 This ecological assessment has demonstrated that development of the site to housing is feasible and acceptable in accordance with ecological considerations and the National Planning Policy Framework. The proposals can be achieved with no significant adverse effects on designated sites for nature conservation, Priority Habitat and irreplaceable habitat.
- 6.2 Mitigation and compensatory measures to protect nesting birds and to secure habitat connectivity and provisions for use by nesting birds and roosting bats at the site are feasible and are described in **Section 5.0**.
- 6.3 Appropriate and proportionate enhancement measures that aim to maximise the benefits for biodiversity as part of the proposals are outlined in **Section 5.5**. This includes the creation of opportunities for use by roosting bats to contribute to the achievement of net gains for biodiversity and compliance with the *Biodiversity Net Gain: Good Practice Principles for Development* (CIEEM, 2016), relevant planning policy and best practice.

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8.0 APPENDIX: TABLES, PHOTOGRAPHS AND FIGURES

8.1 Plant Species Lists

Table 8.1: Plantation Woodland at the Northern End of the Site (AIA Reference G1 and G2)

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Abies</i> sp.	Fir species	VLF	5%
<i>Acer campestre</i>	Field Maple	VLF	5%
<i>Acer pseudoplatanus</i>	Sycamore		<1%
<i>Alnus glutinosa</i>	Alder	VLF	5%
<i>Betula pendula</i>	Silver Birch	O/LF	<1%
<i>Corylus avellana</i>	Hazel	F	10%
<i>Fraxinus excelsior</i>	Ash	F	30%
Garden exotics	Garden exotics	LA	5%
<i>Ilex aquifolium</i>	Holly	O	<1%
<i>Ligustrum ovalifolium</i>	Garden Privet	LF	5%
<i>Lonicera nitida</i>	Wilson's Honeysuckle	R	<1%
<i>Populus tremula</i>	Aspen	R	<1%
<i>Prunus avium</i>	Wild Cherry	LF	<1%
<i>Quercus robur</i>	Pedunculate Oak	LF	<1%
<i>Rosa canina</i>	Dog-rose	R	<1%
<i>Salix caprea</i>	Goat Willow	O/LF	5%
Herb Species			
<i>Anthriscus sylvestris</i>	Cow Parsley	F	5%
<i>Arrhenatherum elatius</i>	False Oat-grass	O	<1%
<i>Carex pendula</i>	Pendulous Sedge	R	<1%
<i>Cirsium arvense</i>	Creeping Thistle	R	<1%
<i>Crocsmia x crocosmiiflora</i>	Montbretia	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	<1%
<i>Festuca rubra</i>	Red Fescue	R	<1%
<i>Galium aparine</i>	Cleavers	F*	<1%
<i>Geum urbanum</i>	Wood Avens	VLF	<1%
<i>Hedera helix</i>	Ivy	F	5%
<i>Hyacinthoides hispanica</i>	Spanish Bluebell	VLF	1%
<i>Lolium perenne</i>	Perennial Rye-grass	O	<1%
<i>Narcissus pseudonarcissus</i>	Daffodil	VLF	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	R	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	R	<1%
<i>Rubus fruticosus</i> agg.	Bramble	F*	10%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Urtica dioica</i>	Common Nettle	F*	5%
<i>Vicia cracca</i>	Tufted Vetch	R	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.2: Grassland A

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
	Garden exotics	R	<1%
<i>Acer pseudoplatanus</i>	Sycamore	R	<1%
<i>Buddleja davidii</i>	Butterfly-bush	R	<1%
<i>Cytisus scoparius</i>	Broom	O	<1%
<i>Ulex europaeus</i>	Gorse	R	<1%
Herb Species			
<i>Achillea millefolium</i>	Yarrow	O	<1%
<i>Agrostis capillaris</i>	Common Bent	F	10%
<i>Agrostis stolonifera</i>	Creeping Bent	F	30%

Scientific Name	Common Name	DAFOR	% Cover
<i>Anthriscus sylvestris</i>	Cow Parsley	R	<1%
<i>Arctium minus</i>	Lesser Burdock	R	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	O	5%
<i>Artemisia vulgaris</i>	Mugwort	R	<1%
<i>Carex pendula</i>	Pendulous Sedge	O	<1%
<i>Centaurea nigra</i>	Common Knapweed	O	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	O	<1%
<i>Cirsium arvense</i>	Creeping Thistle	O	<1%
<i>Cortaderia selloana</i>	Pampas-grass	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O	10%
<i>Daucus carota</i>	Carrot	O	15%
<i>Dipsacus fullonum</i>	Wild Teasel	R	<1%
<i>Elytrigia repens</i>	Common Couch	O	<1%
<i>Festuca rubra</i>	Red Fescue	O/LF	20%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	30%
<i>Juncus inflexus</i>	Hard Rush	R	<1%
<i>Lathyrus pratensis</i>	Meadow Vetchling	O/LF	<1%
<i>Leucanthemum vulgare</i>	Oxeye Daisy	LF	<1%
<i>Medicago lupulina</i>	Black Medick	LF	<1%
<i>Melilotus officinalis</i>	Ribbed Melilot	R	<1%
<i>Oenothera biennis</i>	Common Evening-primrose	R	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	F	5%
<i>Prunella vulgaris</i>	Selfheal	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O	<1%
<i>Reseda luteola</i>	Weld	R	<1%
<i>Rubus fruticosus</i> agg.	Bramble	LF	5%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Senecio jacobaea</i>	Common Ragwort	O	<1%
<i>Tanacetum vulgare</i>	Tansy	VLF	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Trifolium repens</i>	White Clover	O	<1%
<i>Vicia sativa</i>	Common Vetch	O	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.3: Grassland B

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Fraxinus excelsior</i>	Ash	VLF	<1%
<i>Poplar</i> sp.	Poplar species	VLF	<1%
<i>Quercus robur</i>	Pedunculate Oak	R	<1%
<i>Rosa canina</i>	Dog-rose	VLF	<1%
<i>Rosa rugosa</i>	Japanese Rose	R	<1%
Herb Species			
<i>Achillea millefolium</i>	Yarrow	O	<1%
<i>Aegopodium podagraria</i>	Ground-elder	LVA	<1%
<i>Agrostis capillaris</i>	Common Bent	VLF	<1%
<i>Agrostis stolonifera</i>	Creeping Bent	LF	<1%
<i>Anthriscus sylvestris</i>	Cow Parsley	VLF	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	A	<1%
<i>Artemisia vulgaris</i>	Mugwort	O	<1%
<i>Aster novi-belgii</i> agg.	Michaelmas-daisy	VLF	<1%
<i>Calystegia sepium</i>	Hedge Bindweed	VLF	<1%
<i>Carex hirta</i>	Hairy Sedge	VLF	<1%
<i>Carex pendula</i>	Pendulous Sedge	O	<1%
<i>Centaurea nigra</i>	Common Knapweed	LF	<1%

Scientific Name	Common Name	DAFOR	% Cover
<i>Chamerion angustifolium</i>	Rosebay Willowherb	LA	<1%
<i>Cirsium arvense</i>	Creeping Thistle	OVLA	<1%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Cynosurus cristatus</i>	Crested Dog's-tail	LF	<1%
<i>Dactylis glomerata</i>	Cock's-foot	A	<1%
<i>Daucus carota</i>	Carrot	LF	<1%
<i>Elytrigia repens</i>	Common Couch	A	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	VLF	<1%
<i>Festuca rubra</i>	Red Fescue	VLF	<1%
<i>Galium aparine</i>	Cleavers	LF	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	VLF	<1%
<i>Hedera helix</i>	Ivy	LF	<1%
<i>Heracleum sphondylium</i>	Hogweed	O	<1%
<i>Hypochaeris radicata</i>	Cat's-ear	VLF	<1%
<i>Juncus effusus</i>	Soft-rush	LF	<1%
<i>Juncus inflexus</i>	Hard Rush	VLF	<1%
<i>Leucanthemum vulgare</i>	Oxeye Daisy	R	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	LF	<1%
<i>Odontites vernus</i>	Red Bartsia	VLF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Plantago major</i>	Greater Plantain	VLF	<1%
<i>Poa trivialis</i>	Rough Meadow-grass	F	<1%
<i>Potentilla anserina</i>	Silverweed	VLF	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	VLF	<1%
<i>Ranunculus acris</i>	Meadow Buttercup	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	LF	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Senecio jacobaea</i>	Common Ragwort	O	<1%
<i>Solidago canadensis</i>	Canadian Goldenrod	VLF	<1%
<i>Stachys sylvatica</i>	Hedge Woundwort	VLF	<1%
<i>Trifolium pratense</i>	Red Clover	O	<1%
<i>Trifolium repens</i>	White Clover	VLF	<1%
<i>Urtica dioica</i>	Common Nettle	LA	<1%
<i>Vicia cracca</i>	Tufted Vetch	O	<1%
<i>Vicia sativa</i>	Common Vetch	O	<1%
<i>Vicia sepium</i>	Bush Vetch	O	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.4: Grassland C

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Buddleja davidii</i>	Butterfly-bush	R	<1%
<i>Cornus sanguinea</i>	Dogwood	R	<1%
<i>Cytisus scoparius</i>	Broom	O	5%
<i>Ulex europaeus</i>	Gorse	R	5%
Herb Species			
<i>Arrhenatherum elatius</i>	False Oat-grass	O	<1%
<i>Artemisia vulgaris</i>	Mugwort	O/LF	<1%
<i>Carex hirta</i>	Hairy Sedge	O	<1%
<i>Carex pendula</i>	Pendulous Sedge	R	<1%
<i>Cirsium arvense</i>	Creeping Thistle	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O	10%
<i>Dactylorhiza</i> sp.	Orchid species	R	<1%
<i>Daucus carota</i>	Carrot	O	<1%
<i>Festuca rubra</i>	Red Fescue	A*	50%
<i>Holcus lanatus</i>	Yorkshire-fog	F	20%
<i>Hypericum perforatum</i>	Perforate St John's-wort	R	5%
<i>Juncus inflexus</i>	Hard Rush	R	<1%

<i>Lathyrus pratensis</i>	Meadow Vetchling	O	<1%
<i>Melilotus officinalis</i>	Ribbed Melilot	R	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	O	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Prunella vulgaris</i>	Selfheal	R	<1%
<i>Rubus fruticosus</i> agg.	Bramble	O	10%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O/LF	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	R	<1%
<i>Trifolium repens</i>	White Clover	R	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.5: Grassland D

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Betula pendula</i>	Silver Birch	O/LF	5%
<i>Buddleja davidii</i>	Butterfly-bush	O	<1%
<i>Cornus sanguinea</i>	Dogwood	O	<1%
<i>Cytisus scoparius</i>	Broom	O	<1%
<i>Salix caprea</i>	Goat Willow	O/LF	5%
Herb Species			
<i>Agrostis capillaris</i>	Common Bent	O/LF	5%
<i>Agrostis stolonifera</i>	Creeping Bent	F*	20%
<i>Arrhenatherum elatius</i>	False Oat-grass	O/LF	10%
<i>Carex flacca</i>	Glaucous Sedge	O/LF	<1%
<i>Carex hirta</i>	Hairy Sedge	O/LF	<1%
<i>Carex pendula</i>	Pendulous Sedge	O	<1%
<i>Centaurea nigra</i>	Common Knapweed	O/LF	<1%
<i>Cirsium arvense</i>	Creeping Thistle	O/VLF	<1%
<i>Conyza canadensis</i>	Canadian Fleabane	LA	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	10%
<i>Dactylorhiza</i> sp.	Orchid species	VLF	<1%
<i>Daucus carota</i>	Carrot	O	<1%
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	R	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	O/LA	<1%
<i>Festuca rubra</i>	Red Fescue	A*	50%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	10%
<i>Juncus inflexus</i>	Hard Rush	VLF	<1%
<i>Melilotus officinalis</i>	Ribbed Melilot	O/LA	10%
<i>Oenothera biennis</i>	Common Evening-primrose	R	<1%
<i>Phalaris arundinacea</i>	Reed Canary-grass	O/LA	5%
<i>Rubus fruticosus</i> agg.	Bramble	O/LA	5%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Trifolium pratense</i>	Red Clover	O	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.6: Grassland E

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Ulex europaeus</i>	Gorse	O	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	F*	15%
<i>Arrhenatherum elatius</i>	False Oat-grass	O	<1%
<i>Artemisia vulgaris</i>	Mugwort	O/LF	<1%
<i>Cirsium arvense</i>	Creeping Thistle	R	<1%
<i>Conyza canadensis</i>	Canadian Fleabane	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	5%
<i>Epilobium hirsutum</i>	Great Willowherb	R	<1%
<i>Festuca rubra</i>	Red Fescue	F*	20%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	20%
<i>Lolium perenne</i>	Perennial Rye-grass	F*	30%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O	<1%
<i>Rubus fruticosus</i> agg.	Bramble	O	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Senecio jacobaea</i>	Common Ragwort	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Trifolium repens</i>	White Clover	O	<1%
<i>Vicia sativa</i>	Common Vetch	R	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.7: Grassland F

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Buddleja davidii</i>	Butterfly-bush	O	<1%
<i>Salix caprea</i>	Goat Willow	LF	3%
Herb Species			
<i>Aegopodium podagraria</i>	Ground-elder	VLF	<1%
<i>Agrostis stolonifera</i>	Creeping Bent	F/LA	30%
<i>Arrhenatherum elatius</i>	False Oat-grass	F	20%
<i>Artemisia vulgaris</i>	Mugwort	O/LA	5%
<i>Aster novi-belgii</i> agg.	Michaelmas-daisy	R	<1%
<i>Carex pendula</i>	Pendulous Sedge	R	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	10%
<i>Galium aparine</i>	Cleavers	R	<1%
<i>Geranium endressii</i>	French Crane's-bill	O	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O	<1%
<i>Geum urbanum</i>	Wood Avens	R	<1%
<i>Heracleum sphondylium</i>	Hogweed	R	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	O/LF	10%
<i>Juncus inflexus</i>	Hard Rush	R	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	VLF	<1%
<i>Lysimachia vulgaris</i>	Yellow Loosestrife	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Potentilla anserina</i>	Silverweed	VLF	<1%
<i>Ranunculus acris</i>	Meadow Buttercup	R	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O	<1%
<i>Rubus fruticosus</i> agg.	Bramble	LA	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	LA	10%
<i>Senecio jacobaea</i>	Common Ragwort	O	<1%
<i>Sisymbrium officinale</i>	Hedge Mustard	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Urtica dioica</i>	Common Nettle	R	<1%
<i>Vicia sativa</i>	Common Vetch	O	<1%
<i>Vicia tetrasperma</i>	Smooth Tare	R	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.8: Grassland G

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Betula pendula</i>	Silver Birch	R	<1%
<i>Buddleja davidii</i>	Butterfly-bush	LF	<1%
<i>Ulex europaeus</i>	Gorse	R	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	F*	30%
<i>Aquilegia vulgaris</i>	Columbine	VLF	<1%
<i>Arctium minus</i>	Lesser Burdock	O	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	O/LF	5%
<i>Artemisia vulgaris</i>	Mugwort	O/LF	5%
<i>Cirsium arvense</i>	Creeping Thistle	O/LA	<1%
<i>Dipsacus fullonum</i>	Wild Teasel	O	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	O/LF	<1%
<i>Geranium endressii</i>	French Crane's-bill	R	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	R	30%
<i>Leucanthemum vulgare</i>	Oxeye Daisy	R	<1%
<i>Linaria vulgaris</i>	Common Toadflax	R	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	O/LF	<1%

<i>Oenothera biennis</i>	Common Evening-primrose	R	<1%
<i>Prunella vulgaris</i>	Selfheal	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O	<1%
<i>Reseda luteola</i>	Weld	R	<1%
<i>Rubus fruticosus</i> agg.	Bramble	O/LA	5%
<i>Sisymbrium officinale</i>	Hedge Mustard	O/LA	10%
<i>Tussilago farfara</i>	Colt's-foot	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.9: Amenity Grassland A

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Betula pendula</i>	Silver Birch	VLF	<1%
<i>Buddleja davidii</i>	Butterfly-bush	R	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	O	5%
<i>Arrhenatherum elatius</i>	False Oat-grass	R	<1%
<i>Bellis perennis</i>	Daisy	R	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	O	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O	5%
<i>Festuca rubra</i>	Red Fescue	O/LF	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O/LF	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	F*	50%
<i>Lolium perenne</i>	Perennial Rye-grass	F*	40%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	F*	10%
<i>Ranunculus repens</i>	Creeping Buttercup	O/LF	<1%
<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss	F*	5%
<i>Rumex crispus</i>	Curled Dock	R	<1%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.10: Amenity Grassland B

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Carpinus betulus</i>	Hornbeam	R	
Herb Species			
<i>Centaurea nigra</i>	Common Knapweed	O	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	O/LF	<1%
<i>Daucus carota</i>	Carrot	R	<1%
<i>Equisetum arvense</i>	Field Horsetail	VLF	<1%
<i>Festuca rubra</i>	Red Fescue	F*	50%
<i>Galium aparine</i>	Cleavers	R	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	R	<1%
<i>Hypericum perforatum</i>	Perforate St John's-wort	VLF	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	F*	10%
<i>Medicago lupulina</i>	Black Medick	O	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O/LF	<1%
<i>Potentilla reptans</i>	Creeping Cinquefoil	O	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	O/LF	5%
<i>Rhytidiadelphus squarrosus</i>	Springy Turf-moss	A*	40%
<i>Stellaria media</i>	Common Chickweed	R	<1%
<i>Vicia sativa</i>	Common Vetch	O/LF	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

Table 8.11: Vegetation Colonising Hard Standing A

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
	Garden exotics	VLA	2%
<i>Acer pseudoplatanus</i>	Sycamore	O	<1%
<i>Acer saccharinum</i>	Silver Maple	R	<1%
<i>Alnus cordata</i>	Italian Alder	R	<1%
<i>Betula pendula</i>	Silver Birch	LF	2%
<i>Buddleja davidii</i>	Butterfly-bush	LF/VLA	1%
<i>Cytisus scoparius</i>	Broom	R	<1%
<i>Lonicera nitida</i>	Wilson's Honeysuckle	VLF	<1%
<i>Lonicera periclymenum</i>	Honeysuckle	LF	1%
<i>Malus sylvestris</i>	Crab Apple	R	<1%
<i>Prunus avium</i>	Wild Cherry	LF	<1%
<i>Prunus spinosa</i>	Blackthorn	VLF	<1%
<i>Rosa canina</i>	Dog-rose	O	<1%
<i>Rosa sp.</i>	Rose species	O	<1%
<i>Salix caprea</i>	Goat Willow	LF	2%
<i>Salix cinerea</i>	Grey Willow	O	<1%
<i>Sambucus nigra</i>	Elder	O	<1%
Herb Species			
<i>Achillea millefolium</i>	Yarrow	VLA	<1%
<i>Aegopodium podagraria</i>	Ground-elder	VLA	<1%
<i>Agrostis capillaris</i>	Common Bent	LF	5%
<i>Agrostis stolonifera</i>	Creeping Bent	VLA	<1%
<i>Anthriscus sylvestris</i>	Cow Parsley	O	<1%
<i>Arrhenatherum elatius</i>	False Oat-grass	LA	5%
<i>Aster novi-belgii</i> agg.	Michaelmas-daisy	O	<1%
<i>Calystegia sepium</i>	Hedge Bindweed	VLF	<1%
<i>Carex hirta</i>	Hairy Sedge	VLA	<1%
<i>Chamerion angustifolium</i>	Rosebay Willowherb	O	<1%
<i>Cirsium arvense</i>	Creeping Thistle	VLF	<1%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Conyza canadensis</i>	Canadian Fleabane	LF	<1%
<i>Cortaderia selloana</i>	Pampas-grass	VLA	<1%
<i>Dactylis glomerata</i>	Cock's-foot	LF	5%
<i>Dipsacus fullonum</i>	Wild Teasel	R	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	O/LA	2%
<i>Equisetum arvense</i>	Field Horsetail	LF	1%
<i>Eupatorium cannabinum</i>	Hemp-agrimony	VLA	<1%
<i>Festuca rubra</i>	Red Fescue	F	40%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O	<1%
<i>Hedera helix</i>	Ivy	VLA	2%
<i>Heracleum sphondylium</i>	Hogweed	O	<1%
<i>Hypochaeris radicata</i>	Cat's-ear	O	<1%
<i>Iris pseudacorus</i>	Yellow Iris	R	<1%
<i>Juncus effusus</i>	Soft-rush	R	<1%
<i>Leucanthemum vulgare</i>	Oxeye Daisy	R	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	LF	5%
<i>Lotus corniculatus</i>	Common Bird's-foot-trefoil	VLA	<1%
<i>Lotus pedunculatus</i>	Greater Bird's-foot-trefoil	VLA	<1%
<i>Medicago lupulina</i>	Black Medick	VLA	<1%
<i>Myosotis arvensis</i>	Field Forget-me-not	R	<1%
<i>Oenothera biennis</i>	Common Evening-primrose	O	<1%
<i>Pilosella aurantiaca</i>	Fox-and-cubs	R	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	O	<1%
<i>Poa trivialis</i>	Rough Meadow-grass	LF	5%
<i>Potentilla reptans</i>	Creeping Cinquefoil	VLF	<1%
<i>Ranunculus repens</i>	Creeping Buttercup	VLA	<1%
<i>Rubus fruticosus</i> agg.	Bramble	VLA	5%
<i>Rumex obtusifolius</i>	Broad-leaved Dock	O	<1%
<i>Senecio jacobaea</i>	Common Ragwort	VLF	<1%

Scientific Name	Common Name	DAFOR	% Cover
<i>Senecio squalidus</i>	Oxford Ragwort	O	<1%
<i>Sisymbrium officinale</i>	Hedge Mustard	R	<1%
<i>Sonchus arvensis</i>	Perennial Sow-thistle	O	<1%
<i>Sonchus oleraceus</i>	Smooth Sow-thistle	O	<1%
<i>Syringa vulgaris</i>	Lilac	R	<1%
<i>Tanacetum parthenium</i>	Feverfew	R	<1%
<i>Tanacetum vulgare</i>	Tansy	R	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Trifolium arvense</i>	Hare's-foot Clover	R	<1%
<i>Trifolium pratense</i>	Red Clover	VLA	<1%
<i>Trifolium repens</i>	White Clover	VLA	<1%
<i>Tussilago farfara</i>	Colt's-foot	VLF	<1%
<i>Vicia cracca</i>	Tufted Vetch	VLA	<1%
<i>Vicia sativa</i>	Common Vetch	O	<1%
<i>Vicia sepium</i>	Bush Vetch	VLF	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.12: Vegetation Colonising Hard Standing B

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Betula pendula</i>	Silver Birch	R	<1%
<i>Buddleja davidii</i>	Butterfly-bush	O/LF	5%
<i>Cornus sanguinea</i>	Dogwood	VLF	<1%
<i>Lonicera nitida</i>	Wilson's Honeysuckle	VLF	<1%
<i>Salix caprea</i>	Goat Willow	O/LF	5%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	O/LF	<1%
<i>Bellis perennis</i>	Daisy	O	<1%
<i>Cardamine flexuosa</i>	Wavy Bitter-cress	R	<1%
<i>Cerastium fontanum</i>	Common Mouse-ear	R	<1%
<i>Cirsium vulgare</i>	Spear Thistle	O	<1%
<i>Dryopteris dilatata</i>	Broad Buckler-fern	R	<1%
<i>Epilobium hirsutum</i>	Great Willowherb	R	<1%
<i>Festuca rubra</i>	Red Fescue	O	<1%
<i>Geranium molle</i>	Dove's-foot Crane's-bill	O/LF	<1%
<i>Geranium robertianum</i>	Herb-Robert	O	<1%
<i>Hedera helix</i>	Ivy	VLF	<1%
<i>Hieracium</i> sp.	Hawkweed species	R	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	O	<1%
<i>Juncus inflexus</i>	Hard Rush	O	<1%
<i>Lolium perenne</i>	Perennial Rye-grass	VLF	<1%
<i>Plantago lanceolata</i>	Ribwort Plantain	R	<1%
<i>Potentilla anserina</i>	Silverweed	R	<1%
<i>Rubus fruticosus</i> agg.	Bramble	O/LA	5%
<i>Sedum acre</i>	Biting Stonecrop	VLF	<1%
<i>Senecio jacobaea</i>	Common Ragwort	O	<1%
<i>Senecio vulgaris</i>	Groundsel	O	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
<i>Tussilago farfara</i>	Colt's-foot	VLF	<1%
<i>Veronica chamaedrys</i>	Germander Speedwell	R	<1%

¹**Key to DAFOR:** D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species

Table 8.13: Previously Cleared Area at the South-eastern Corner of the Site

Scientific Name	Common Name	DAFOR	% Cover
Woody Species			
<i>Acer campestre</i>	Field Maple (sapling)	VLF	<1%
<i>Alnus glutinosa</i>	Alder (sapling)	O/LF	<1%

<i>Buddleja davidii</i>	Butterfly-bush	O	<1%
<i>Ribes sanguineum</i>	Flowering Currant	O	<1%
<i>Salix caprea</i>	Goat Willow (sapling)	O/LF	<1%
<i>Tilia sp.</i>	Lime species (sapling)	LF	<1%
Herb Species			
<i>Agrostis stolonifera</i>	Creeping Bent	LF	<1%
<i>Bellis perennis</i>	Daisy	LF	<1%
<i>Dactylis glomerata</i>	Cock's-foot	O/LF	<1%
<i>Daucus carota</i>	Carrot	R	<1%
<i>Deschampsia cespitosa</i>	Tufted Hair-grass	O	<1%
<i>Galium aparine</i>	Cleavers	O/LF	<1%
<i>Geranium robertianum</i>	Herb-Robert	LF	<1%
<i>Geum urbanum</i>	Wood Avens	R	<1%
<i>Hedera helix</i>	Ivy	LF	<1%
<i>Holcus lanatus</i>	Yorkshire-fog	O/LF	<1%
<i>Melilotus officinalis</i>	Ribbed Melilot	LF	<1%
<i>Rubus fruticosus</i> agg.	Bramble	F*	5%
<i>Senecio vulgaris</i>	Groundsel	O	<1%
<i>Silene dioica</i>	Red Campion	R	<1%
<i>Taraxacum officinale</i> agg.	Dandelion	O	<1%
¹ Key to DAFOR: D=Dominant, A=Abundant, F=Frequent, O=Occasional, R=Rare, V=Very, L=Local and *denotes a constant species			

8.2 Breeding Bird Survey Data

Table 8.14: Breeding Bird Survey Data (refer to Figure 3)

Common Name	Times Observed	Total Number Seen	No. Observed In Site	No. Observed Over Site	No. Observed Outside Site	No. Displaying Breeding Behaviour	No. Not Displaying Breeding Behaviour	Peak Count (for a single flock)
Blackbird	14	18	9	0	9	9	9	3
Blackcap	8	8	5	0	3	8	0	1
Black-headed gull	1	2	0	2	0	0	2	2
Blue tit	6	6	3	0	3	6	0	1
Carrion crow	5	6	4	0	2	4	2	2
Chaffinch	8	8	5	0	3	8	0	1
Chiffchaff	4	4	2	0	2	4	0	1
Coal tit	2	2	0	0	2	2	0	1
Dunnock	7	7	4	0	3	7	0	1
Feral pigeon	1	20	0	20	0	0	20	20
Goldcrest	1	1	1	0	0	1	0	1
Goldfinch	3	15	15	0	0	1	14	8
Great tit	3	4	3	0	1	3	1	2
Herring gull	2	5	0	1	4	0	5	4
House sparrow	3	10	8	0	2	2	8	8
Kestrel	1	1	0	0	1	0	1	1
Lesser black-backed gull	14	22	0	18	4	0	22	5
Long-tailed tit	3	3	1	0	2	3	0	1
Magpie	9	17	14	0	3	4	13	4
Pied wagtail	1	2	2	0	0	0	2	2
Robin	22	22	14	0	8	22	0	1
Treecreeper	1	1	0	0	1	1	0	1
Whitethroat	1	1	0	0	1	1	0	1
Willow warbler	2	2	1	0	1	2	0	1
Wood pigeon	24	38	18	0	20	13	25	4
Wren	13	13	7	0	6	13	0	1

8.3 Assessment of Open Mosaic Habitat on Previously Developed Land Priority Habitat (OMH)

8.3.1 In accordance with UK Biodiversity Action Plan Priority Habitat Descriptions: Open Mosaic Habitats on Previously Developed Land (updated July 2010) (BRIG (Ed. Ant Maddock), 2010) each of the 5 criteria listed in the table below must be met. An examination of the site in relation to the criteria is also provided, making reference to the plant species lists presented within the ecology report.

Table 8.15: Assessment of Previously Developed and Disturbed Land Within the Site in Terms of OMH

Criteria	Evaluation Relating to the Site
1. The site is at least 0.25ha in size (<i>the minimum size refers to the potential OMH habitat, which might be a part of a larger site containing other habitats such as woodland or developed land</i>).	The areas of previously developed land with colonising vegetation at the site are in excess of 0.25 hectare.
2. Known history of disturbance at the site or evidence that soil has been removed or severely modified by previous use(s) of the site. Extraneous materials/substrates such as industrial spoil may have been added.	The site has a known history of disturbance at the following areas: • Vegetation Colonising Hard Standing A (Photos 43 to 45); • Vegetation Colonising Hard Standing A (Photos 46 and 47); and • Previously cleared ground at the south-eastern corner of the site (Photo 48) Soil has not been removed or severely modified at the previously cleared ground at the south-eastern corner of the site; in this area scrub vegetation has been partially cleared, and the area is recolonising to Bramble scrub. This area is therefore not considered to be representative of OHM and has been discounted from further consideration.
3. The site contains some vegetation. This will comprise early successional communities consisting mainly of stress-tolerant species (e.g. indicative of low nutrient status or drought). Early successional communities are composed of (a) annuals, or (b) mosses/liverworts, or (c) lichens, or (d) ruderals, or (e) inundation species, or (f) open grassland, or (g) flower-rich grassland, or (h) heathland.	It is not considered that Vegetation Colonising Hard Standing A or B (or any other habitats within the site) represent the habitats required by this description. Further assessment of the early successional communities which form OHM in relation to the site's habitats are presented below: (a) Annual communities are those comprised mainly of stress tolerant ruderals, which are short in stature and suited to low nutrient availability. Typical examples would be <i>Arenaria serpyllifolia</i>, <i>Centaurea erythraea</i>, <i>Linum catharticum</i> or <i>Trifolium arvense</i>. No areas within the site were noted to support annual communities as described above. Each of the plant species listed are absent from the site. (b) Moss / liverwort communities can contain both acrocarpous (i.e. usually unbranched, tufted) and pleurocarpous (usually branched, carpeted) mosses and are usually relatively open and less luxuriant than in more mature habitats, often with bare ground present in a fine-grained mosaic. They can occur in discrete patches or interspersed in other communities such as open grassland or heathland. Common species are usually present such as the mosses <i>Brachythecium rutabulum</i>, <i>Dicranum scoparium</i> or <i>Hypnum cupressiforme</i>, and the liverworts <i>Lophocolea heterophylla</i> or <i>Ptilidium ciliare</i>. No areas of the site were noted to support abundant or frequent mosses within areas of open ground, open grassland or heathland. It is not considered that the site supports habitats which meet the above description. (c) Lichen communities are likely to occur in extensive patches or interspersed with other communities such as open grassland or heathland. Species with a range of growth forms might be present, for example foliose (leaf-like), crustose (crust) or fruticose (shrubby and branched). (d) Ruderal communities are those composed mainly of taller annuals, biennials or short-lived perennials and typical of slightly more nutrient-rich, or less disturbed conditions than the annual communities. Typical examples would be <i>Daucus carota</i>, <i>Linaria vulgaris</i>, <i>Medicago lupulina</i> or <i>Reseda luteola</i>. No areas within the site were noted to support extensive areas of lichens interspersed with open grassland or heathland. Of the herbaceous plant species listed, they are either absent or of only localised distribution within the habitats present.

	(e) Inundation communities are comprised of species suited to periodic, often seasonal flooding. Vegetation is usually interspersed with bare areas of mud which can have a caked surface during dry periods and can result in annuals establishing. Typical species would be <i>Alopecurus geniculatus</i>, <i>Juncus bufonius</i>, <i>Persicaria maculosa</i> or <i>Ranunculus flammula</i>. No areas typical of those described above are present. None of the listed plant species are characteristic of the habitats present. (f) Open grassland is comprised mainly of perennial, stress-tolerant species of short stature with patches of bare ground at very fine-grained scale and often with a significant number of annual species or lichens in the sward. Typical species would be <i>Festuca ovina</i>, <i>Hypochaeris radicata</i>, <i>Pilosella officinarum</i> or <i>Rumex acetosella</i>. None of the habitats present are representative of the above. None of the listed plant species are characteristic of the habitats present, or are present in significant numbers. (g) Flower-rich grassland is a more typical, mature community with fewer gaps and characterised by more robust mesotrophic forbs such as <i>Centaurea nigra</i>, <i>Lotus corniculatus</i>, <i>Ranunculus acris</i> or <i>Trifolium pratense</i>. None of the listed plant species are characteristic of the habitats present within the site; they are either absent or of only localised distribution within the habitats present. (h) Heathland communities are composed mainly of dwarf shrubs, often interspersed or in mosaics with graminoids, bryophytes or lichens. On OMH they tend to have a more open structure with less plant litter and other organic matter build up on the substrate than in more typical heathlands. Typical species include <i>Calluna vulgaris</i>, <i>Deschampsia flexuosa</i>, <i>Festuca ovina</i> or <i>Nardus stricta</i> No heathland habitats were detected within the site. None of the listed plant species are characteristic of the habitats present and are absent from the disturbed areas of the site.
4. The site contains unvegetated, loose bare substrate and pools may be present.	No pools were detected within the site. Loose, bare substrate was not detected in Vegetation Colonising Hard Standing A or B.
5. The site shows spatial variation, forming a mosaic of one or more of the early successional communities (a)–(h) above (criterion 3) plus bare substrate, within 0.25ha.	The site does not support habitats typical of those described for criteria (a)–(h) above.

8.4 Photographs



Photo 1: Plantation Woodland A (AIA Reference G1 and G2), from Valley Road facing south



Photo 2: Plantation Woodland A from Valley Road facing north



Photo 3: Plantation Woodland A from within the site, facing south-west



Photo 4: Scrub A (AIA reference G3 and G4)



Photo 5: Scrub B (includes AIA reference G12, T10 and T11). Grassland B is in the foreground.



Photo 6: Scrub C (includes AIA reference G9, G10, T12, T13 and T14). Grassland B is in the foreground.



Photo 7: Scrub D (includes AIA references T20, T21, T22, T23 and T24). Grassland B is in the foreground.



Photo 8: Scrub E (AIA reference G16). Tree Line E is in the background and Grassland B is in the foreground.



Photo 9: Scrub F (AIA references G50 and G51). Grassland D is in the foreground.



Photo 10: Scrub F



Photo 11: Scrub G (AIA reference G30)



Photo 12: Shrub H, beneath Tree Line G.



Photo 13: Scrub I (includes AIA reference G42).



Photo 14: Scrub I



Photo 15: Scrub J



Photo 16: Scrub K



Photo 17: Scrub L



Photo 18: Scrub L



Photo 19: Tree Line A



Photo 20: Tree Line B



Photo 21: Tree Line C



Photo 22: Tree Line D



Photo 23: Tree Line E



Photo 24: Tree Line E



Photo 25: Tree Line F



Photo 26: Tree Line G



Photo 27: Tree Line H



Photo 28: Tree Line I



Photo 29: Tree Line J



Photo 30: Tree Line K



Photo 31: Grassland A



Photo 32: Grassland A



Photo 33: Grassland B.



Photo 34: Grassland B.



Photo 35: Grassland C (Amenity Grassland C is in the foreground).



Photo 36: Grassland D.



Photo 37: Grassland D.



Photo 38: Grassland D.



Photo 39: Grassland E



Photo 40: Grassland F



Photo 41: Grassland G



Photo 42: Amenity Grassland A



Photo 43: Amenity Grassland A



Photo 44: Amenity Grassland B



Photo 45: Amenity Grassland C



Photo 46: Amenity Grassland C



Photo 47: Amenity Grassland D



Photo 48: Amenity Grassland E



Photo 49: Amenity Grassland F



Photo 50: Vegetation Colonising Hard Standing A



Photo 51: Vegetation Colonising Hard Standing A.



Photo 52: Vegetation Colonising Hard Standing A.



Photo 53: Vegetation Colonising Hard Standing B



Photo 54: Vegetation Colonising Hard Standing B



Photo 55: Abundant Bramble scrub between Vegetation Colonising Hard Standing B and Tree Line E



Photo 56: Previously cleared ground at the south-eastern corner of the site.



Photo 57: Hard standing at the southern end of the site.



Photo 58: Hard standing within the car park area.



Photo 59: Building 1, northern elevation



Photo 60: Building 1, western and southern elevations



Photo 61: Building 2, western and southern elevations



Photo 62: Building 2, northern elevation



Photo 63: Building 3, southern and western elevations



Photo 64: Building 4, northern and western elevations



Photo 65: Building 4, western elevation, southern end



Photo 66: Building 4, southern and eastern elevations



Photo 67: Building 5, western and southern elevations



Photo 68: Building 5, northern elevation



Photo 69: Structure 1, a metal shipping container



Photo 70: Structure 2, a small brick plant housing



Photo 71: Structure 3, an open fronted and dilapidated outbuilding



Photo 72: Structure 4, a fire damaged metal boarded brick structure



Photo 73: Tree Line D, showing dense ivy



Photo 74: Tree Line G, showing dense ivy

8.5 Figures

Figure 1: Aerial Image of the Site and its Surroundings, Showing LWS in the Wider Area and LCREN CBA Grassland



Figure 2: Phase 1 Habitat and Vegetation Map

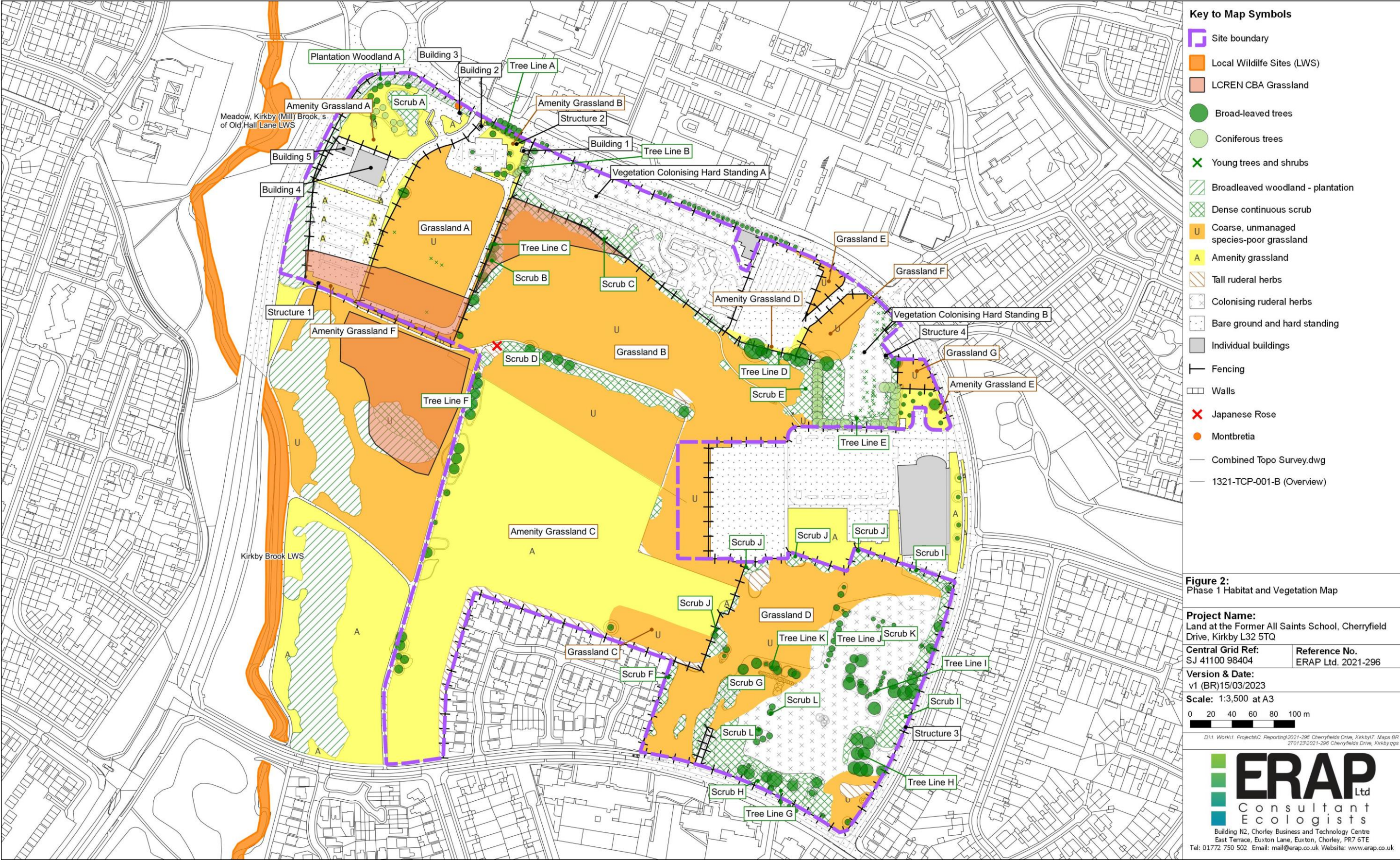


Figure 3: Results of the Breeding Bird Survey Completed on 21st July 2022

