



**University of Nottingham – University Park Campus
Preliminary Ecological Appraisal and Baseline Biodiversity Impact
Assessment**

October, 2023



For:

**University of Nottingham
University Park,
Nottingham,
NG7 2RD**

**This report contains confidential information regarding badgers which must be redacted
prior to release into the public domain.**

Control sheet

EMEC Ecology The Old Ragged School, Brook Street, Nottingham, NG1 1EA. 0115 964 4828 www.emec-ecology.co.uk	
Client:	University of Nottingham
Job reference:	#1235
Title:	University of Nottingham – University Park Campus, Preliminary Ecological Appraisal and Baseline Biodiversity Impact Assessment
Author	Jake Hill BSc (Hons) ACIEEM, Ecologist
1st QA	Greg Gilmore BSc (Hons), Ecologist
2nd QA	Vicky Philpott BSc (Hons) ACIEEM, Senior Ecologist Laura McClelland MSc BSc (Hons), Ecologist
Date of issue	25/10/2023
Status	Final

Disclaimer: the information, data, evidence, advice and opinions which have been prepared and provided are true and have been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s Code of Professional Conduct and with the British Standard 42020:2013. We confirm that the opinions expressed are our true and professional bona fide opinions.

This report prepared by EMEC Ecology is for the sole and exclusive use of University of Nottingham in response to their particular instructions. No liability is accepted for any costs, claims or losses arising from the use of this report or any part thereof for any purpose other than that for which it was specifically prepared or by any party other than University of Nottingham.

This report has been prepared by an ecological specialist and does not purport to provide legal advice. You may wish to take separate legal advice.

EMEC is accredited to ISO standards in respect of quality and environmental management and holds ISC certification 9001:2015 and 14001:2015.



East Midlands Environmental Consultants Ltd (trading as EMEC Ecology), Registered in England and Wales, no. 2623590. Registered offices: The Old Ragged School, Brook Street, Nottingham, NG1 1EA.

CONTENTS

Summary	4
1. Introduction	6
1.1. Purpose and Scope of the Report	6
1.2. Site Location and Context	6
1.3. Planning and Legislation	6
2. Methodology	9
2.1. Desk Study	9
2.2. Field Survey	10
2.3. Baseline BIA	10
2.4. Limitations	11
2.5. Re-survey of the Site	11
3. Results	12
3.1. Desk-based Assessment	12
3.2. Field Survey Details	19
3.3. Habitats	19
3.4. Species	39
4. Assessment of Effects and Recommendations	43
4.1. Proposed scheme design	43
4.2. Designated sites and HPI	43
4.3. Habitats	43
4.4. Biodiversity Net Gain (Baseline BIA)	43
4.5. Species	46
5. Enhancement	53
5.1. Enhancement proposals	53
References	54
Appendix A: UK Habitat Plan	56
Appendix B: Categories for Assessing Bat Roost Potential	57
Appendix C: Legislative Information	58

Summary

A Preliminary Ecological Appraisal (PEA) of University of Nottingham – University Park Campus, Nottingham (NGR, taken from the centre of the Site: SK 54116 38219, hereafter referred to as ‘the Site’) was undertaken during May and June 2023, alongside a baseline Biodiversity Impact Assessment (BIA), to provide baseline information to inform future proposals and ecological enhancement of the campus.

The Site comprises a diverse range of habitats including woodland, lines of trees, hedges, scrub and grassland, in addition to the buildings, roads, footpaths and sports pitches associated with the university. The Site is located to the west of Nottingham, with the suburb of Wollaton to the north and town of Beeston to the south. The surrounding landscape is largely urban and suburban, with pockets of open green space such as Wollaton Park adjacent to the north and Highfields Park adjacent to the south.

Important ecological features, impacts, recommendations, further survey requirements and survey timings are detailed in Table 1 below.

Table 1: Summary of important ecological features, impacts, recommendations and further survey requirements

Ecological feature	Recommendations	Recommendations section(s)
Designated sites	Further assessment and liaison with Local Planning Authority or Natural England may be required.	4.2.1
Biodiversity Net Gain	Enhancement through habitat management options are proposed.	4.4.
Plants	Further botanical surveys including invasive species and invasive species control.	4.5.1
Birds	Vegetation removal works should be undertaken outside of bird nesting season; considered to be March to August inclusive. If not possible, then a nesting bird check by a suitably experienced ecologist required.	4.5.2, 4.5.3
Great crested newt (<i>Triturus cristatus</i>)	Further survey work, including eDNA (undertaken between April and the end of June) and HSI, and Precautionary Working Methods.	4.5.4, 4.5.5
Reptiles	Precautionary Working Methods.	4.5.6
Bats	Further surveys including Preliminary Roost Assessment, emergence/re-entry (undertaken between May and August) and activity transects (undertaken between April and October), depending on nature and location of proposed works.	4.5.7, 4.5.8, 4.5.9, 4.5.10, 4.5.11
Badger (<i>Meles meles</i>)		4.5.12, 4.5.13, 4.5.14
Terrestrial invertebrates	Further survey work of mature trees (between May and August) if they are to be affected and habitat retention.	4.5.15, 4.5.16
Additional Species of Principal Importance	Hedgehog highways and Precautionary Working Methods.	4.5.17

Measures that may be taken to enhance the value of the Site for habitats and species include the following, full details of which can be found in section 5. When the Baseline BNG has been completed, recommendations of how to improve habitat condition will be included.

- Installation of a variety of bat boxes.
- Installation of a variety of bird boxes.
- Installation of hedgehog boxes.
- Veteranisation of semi-mature / mature trees within the woodlands.
- Installation of a variety of invertebrate hotels.

1. Introduction

1.1. Purpose and Scope of the Report

1.1.1. EMEC Ecology were commissioned to undertake a Preliminary Ecological Appraisal (PEA) of University of Nottingham – University Park Campus, Nottingham (NGR, taken from the centre of the Site: SK 54116 38219, hereafter referred to as ‘the Site’) was undertaken during May and June 2023, alongside a baseline Biodiversity Impact Assessment (BIA), to provide baseline information to inform future proposals and ecological enhancement of the campus.

1.1.2. The PEA and BIA followed the Guidelines for Accessing and Using Biodiversity Data in the UK (CIEEM, 2020), the Guidelines for Preliminary Ecological Appraisal, the Guidelines for Ecological Report Writing (CIEEM, 2017 a & b), the Biodiversity Net Gain Report & Audit Templates (2021) and the British Standard BS42020:2013 ‘Biodiversity – Code of practice for planning and development’.

1.1.3. The aims of the PEA and baseline BIA were to:

- Undertake a desk study to identify any statutory and/or non-statutory nature conservation sites and other notable habitats and records of legally protected and notable species within the Study Area (defined in Section 2.1).
- Identify and map habitats occurring within the Site.
- Identify the presence of, or the potential for the Site to support legally protected and/or notable species.
- To ascertain a baseline data set for protected or notable habitats and species, in addition to any associated constraints to the proposals in line with current ecological legislation, that can inform future proposals.
- Assess the baseline biodiversity units on Site using the Biodiversity Metric 4.0
- Provide enhancements recommendations to benefit the overall biodiversity value of the Site.

1.2. Site Location and Context

1.2.1. The Site consisted of a varied mixture of habitats including woodland, lines of trees, hedges, scrub, ornamental waterbodies and grassland, along with the buildings, roads, footpaths and sports pitches associated with the university. It is located to the west of Nottingham, with the suburb of Wollaton to the north and town of Beeston to the south. The surrounding landscape is largely urban and suburban, with pockets of open green space such as Wollaton Park adjacent to the north, Highfields Park adjacent to the south.

1.3. Planning and Legislation

1.3.1. Current legislation and planning policy have been considered when preparing this report and when planning and undertaking the associated survey. This is necessary to identify potential constraints to the project, and to inform recommendations for further surveys and mitigation. The following legislation and planning policy have been considered when planning and undertaking this report to identify potential constraints to the project, and when making

recommendations for further surveys and mitigation. Compliance with legislation may require the attainment of relevant European Protected Species licences prior to the commencement of works. Further detail regarding the legislation considered as part of this PEA and baseline BIA is provided in Appendix C.

- The Conservation of Habitats and Species Regulations 2017 (as amended).
- The Wildlife and Countryside Act, 1981 (as amended).
- The Environment Act, 2021.
- The Countryside and Rights of Way Act, 2000.
- The Natural Environment and Rural Communities Act (NERC), 2006.
- The National Planning Policy Framework, 2021.
- The Protection of Badgers Act, 1992.
- The Hedgerow Regulations, 1997.
- Taxa-specific conservation lists (e.g. Bird Species of Conservation Concern, Stanbury *et al.*, 2021).
- Nottinghamshire Local Biodiversity Action Plan (Nottinghamshire BAG, 1998)

Figure 1. Site Location Plan



2. Methodology

2.1. Desk Study

- 2.1.1. A desk-based assessment of the Site including appropriate buffer zones was undertaken, the Site and buffer together are hereafter referred to as the ‘Study Area’. The Study Area for each receptor is defined in Table 2 below.
- 2.1.2. The Multi-Agency Geographic Information for the Countryside (MAGIC) website (www.magic.gov.uk¹) was reviewed to identify any statutory designated nature conservation sites and Habitats of Principal Importance (HPI, Section 41 of the NERC Act, 2006), in addition to records of previous European Protected Species Licences (EPSLs) within the Study Area. Although it is acknowledged that this database may not be up to date, if present, licences for EPSLs within the locality can provide further information of species that may be present and can augment the species records provided by data centres.
- 2.1.3. Nottinghamshire Biological and Geological Records Centre (NGBRC) was instructed to undertake a data search in July 2023, to identify non-statutory designated sites and records of protected and notable species within the Study Area. With regard to species records, only those considered relevant to the Site (for example where habitat types present on Site or within the surrounding area would reasonably be considered to support that species), and that are ten years old or less have been included within the summary of records provided (Table 6). Exceptions to this will however be made, such as in instances whereby historical records are pertinent to the specific Site and/or proposals. A full copy of the data search is available on request.
- 2.1.4. Ordnance Survey (OS) maps and satellite imagery (Google Maps, maps.google.com/maps and Google Earth, earth.google.com) were reviewed to identify any waterbodies and other waterbodies within a 500 m buffer of the Site boundary.
- 2.1.5. The Nottinghamshire Biodiversity Action Plan (Nottinghamshire BAG, 1998) was also checked for any species or habitats that may be relevant to the Site.

Table 2. Summary of Study Areas and resources used for desk study

Receptor	Resource	Study Area (radius from Site boundary)
Waterbodies	Combination of OS maps and satellite imagery	500 m
HPIs	MAGIC	1 km
Nationally important statutory designated sites	MAGIC	2 km
Internationally important statutory designated sites	MAGIC	5 km
EPSLs	MAGIC	2 km
Non-statutory designated sites	NGBRC	2 km
Protected/principal species records	NGBRC	2 km

¹ MAGIC resource was accessed on 27/07/2023

2.2. Field Survey

Habitat Classification and Condition Assessment

- 2.2.1. Habitats on Site were assessed and classified according to the UK Habitat Classification system (UKHab, Butcher *et al.*, 2020). A detailed plan is currently being completed using Geographical Information Systems (QGIS), mapping habitats using UKHab suggested symbology (UKHab, 2020) and including target notes to record important ecological features including sightings, signs, evidence and potential habitat for legally protected and/or notable species. This plan along with photographs and descriptions of any target notes will be provided in the final draft of this report.
- 2.2.2. The Minimum Mapping Units (MMU) used when mapping habitats on Site were ≥ 25 m sq for area habitats and 5 m length by <1 m width for linear habitats.
- 2.2.3. Only the mandatory secondary codes (UKHab, 2020) were used to map the habitats on Site.
- 2.2.4. The BIA process relies on baseline information regarding the condition of habitats within a Site prior to the proposed works taking place. A condition assessment was therefore undertaken as part of the field survey, using the DEFRA Biodiversity Metric 4.0 condition assessment sheets (taken from Biodiversity Metric 4.0: auditing and accounting for biodiversity – Technical Supplement Part 1a, 2022).

Species Scoping Assessment

- 2.2.5. Habitats on Site were also assessed for their potential to support protected, priority or notable species that may be affected by the proposals. Any incidental sightings of individuals or field signs of protected species, such as footprints, droppings or feeding remains were noted during the survey and their locations recorded as a target note.
- 2.2.6. The species scoping assessment included noting the location of any non-native, invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act, 1981 (as amended). Such species include (but are not limited to) New Zealand pygmyweed (*Crassula helmsii*), Japanese knotweed (*Reynoutria japonica*), giant hogweed (*Heracleum mantegazzianum*), rhododendron (*Rhododendron* sp.), and Himalayan balsam (*Impatiens glandulifera*).

2.3. Baseline BIA

DEFRA Metric 4.0

- 2.3.1. Using the condition assessment of habitats undertaken during the field survey, a baseline BIA was completed using the DEFRA Metric 4.0. This involves inputting baseline data for existing habitats (habitats shown in Appendix A) including their assessed conditions. The metric then calculates the biodiversity units on Site for area habitats (such as grassland) in addition to a separate unit calculation for linear habitats such as hedgerows.
- 2.3.2. Assessed habitat conditions are provided in Section 3 (this will be updated when this information is complete), however the completed full condition sheets for the Site can be provided on request.

2.4. Limitations

- 2.4.1. A single visit at any time of year is likely to miss a proportion of the plant and animal species supported by a site. Ecological surveys are limited by factors that affect the visibility or presence of plants and animals such as time of year, migration patterns and behaviour. Therefore, the survey has not produced a comprehensive species list for the Site.
- 2.4.2. Biological records held by data centres can be received from a wide variety of sources, as such they may or may not be detailed and/or accurate. Likewise, desk study data should not be treated as a comprehensive list of species within a search area. Many species are under-recorded and low numbers of records can indicate a lack of survey effort, as opposed to the absence of a species.
- 2.4.3. The list of non-native plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) is extensive, and these plants are found in a variety of different habitats. The survey checked for all species listed on Schedule 9.
- 2.4.4. Preliminary Roost Assessments (PRA), consisting of full, systematic assessments of each tree, building and structure on Site to determine Bat Roost Potential (BRP) and Habitat Suitability Index (HSI) assessment(s) of waterbodies within 500 m of the Site for great crested newts were beyond the scope of the PEA and baseline BIA at this stage. This was due to the early stage of the project, as it is not yet known which features of the Site will be affected by the proposals. Due to the limited lifespan of this type of data (generally considered to be 12 months from the date of survey), it was considered likely that these surveys would require repeating once a plan is available for the Site and therefore it would be more efficient to target these surveys once this is in place. As such, BRP of features on Site are only reported when this was incidentally noted.
- 2.4.5. A full, systematic search was beyond the scope of the survey, however, Schedule 9 species of plant were searched for as part of the PEA. Additionally, due to the stage of plant growth (during summer), some vegetated areas were difficult to access, such that invasive plants may have been missed.

2.5. Re-survey of the Site

- 2.5.1. If the works are not undertaken on site within 12 months of the date of survey upon which this appraisal is based, and when proposals for the Site are available, further ecological survey may be necessary. This is due to the mobile nature of many protected/notable species and potential changes to the suitability of habitat present.

3. Results

3.1. Desk-based Assessment²

Designated Sites, Habitats of Principal Importance and Waterbodies

3.1.1. There were eight statutory designated nature conservation sites identified within the Study Area. These are summarised in Table 3 below.

Table 3 Summary of statutory designated nature conservation sites identified within the Study Area

Site name and designation	Distance and direction from Site	Brief description
Nationally important sites		
Attenborough Gravel Pits Site of Special Scientific Interest (SSSI)	1.9 km south-west	Designated for standing open water and canals, broadleaved mixed and yew woodland and neutral grassland habitats
Locally important sites		
Wollaton Park Local Nature Reserve (LNR) ³	25 m north, separated by Derby Road (A52)	Formal gardens and parkland.
Beeston sidings LNR	263 m south	Post-industrial green space.
Sandy Lane LNR	980 m west	Woodland, grassland and scrub.
Alexandrina Plantation LNR	1.45 km west	Woodland, grassland and scrub.
Harrison Plantation LNR	1.67 km north	Woodland.
Martin's Pond LNR	1.8km north	Diverse wetland and woodland.
Clifton Grove, Clifton Woods & Holme Pit Pond LNR	2 km south	Sedimentary escarpment with woodland, good ground flora reed swamp, wet grassland and willow carr.

3.1.2. In addition, Natural England's SSSI Impact Risk Zone (IRZ) tool (available at MAGIC.defra.gov.uk) showed the Site also lay within the SSSI IRZ for Attenborough Gravel Pits, as well as several other overlapping IRZ shown on MAGIC, for which it was not possible to accurately determine which specific SSSI(s) the IRZs related to. In line with the IRZ tool, should any works on Site fall within the following categories, then Natural England must be consulted prior to said works taking place:

- **Infrastructure** – Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.
- **Wind & Solar Energy** - Solar schemes with a footprint >0.5ha, all wind turbines.

² A copy of the full desk study data can be provided upon request.

³ Local Nature Reserve – Designated by the local authority, under the National Parks and Access to the Countryside Act, 1949.

- **Minerals, Oil & Gas** – Planning applications for quarries, including new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
- **Rural Non-residential** – Large non-residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000 m² or footprint exceeds 0.2 ha.
- **Residential** – Residential development of 100 units or more.
- **Rural Residential** – Any residential development of 50 or more houses outside existing settlements/urban areas.
- **Air Pollution** - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (including industrial/commercial processes and agricultural developments such as livestock & poultry units, manure/slurry stores).
- **Combustion** - All general combustion processes. Including: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/combustion.
- **Waste** - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management.
- **Composting** - Any composting proposal. Including: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.
- **Discharges** - Any discharge of water or liquid waste that is discharged to ground (i.e. to seep away) or to surface water, such as a beck or stream
- **Water Supply** - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1000m² or any development needing its own water supply (e.g., remote rural housing).

3.1.3. There were 11 non-statutory designated nature conservation sites identified within the Study Area. These are summarised in Table 4 below.

Table 4: Summary of non-statutory designated nature conservation sites identified within the Study Area

Site name and designation	Distance and direction from Site	Brief description
Nottingham University Downs LWS ⁴	Within the University Parks Campus	A group of acid and neutral grasslands with characteristic species and botanical interest.
Wollaton Park LWS	25 m north, separated by Derby Road (A52)	A deer park incorporating important wetland, grassland and aquatic plant

⁴ Local Wildlife Site

		communities, with botanical and moth species of interest.
Beeston Sidings LWS	775 m south-east	Two remnants of a once extensive system of railway sidings with an uncommon but characteristic tall herb community and presence of slow-worm (<i>Anguis fragilis</i>).
River Leen LWS (Part)	1.1 km north-east	City section of a river with important plant communities.
Beeston Canal LWS	1.2 km south-east	A valuable aquatic habitat in an urban setting with local species on walls.
Central Studio's Grassland LWS	1.53 km east	A notable neutral grassland.
King's Meadow Grassland LWS	1.66 km north-east	An ex-industrial site with a variety of habitats.
Lenton Triangle LWS	1.8 km north-east	An excised marsh and grassland site with a good range of species.
Alexandria Plantation LWS	1.9 km north-west	A mixture of habitats with characteristic sandstone plant associations.
Beeston Cemetery LWS	1.97 km west	A notable acidic grassland in a cemetery.
Lenton Methodist Church Walls LWS	2 km north-east	Several walls supporting notable plant communities.

3.1.4. There were three Habitats of Principal Importance (HPI) identified within the Study Area and these are summarised in Table 5 below. All of these were on Site.

Table 5: Summary of HPI identified within the Study Area

HPI	Closest HPI parcel distance and direction from Site	Number of HPI parcels within Study Area
Deciduous woodland	On site	89
Traditional orchard	On site	7
Wood-pasture and Parkland	On site	20

3.1.5. There were four waterbodies identified within the Study Area. These are discussed further with regard to species in the following section.

Species

3.1.6. Records of protected, priority and notable species were received from NGBRC. A summary of these records is provided in Table 6 below. For further detail regarding which records are included in the summary, please refer to Section 2.

Table 6: Summary of protected, priority and notable species records from within the Study Area

Common name	Scientific name	Total no. records	Closest record	Most recent record	Conservation status/protection
Plants					
Bitter-vetch	<i>Lathyrus linifolius</i>	1	1.21 km NW	2018, same as closest	NRPR ⁵ - Near threatened
New Zealand pygmyweed	<i>Crassula helmsii</i>	1	1.57 km NE	2015, same as closest	WCA9 ⁶
Common cudweed	<i>Filago germanica</i>	1	800 m N	2019, same as closest	NRPR - Near threatened
Corn spurrey	<i>Spergula arvensis</i>	1	240 m SW	2015, same as closest	NRPR - Vulnerable
Cornflower	<i>Centaurea cyanus</i>	2	1.21 km NE	2018, same as closest	NRPR - Nationally scarce
Dittander	<i>Lepidium latifolium</i>	10	770 m NE	2019, 1.20 km E	NRPR - Nationally scarce
Field garlic	<i>Allium oleraceum</i>	1	860 m NW	2019, same as closest	NRPR - Vulnerable
Field scabious	<i>Knautia arvensis</i>	2	800 m N	2017, same as closest	NRPR - Near threatened
Field woundwort	<i>Stachys arvensis</i>	1	1.57 km NE	2020, same as closest	NRPR - Near threatened
Floating pennywort	<i>Hydrocotyle ranunculoides</i>	1	1.49 km SE	2020, same as closest	WCA9
Goldenrod	<i>Solidago virgaurea</i>	2	1.90 km E	2015, same as closest	NRPR - Near threatened
Himalayan balsam	<i>Impatiens glandulifera</i>	4	380 m S	2019, 990 m NE	WCA9
Japanese knotweed	<i>Reynoutria japonica</i>	10	410 m S	2020, 1.51 km NE	WCA9
Large-leaved lime	<i>Tilia platyphyllos</i>	1	1.21 km S	2015, same as closest	NRPR - Nationally scarce
Maiden pink	<i>Dianthus deltoides</i>	1	1.79 km NE	2019, same as closest	NRPR - Near threatened
Mat-grass	<i>Nardus stricta</i>	1	1.36 km NW	2013, same as closest	NRPR - Near threatened
Nettle-leaved goosefoot	<i>Chenopodium murale</i>	1	150 m NW	2019, same as closest	NRPR - Vulnerable
Prickly poppy	<i>Roemeria argemone</i>	1	1.86 km NE	2019, same as closest	NRPR - Vulnerable
Ragged-robin	<i>Silene flos-cuculi</i>	2	800 m N	2019, 1.13km SW	NRPR - Near threatened
Round-fruited rush	<i>Juncus compressus</i>	1	1.48 km NW	2013, same as closest	NRPR - Near threatened
Russian-vine	<i>Fallopia baldschuanica</i>	1	1.70 km NE	2018, same as closest	WCA9

⁵ Nottinghamshire Rare Plant Register Species

⁶ Wildlife and Countryside Act, 1981 (as amended) – Schedule 9 invasive species.

Sickle medick	<i>Madicago sativa sub sp. Falcata</i>	1	1.80 km E	2015, same as closest	NRPR - Nationally scarce
Toothed Medick	<i>Medicago polymorpha</i>	1	800 m NE	2019, same as closest	NRPR - Near threatened
Tormentil	<i>Potentilla erecta</i>	1	1.13 km SW	2013, same as closest	NRPR - Near threatened
Wall bedstraw	<i>Galium parisiense</i>	1	810 m W	2019, same as closest	NRPR - Vulnerable
Whorl-grass	<i>Catabrosa aquatica</i>	4	1.12 km NW	2019, same as closest	NRPR - Vulnerable
Yellow skunk cabbage	<i>Lysichiton americanus</i>	2	1.66 km NE	2017, same as closest	WCA9
Birds					
Barn Swallow	<i>Hirundo rustica</i>	8	1.24 km NW	2015, 1.42 km NW	BoCC5 ⁷ Red-Listed, SPI ⁸
Black redstart	<i>Phoenicurus ochruros</i>	1	1.36 km NW	2014, same as closest	BoCC5 Amber-Listed, WCA1 ⁹
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	54	240 m SW	2019, 1.35 km, NW	BoCC Amber-Listed
Bullfinch	<i>Pyrrhula pyrrhula</i>	5	1.36 km NW	2018, same as closest	BoCC5 Amber-Listed, SPI
Cetti's warbler	<i>Cettia cetti</i>	2	1.93 km SW	2019, same as closest	WCA1
Cuckoo	<i>Cuculus canorus</i>	2	1.93 km SW	2019, same as closest	BoCC5 Red-Listed, SPI
Common gull	<i>Larus canus</i>	19	240 m SW	2019, 1.21 km S	BoCC Amber-Listed
Common redstart	<i>Phoenicurus phoenicurus</i>	1	1.36 km NW	2019, 1.93 km SW	BoCC5 Amber-Listed
Starling	<i>Sturnus vulgaris</i>	8	240 m SW	2018, 1.36 km NW	BoCC5 Red-Listed
Swift	<i>Apus apus</i>	9	1.36 km NW	2018, 1.93 km SW	BoCC5 Red-Listed
Common tern	<i>Sterna hirundo</i>	4	240 km SW	2019, 1.93 km SW	BoCC5 Amber-Listed
Common whitethroat	<i>Sylvia communis</i>	5	910 m SE	2019, 1.93 km SW	BoCC5 Amber-Listed
Dunnock	<i>Prunella modularis</i>	7	1.21 km S	2017, 1.93 km SW	SPI, BoCC5 Amber-Listed
Eurasian teal	<i>Anas crecca</i>	14	240 m SW	2018, 1.36 km NW	BoCC5 Amber-Listed
Wigeon	<i>Anas penelope</i>	2	1.36 km NW	2019, same as closest	BoCC5 Amber-Listed
Fieldfare	<i>Turdus pilaris</i>	5	1.21 km S	2019, same as closest	BoCC5 Red-Listed, WCA1

⁷ Birds of Conservation Concern 5, 2021.

⁸ Species of Principal Importance under Section 41 of the Natural Environment Rural Communities Act (NERC Act, 2006).

⁹ Wildlife and Countryside Act, 1981 (as amended) – Schedule 1 protected bird species.

Gadwall	<i>Anas strepera</i>	24	1.36 km NW	2019, same as closest	BoCC5 Amber-Listed
Greenfinch	<i>Chloris chloris</i>	4	1.21 km S	2015, 1.42 km NW	BoCC5 Red-Listed
Grey wagtail	<i>Motacilla cinerea</i>	14	240 m SW	2018, 1.36 km NW	BoCC5 Amber-Listed
Greylag goose	<i>Anser anser</i>	6	1.21 km S	2019, 1.93 km SW	BoCC5 Amber-Listed, WCA1
Hawfinch	<i>Coccothraustes coccothraustes</i>	1	1.36 km NW	2018, same as closest	BoCC5 Red-Listed, SPI
Herring gull	<i>Larus argentatus</i>	6	240 m SW	2019, 1.36 km NW	BoCC5 Red-Listed, SPI
House martin	<i>Delichon urbicum</i>	9	720 m SE	2019, 1.36 km NW	BoCC5 Red-Listed
House sparrow	<i>Passer domesticus</i>	1	1.93 km SW	2019, same as closest	BoCC5 Red-Listed, SPI
Kestrel	<i>Falco tinnunculus</i>	13	800 m N	2019, 1.36 km NW	BoCC5 Amber-Listed
Kingfisher	<i>Alcedo atthis</i>	6	800 m N	2019, 1.93 km SW	WCA1
Lapwing	<i>Vanellus vanellus</i>	1	1.93 km SW	2019, same as closest	BoCC5 Red-Listed, SPI
Lesser spotted woodpecker	<i>Dendrocopos minor</i>	28	1.36 km NW	2018, same as closest	BoCC5 Red-Listed, SPI, WCA1
Mallard	<i>Anas platyrhynchos</i>	57	240 m SW	2019, 1.36 km NW	BoCC5 Amber-Listed
Marsh tit	<i>Poecile palustris</i>	4	1.36 km NW	2019, same as closest	BoCC5 Red-Listed, SPI
Mistle thrush	<i>Turdus viscivorus</i>	38	1.03 km NW	2019, 1.36 km NW	BoCC5 Red-Listed
Moorhen	<i>Gallinula chloropus</i>	31	240 m SW	2018, 1.36 km NW	BoCC Amber-Listed
Mute swan	<i>Cygnus olor</i>	30	720 m SE	2019, 2km NE	BoCC5 Amber-Listed
Osprey	<i>Pandion haliaetus</i>	1	1.42 km NW	2017, same as closest	WCA1
Peregrine falcon	<i>Falco peregrinus</i>	27	240 m SW	2019, 800m N	WCA1
Red kite	<i>Milvus milvus</i>	3	800m N	2019, 1.36 km NW	WAC1
Redwing	<i>Turdus iliacus</i>	23	1.21 km S	2019, same as closest	BoCC5 Amber-Listed, WCA1
Rook	<i>Corvus frugilegus</i>	5	1.36 km NW	2018, same as closest	BoCC5 Amber-Listed
Shoveler	<i>Anas clypeata</i>	11	1.36 km NW	2019, same as closest	BoCC5 Amber-Listed
Song thrush	<i>Turdus philomelos</i>	27	240 m SW	2019, 1.93 km SW	BoCC5 Amber-Listed, SPI
Sparrowhawk	<i>Accipiter nisus</i>	14	800m N	2019, same as closest	BoCC5 Amber-Listed
Spotted flycatcher	<i>Muscicapa striata</i>	2	1.42 km NW	2015, 1.73 km NE	BoCC5 Red-Listed, SPI
Stock dove	<i>Columba oenas</i>	20	720 m SE	2019, 1.70 km NW	BoCC5 Amber-Listed
Tawny owl	<i>Strix aluco</i>	16	720 m SE	2018, same as closest	BoCC5 Amber-Listed

Willow warbler	<i>Phylloscopus trochilus</i>	4	1.42 km NW	2019, 1.93 km SW	BoCC5 Amber-Listed
Wood pigeon	<i>Columba palumbus</i>	32	240 m SW	2019, 1.21 km S	BoCC5 Amber-Listed
Wood warbler	<i>Phylloscopus sibilatrix</i>	1	1.36 km NW	2018, same as closest	BoCC5 Red-Listed, SPI
Wren	<i>Troglodytes troglodytes</i>	12	1.21 km S	2019, 1.93 km S	BoCC5 Amber-Listed
Amphibians					
Common frog	<i>Rana temporaria</i>	5	1.03 km NW	2020, same as closest	WCA5 ¹⁰
Common toad	<i>Bufo bufo</i>	13	1.01 km S	2020, 1.92 km N	SPI, WCA5
Great crested newt	<i>Triturus cristatus</i>	4	1.57 km SE	2017, same as closest	EPS ¹¹ , SPI, WCA 5
Reptiles					
Slow worm	<i>Anguis fragilis</i>	1	860 m SE	2013, same as closest	SPI, WCA5
Mammals					
Badger	<i>Meles meles</i>	1	1.44 km NW	2019, 1.44 km NW	PBA ¹²
Brown long-eared bat	<i>Plecotus auritus</i>	3	1.44 km NW	2019, 1.81 km W	SPI, WCA5, EPS
Common pipistrelle	<i>Pipistrellus pipistrellus</i>	52	0.65 km SW	2020, 1.21 km S	WCA5, EPS ¹³
Daubenton's bat	<i>Myotis daubentonii</i>	9	249 m SW	2017, 1.39 km NW	EPS, WCA5
European hedgehog	<i>Erinaceus europaeus</i>	31	910 m SE	2020, 1.60 km NE	SPI
Leisler's bat	<i>Nyctalus leisleri</i>	1	1.44 km NW	2019, same as closest	EPS, WCA5
<i>Myotis sp.</i>	<i>Myotis sp.</i>	3	1.21 km NW	2019, 1.21 km NE	SPI, WCA5, EPS
Nathusius Pipistrelle	<i>Pipistrellus nathusii</i>	5	1.33 km NW	2017, same as closest	WCA5, EPS
Noctule	<i>Nyctalus noctula</i>	15	0.81 km SE	2020, 1.21 km S	WCA
Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>	17	940 m SW	2019, 1.21 km S	WCA5
Whiskered bat	<i>Myotis mystacinus</i>	1	650 m SW	2020, same as closest	WCA5, EPS
Water vole	<i>Arvicola terrestris</i>	6	1.63 km SE	2017, 1.79 km SE	BAP, SPI, WCA5
Invertebrates					
Banded Demoiselle	<i>Calopteryx splendens</i>	1	1.64 km NW	2015, same as closest	Local importance
Black-tailed skimmer	<i>Orthetrum cancellatum</i>	1	1.64 km NW	2015, same as closest	Local importance

¹⁰ Wildlife and Countryside Act, 1981 (as amended) – Schedule 5 protected animal species.

¹¹ European Protected Species

¹² Protection of Badgers Act 1992

Blue-tailed damselfly	<i>Ischnura elegans</i>	1	1.64 km NW	2015, same as closest	Local importance
Brown argus	<i>Aricia agestis</i>	4	930 m SE	2020, 1.70 km E	Local importance
Brown hawker	<i>Aeshna grandis</i>	1	1.64 km NW	2015, same as closest	Local importance
Common blue	<i>Polyommatus icarus</i>	39	800 m SE	2017, 1.70 km E	Local importance
Common Blue Damselfly	<i>Enallagma cyathigerum</i>	1	1.64 km NW	2015, same as closest	Local importance
Emperor dragonfly	<i>Anax imperator</i>	1	1.64 km NW	2015, same as closest	Local importance
Purple hairstreak	<i>Favonius quercus</i>	9	810 m SE	2019, same as closest	Local importance
Red-eyed Damselfly	<i>Erythromma najas</i>	1	1.64 km NW	2015, same as closest	Local importance
Small copper	<i>Lycaena phlaeas</i>	32	810 m SE	2017, 1.80 km E	Local importance
White-letter hairstreak	<i>Satyrrium w-album</i>	1	800 m SE	2019, 910 m S	SPI, WCA5

3.1.7. Records of EPSLs identified from within the Study Area included:

- One license to allow the destruction of a soprano pipistrelle maternity roost from Florence Boot Hall, located within the Site, from 2022.
- One licence to destroy a resting place of an individual common pipistrelle bat from 2015, approximately 1 km north of the Site.
- One licence to destroy 1 ha of great crested newt habitat from 2017, 1 km south-west of the Site.

3.2. Field Survey Details

3.2.1. The field survey was carried out over three days by Ecologist Jake Hill BSc (Hons) ACIEEM and Ecologist Greg Gilmore BSc (Hons). The surveys were undertaken in suitable weather conditions, as shown in Table 7 below.

Table 7 – Weather conditions

Weather conditions	24 th May 2023	25 th May 2023	6 th June 2023
Temperature (°C)	25	25	23
Wind (Beaufort scale)	21	1	2
Cloud cover (%)	0	0	20
Precipitation	None	None	None

3.3. Habitats

3.3.1. Habitat descriptions are detailed below, along with the UKHab code for each habitat type. Habitats are listed in alpha-numerical order with reference to their UKHab codes and plant

species nomenclature follows Stace (2019). UKHab Habitat Plan of the Site can be found in Appendix A.

Lowland Dry Acid Grassland (g1a)

- 3.3.2. A parcel of lowland dry acid grassland equating to 0.38ha was present towards the northern boundary of the Site. The soil was sandy, sloping slightly and free draining, species were indicative of this habitat defined within the UKHab definition. Periodical mowing of this habitat was evident, although the sward was to 20 cm during the survey. Some damage from resident rabbits (*Oryctolagus cuniculus*) was observed with some areas of the sward grazed to ground level and evidence of digging also present. Species comprised, dominant sheep's sorrel (*Rumex acetosella*), abundant common bent (*Agrostis capillaris*), sweet vernal-grass (*Anthoxanthum odoratum*), and field wood-rush (*Luzula campestris*), frequent annual meadow grass (*Poa annua*), occasional common mouse-ear (*Cerastium fontanum*), and rare yarrow (*Achillea millefolium*).

Figure 2 – Lowland dry acid grassland



- 3.3.3. This habitat passed three of five condition criteria; however, it failed essential Criterion A, such that only poor condition could be achieved:

- Criterion A, fail: The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description. However, indicator species are limited and not consistently present within the sward.
- Criterion B, pass: The sward height was varied, with at least 20% less than 7 cm and at least 20% over 7 cm.
- Criterion C, pass: Cover of bare ground was between 1% and 5%, including areas where rabbits were active.
- Criterion D, pass: Cover of bracken was less than 20% and cover of scrub, including bramble was less than 5%.
- Criterion E, fail: combined cover of physical damage was greater than 5% of the total area.

3.3.4. As the Site is located in close proximity to Wollaton Park LNR and LWS, it forms an interconnected mosaic of habitats for a range of species. Additionally, Nottingham University Downs LWS was identified on site, such that the above habitat was classed as present within a location ecologically desirable but not in local strategy. Due to the importance of the above habitat, any removal of the lowland dry acid grassland equates to an unacceptable loss, as such no unit score for this habitat is given. The lowland dry acid grassland contributes 3.34 habitat units to the overall on-Site baseline score.

Modified grassland (g4)

3.3.5. The management regime of the modified grassland was largely homogenous across all areas of the campus where it was present, with a sward height of approximately 10 cm, continuous but sparse coverage of herb species and no areas of bare ground. No evidence of grazing by terrestrial mammals was observed, likely due to the location of the Site within a relatively isolated, urban context. Species composition was similar across all compartments.

3.3.6. The area of modified grassland on Site totalled 14.8 ha, located across the entirety of the campus. Species recorded within this habitat type included dominant perennial rye-grass (*Lolium perenne*) and false oat-grass (*Arrhenatherum elatius*), with abundant common bent and prickly sow-thistle (*Sonchus asper*), frequent dandelion (*Taraxacum officinale* agg.), groundsel (*Senecio vulgaris*) and ragwort (*Senecio jacobaea*).

Figure 3 – Modified grassland



3.3.7. This habitat passed five of seven condition criteria; however it failed the essential Criterion A, which prevents the grassland from achieving greater than poor condition:

- Criterion A, fail: There were fewer than six species present per m².
- Criterion B, pass: The sward height was varied, with at least 20% less than 7 cm and at least 20% over 7 cm.
- Criterion C, pass: Cover of scrub accounted for less than 20% of the total grassland area.
- Criterion D, pass: Evidence of minor poaching was present, however physical damage was evident in less than 5% of the total grassland area.

- Criterion E, fail: Cover of bare ground was over 10%.
- Criterion F, pass: Cover of bracken was less than 20%.
- Criterion G, pass: Although non-native ornamental species were present, no invasive non-native species (as listed on Schedule 9 of the Wildlife and Countryside Act [as amended], 1981).

3.3.8. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 32.56 habitat units to the on Site baseline biodiversity value.

Other neutral grassland (g3c) – Compartment 1

3.3.9. The management of the other neutral grassland across the campus was largely consistent across all areas. It mainly comprised of verges and boundaries where the grass had been allowed to grow to a longer sward of 20 to 50 cm, leaving more herbs to grow within the grassland. There were more managed areas comprising a shorter sward, to 7cm, providing a varied structure over the entirety of the Site. No evidence of grazing by terrestrial mammals was observed, likely due to the location of the Site within a relatively isolated, urban context. Species composition was similar across all compartments.

3.3.10. The area of other neutral grassland on Site totalled 14.6 ha, located across the entirety of the campus. Species recorded in this habitat type included dominant false oat grass, with abundant Yorkshire fog (*Holcus lanatus*), ragwort, broad-leaved willowherb (*Epilobium montanum*), and occasional broadleaved dock (*Rumex acetosa*). There were also areas of other neutral grassland which had been seeded with a flowering lawn mix, comprising a varied and more diverse sward.

Figure 4 – Other neutral grassland



3.3.11. This habitat passed four of six condition criteria, however it failed the essential Criteria A, which prevents the grassland from achieving a condition higher than poor:

- Criterion A, fail: The grassland did not closely match the UKHab definition of other neutral grassland as it lacked many of the indicator species.

- Criterion B, pass: The sward height was varied, with at least 20% less than 7 cm and at least 20% over 7 cm.
- Criterion C, pass: Cover of bare ground was between 1 and 5%.
- Criterion D, pass: Bracken was absent, and cover of scrub was less than 5%;
- Criterion E, fail: Although there was an absence of invasive, non-native species, the cover of sub-optimal species (such as nettles (*Urtica dioica*), dock (*Rumex* sp.), thistle (*Cirsium* sp.) species, and creeping buttercup (*Ranunculus repens*) covered over 5% of the total area.
- Criterion F (non-acid types), pass: There were greater than nine species per metre squared.

3.3.12. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 63.80 habitat units to the on-Site baseline biodiversity value.

Other neutral grassland (g3c) - Compartment 2

3.3.13. An area to the centre of the campus, was located within the Nottingham University Downs LWS, comprising the main lawn area of the campus. Species comprised abundant Yorkshire-fog, meadow buttercup (*Ranunculus acris*), cock's-foot (*Dactylis glomerata*), frequent sheep sorrel, yellow rattle (*Rhinanthus minor*), red clover (*Trifolium pratense*), common knapweed (*Centaurea nigra*), occasional sweet vernal grass, pignut (*Conopodium majus*), common vetch (*Vicia sativa*) and rare germander speedwell (*Veronica chamaedrys*) and ribwort plantain (*Plantago lanceolata*). No evidence of recent management was observed and the sward height was largely 30 cm with some areas of shorter growth. This habitat was located on an embankment which sloped moderately from the south to the north. The soil appeared to be well draining with an area of other broadleaved woodland located to the south and modified grassland to the north.

Figure 5 – Other neutral grassland (compartment 2)



3.3.14. The above habitat passed all six condition assessment criteria, achieving good condition.

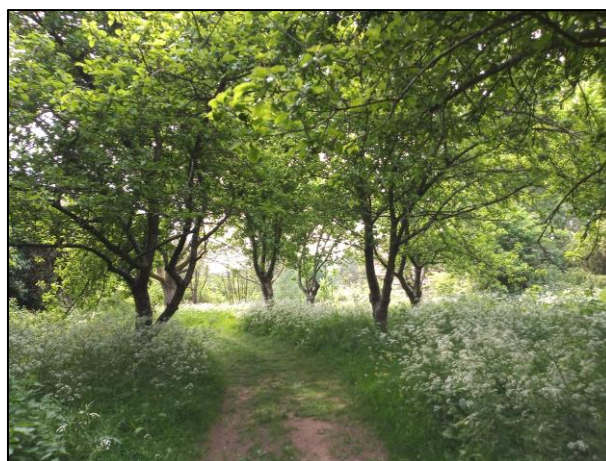
- Criterion A, pass: The grassland was a good representation of other neutral grassland, based on its UKHab description and Indicator species were constantly present within the sward.
- Criterion B, pass: The sward height was varied, with at least 20% less than 7 cm and at least 20% over 7 cm.
- Criterion C, pass: Cover of bare ground was between 1 and 5%.
- Criterion D, pass: Bracken was absent, and cover of scrub was less than 5%;
- Criterion E, pass: No invasive species were present and non-desirable species were rarely found, accounting for less than 5% of the total area.
- Criterion F (non-acid types), pass: There were greater than ten species per metre squared, not including non-desirable species i.e. creeping thistle (*Cirsium arvense*) and common nettles.

3.3.15. This habitat was formally identified in a local strategy as was located within Nottingham University Downs LWS and contributes 7.59 habitat units to the on-Site baseline biodiversity value.

Traditional Orchard (g3-21)

3.3.16. A small compartment of traditional orchard (0.098 ha) was located to the south of the Site, bordered by other broadleaved woodland to the north and mixed woodland to the east. Note that this habitat come under broadleaved woodland within the UKHabs baseline plan of the Site. Species were dominated by cultivated fruit trees in the family *Rosaceae* and ground flora was unmanaged with a sward height of 1.5 m in parts. Stands included dominant apple (*Malus domestica*) with rare elder (*Sambucus nigra*), beech (*Fagus sylvatica*) and weeping willow (*Salix babylonica*). The ground flora comprised dominant cow parsley (*Anthriscus sylvestris*) and common nettles, abundant cleavers (*Galium aparine*), spear thistle (*Cirsium vulgare*) and meadow buttercup, frequent broadleaved dock and rare ragged robin (*Silene flos-cuculi*). There was little evidence of pesticide management, no evidence of grazing with a pedestrian access track running beneath the canopy.

Figure 6 – Traditional orchard (g3-21)



3.3.17. The above habitat passed five of eight condition criteria, achieving moderate condition.

- Criterion A, fail: No presence of ancient and or veteran trees.
- Criterion B, fail: Lack of any substantial deadwood with pruning scars indicating removal of dead limbs.
- Criterion C, pass: Less than 5% of fruit trees are smothered by scrub with less than 10% scrub present between stands.
- Criterion D, pass: Evidence of pruning to increase longevity of stands.
- Criterion E, pass: At least 95% of trees are free from damage caused by humans/animals or ties.
- Criterion F, pass: Grassland is not overgrazed with no more than 10% of trees poached under the canopy.
- Criterion G, pass: species richness of grassland is higher than low distinctiveness.
- Criterion H, fail: there is an absence of invasive non-native plant species however species indicating sub-optimal conditions make up more than 10% of ground cover.

3.3.18. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 1.29 habitat units to the on-Site baseline biodiversity value.

Dense (Mixed) Scrub (h3h)

3.3.19. Five compartments of mixed scrub were found across the Site, equating to 0.47ha. Structure and species were largely consistent across each parcel with some areas that had been planted. A diverse species assemblage was recorded with evidence of recent and previous planting of scrub species. These included; abundant bramble (*Rubus fruticosus*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*) and blackthorn (*Prunus spinosa*) and frequent field maple (*Acer campestre*). The understorey was sparse with dominant false-oat grass (*Arrhenatherum elatius*), abundant creeping thistle, and ragwort (*Jacobaea vulgaris*), frequent hedge bindweed (*Calystegia sepium*), common nettle, and rough meadow grass (*Poa trivialis*) occasional dogrose (*Rosa canina*) and ox-eye daisy (*Leucanthemum vulgare*). There was little evidence of pesticide management, no evidence of grazing, although management including pruning and cutting back of this habitat was observed.

Figure 7 – Mixed scrub



3.3.20. The above habitat passed one of five condition criteria, achieving poor condition.

- Criterion A, pass: The habitat was a good representation of the scrub defined within the UKHab description, which matches the characteristics of the specific scrub type (mixed). Additionally at least 80% of the scrub species were native, with at least three native woody species and no single species comprising more than 75% of the cover.
- Criterion B, fail: Lack of mature stands and seedlings with a fairly uniform age range.
- Criterion C, fail: Invasive species were present, including cherry laurel (*Prunus laurocerasus*).
- Criterion D, fail: The scrub habitat did not have a well-developed edge, grading straight into modified and other neutral grassland or urban sealed surface.
- Criterion E, fail: A lack of any substantial clearings, glades or rides were present within this habitat.

3.3.21. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 2.07 habitat units to the on-Site baseline biodiversity value.

Other broadleaved woodland (w1g)

3.3.22. Several compartments of broadleaved woodland (totalling 30.36 ha) featuring a consistent structure and species composition were found within the Site. Vegetation was dominated by trees that were greater than 5 m high with a distinct canopy. Much of the woodland appeared to be planted, albeit some time ago, with mature and veteran stands present in low numbers. Evidence of damage including pruning scars and bark stripping from squirrel (*Sciurus carolinensis*) activity were present. The species composition was largely consistent across the different compartments with broadleaved species making up more than 80% of the overall coverage. A lack of deadwood, standing and fallen was noted and ground floral was largely sparse. Woody species comprised; abundant sycamore (*Acer pseudoplatanus*), Norway maple (*Acer platanoides*), pedunculate oak (*Quercus robur*), frequent silver birch (*Betula pendula*), occasional ash (*Fraxinus excelsior*), holly (*Ilex aquifolium*), yew (*Taxus baccata*), hornbeam (*Carpinus betulus*), beech, sweet chestnut (*Castanea sativa*) and common lime (*Tilia x*

europaea) and rare Lombardy poplar (*Populus nigra var. italica*). The shrub layer was patchy and limited to few species including hawthorn, elder, cherry laurel, rhododendron (*Rhododendron ponticum*) and holly (*Ilex aquifolium*). The ground flora was sparse with dominant meadow buttercup, abundant red campion (*Silene dioica*) and hogweed (*Heracleum sphondylium*), frequent rough meadow-grass (*Poa trivialis*) and germander speedwell, occasional cow parsley, wood avens (*Geum urbanum*) and pignut with rare common vetch, and heath wood-rush (*Luzula multiflora*). Further details of the condition of the other broadleaved woodland on-Site are detailed below.

Figure 8 – Other broadleaved woodland (w1g)



3.3.23. This habitat scores 28 of 39 condition criteria, achieving moderate condition:

- Criterion 1, scoring 2; Two age-classes present.
- Criterion 2, scoring 3; No significant browsing damage evident in woodland.
- Criterion 3, scoring 1; rhododendron and cherry laurel present.
- Criterion 4, scoring 3; Greater than five native tree species across the woodland.
- Criterion 5, scoring 2; 50% to 80% of canopy and understory are native species.
- Criterion 6, scoring 2; 21 – 40% of woodland has areas of temporary open space.
- Criterion 7, scoring 2; two classes of regeneration present.
- Criterion 8, scoring 3; Tree mortality less than 10%.
- Criterion 9, scoring 2; recognisable woodland NVC plant community at ground layer present.
- Criterion 10, scoring 2; Two storeys present across all survey plots.
- Criterion 11, scoring 2; One veteran tree present per hectare in woodland.
- Criterion 12, scoring 2; Between 25% and 50% deadwood present within woodland.

- Criterion 13, scoring 2; Less than 1 hectare in total of nutrient enrichment across woodland and less than 20% of woodland has damaged ground

3.3.24. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 267.17 habitat units to the on-Site baseline biodiversity value.

Other mixed woodland (w1h)

3.3.25. Several compartments of mixed woodland were found, totalling 11.86 ha within the Site. The majority of parcels featured consistent structures and species compositions. Vegetation was dominated by trees that were greater than 5 m high with a distinct canopy. Much of the woodland appeared to have been planted several decades ago. Evidence of damage, including pruning scars, was present. The species composition was largely consistent across the different compartments with a mixture of broadleaved and coniferous species, neither of which made up more than 80% of the overall canopy cover. A lack of deadwood, standing and fallen, was noted, and ground flora was largely sparse. Woody species comprised; abundant red pine (*Pinus resinosa*), Norway maple, Blue atlas cedar (*Cedrus atlantica Glauca*), Scots pine (*Pinus sylvestris*), beech and pedunculate oak, frequent wild cherry (*Prunus avium*), silver birch, redwood (*Sequoia* sp.), spruce (*Picea* sp.) and Leyland Cyprus (*Cupressus x leylandii*), occasional ash, holly, yew, hornbeam, beech, sweet chestnut (*Castanea sativa*) and common lime. The shrub layer was patchy and limited to few species including hawthorn, elder and holly. The ground flora was diverse with dominant ramsons (*Allium ursinum*) and ivy (*Hedera helix*), abundant brambles, frequent cleavers, wood avens (*Geum urbanum*) and ground elder (*Aegopodium podagraria*), occasional Lord's-and-Ladies (*Arum maculatum*) and rare Japanese knotweed (*Reynoutria japonica*) and deadly nightshade (*Atropa belladonna*).

3.3.26. Further details of the condition of the other mixed woodland on-Site are detailed below.

Figure 9 – Other mixed woodland (w1h)



3.3.27. This habitat scores 28 of 39 condition criteria, achieving moderate condition:

- Criterion 1, scoring 2; Two age-classes present.
- Criterion 2, scoring 3; No significant browsing damage evident in woodland.

- Criterion 3, scoring 1; Japanese knotweed, rhododendron and cherry laurel present and greater than 10% coverage of total area.
- Criterion 4, scoring 3; Greater than five native tree species across the woodland.
- Criterion 5, scoring 2; 50% to 80% of canopy and understory are native species.
- Criterion 6, scoring 2; 21 – 40% of woodland has areas of temporary open space.
- Criterion 7, scoring 2; two classes of regeneration present.
- Criterion 8, scoring 3; Tree mortality less than 10%.
- Criterion 9, scoring 2; recognisable woodland NVC plant community at ground layer present.
- Criterion 10, scoring 2; Two storeys present across all survey plots.
- Criterion 11, scoring 2; One veteran tree present per hectare in woodland.
- Criterion 12, scoring 2; Between 25% and 50% deadwood present within woodland.
- Criterion 13, scoring 2; Less than 1 hectare in total of nutrient enrichment across woodland and less than 20% of woodland has damaged ground.

As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy, contributing 104.37 habitat units to the on-Site baseline biodiversity value.

Wood-pasture and parkland (w1 - 26)

3.3.28. Two large areas of wood-pasture and parkland were found to the south-west of the Site equating to 5.46 ha and notified as a habitat of principal importance. Note that this habitat was mapped as broadleaved woodland within the baseline plan of the Site (Appendix A). Both parcels were largely similar in species composition, age and structure. The grassland was managed and frequently mown to approximately 20 cm with some area of shorter growth. Stands grew to a height of 15 m with some smaller / younger stands. Management of stands was evident with historic pruning scars, likely removing dead or dying limbs. A lack of deadwood, standing and fallen, was noted. Woody species comprised; abundant Italian alder (*Alnus cordata*) and walnut (*Juglans regia*), frequent sycamore, wild cherry and horse chestnut (*Aesculus hippocastanum*) and occasional pedunculated oak, alder and hornbeam. The ground flora was uniform and comprised limited diversity. Cock's-foot and perennial rye-grass were dominant, with abundant rough-meadow-grass, cuckoo flower (*Cardamine pratensis*), frequent germander speedwell, lesser stitchwort (*Stellaria graminea*), ladies bedstraw (*Galium verum*), cat's-ear (*Hypochaeris radicata*), creeping buttercup and common mouse-ear (*Cerastium fontanum*).

3.3.29. Further details of the condition of the other mixed woodland on-Site are detailed below.

Figure 10 – Wood-pasture and parkland (w1 – 26)



3.3.30. The above habitat passed three of eight condition criteria, achieving poor condition.

- Criterion A, fail: no presence of ancient and or veteran trees (essential criterion for achieving good condition).
- Criterion B, fail: there are not three different life stages are present.
- Criterion C, pass: Native scrub is present with a variety of heights, widths and shapes and species compositions. These were found largely along the boundary of the habitat to the north.
- Criterion D, fail: There was a distinct lack of any deadwood, due to management practices.
- Criterion E, fail: There is no evidence of recent adverse impact on tree health by human activities.
- Criterion F, pass: The ground cover comprised open habitats including grassland of a medium distinctiveness.
- Criterion G, fail: Ground cover is subject to an appropriate management regime, which provides a structural diversity valuable to vertebrates and invertebrates. This failed due to the intense management regime present, maintaining a uniform sward height.
- Criterion H, pass: there is an absence of invasive non-native plant species and species indicative of sub-optimal condition, make up less than 5% of cover.

3.3.31. The above habitat was assessed as medium strategic significance, present within a location ecologically desirable but not in local strategy, contributing 48.08 habitat units to the on-Site baseline biodiversity value. Due to its value within the Defra Metric 4.0, this habitat requires bespoke compensation if proposed for removal, such that any loss is deemed unacceptable.

Ponds (r1 – Ornamental 46 & non-priority 41)

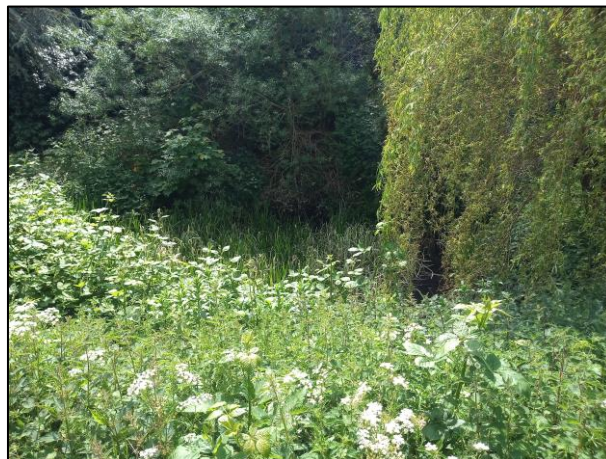
3.3.32. Ornamental and non-priority ponds were present within the landscaped areas of the Site. One was found within garden areas, built of hard artificial construct likely to hold water all year

round. Whilst a more natural pond with vegetated earth banks was present to the south. The northern ornamental pond featured goldfish (*Cyprinidae* species) and limited to a non-native pond weed. The southern more naturalised pond supported iris (Iridaceae) and sedge (*Carex* sp) species with dense foliage encroaching within the standing water.

Figure 11 – Ponds (r1 - ornamental 46)



Figure 12 – Ponds (r1 – non-priority 41)



3.3.33. The ornamental pond passed five of eight condition criteria, achieving poor condition, and the non-priority pond passed eight of nine condition criteria, achieving good condition.

- Criterion A, pass: Both ponds were of good water quality, with clear water indicating no obvious signs of pollution.
- Criterion B, fail: Both ponds did not support a 10 m buffer of semi-natural habitat surrounding the ponds.
- Criterion C, pass: Neither pond featured duckweed (*Lemna* sp) or filamentous algae.
- Criterion D, pass: Neither pond appeared to be connected to other waterbodies or artificial pipes.

- Criterion E, ornamental pond fail, non-priority pond pass: Pond levels can fluctuate naturally throughout the year.
- Criterion F, ornamental pond fail, non-priority pond pass: There is an absence of listed non-native plant and animal species.
- Criterion G, ornamental pond fail, non-priority pond pass: The pond is not artificially stocked with fish.
- Criterion H, pass: emergent, submerged or floating plants cover at least 50% of the pond area which is less than 3 m deep.
- Criterion I, pass: the pond surface is no more than 50% shaded by adjacent trees and scrub.

3.3.34. As previously mentioned, the above habitats were classed as present within a location ecologically desirable but not in local strategy, the ornamental pond contributing 0.04 and the non-priority pond contributing 0.19 habitat units to the on-Site baseline biodiversity value.

Urban - Introduced shrub (u 1160)

3.3.35. Large areas of the Site (6.47 ha in total) comprised introduced shrub borders between hardstanding and other vegetated habitat parcels. Some areas had developed into mature stands with younger specimens found elsewhere. The non-native shrubs varied in size from low lying to approximately 4 m tall. All appeared well managed with regular pruning evident. Species were consistent across the Site, comprising; barberry (*Barberis vulgaris*), Oregon grape (*Mahonia aquifolium*), cherry laurel, Japanese holly (*Ilex crenata*), red-robin (*Photinia x fraseri*), firethorn (*Pyracantha coccinea*), myrtle (*Myrtus communis*) and ornamental rose (*Rosaceae* sp.).

Figure 13 – Introduced shrub (u 1160)

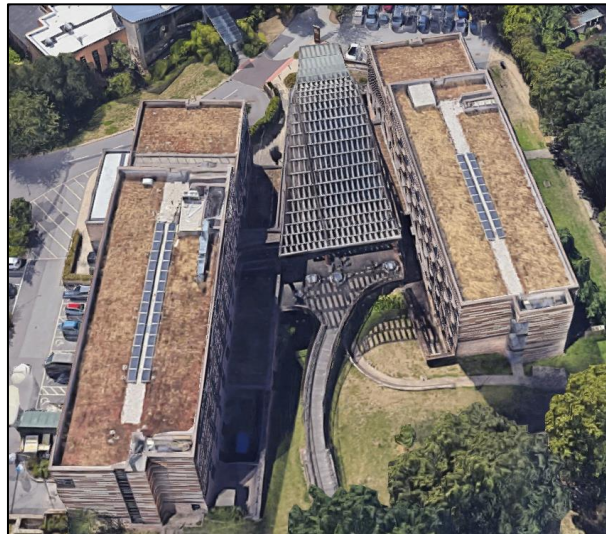


3.3.36. A condition assessment is not applicable for introduced shrub, which was classed as present within a location ecologically desirable but not in local strategy, contributing 14.23 habitat units to the on-Site baseline biodiversity value.

Urban - Green roof (u 1110)

3.3.37. Two green roofs atop the Orchard Hotel building were visible during the field survey and appeared to be in good condition; however, the species composition and could not be determined from ground-level. It is understood that the School of Mathematical Sciences building to the east of the Site, also had a green roof, but these were not accessible during the survey. Areas of green roof have been mapped as urban habitat within the baseline plan for the Site.

Figure 14 – Green roof (u 1110)



Contains google satellite imagery data ©. Accessed 2023

3.3.38. The above habitat was classed as present within a location ecologically desirable but not in local strategy, providing a medium strategic significance within the site. No condition assessment is required for the above habitat, however the total area of green roof contributes 0.29 habitat units to the overall baseline assessment.

Vegetated garden (u 231)

3.3.39. Several areas of vegetated garden were found across the Site. Either located within residential curtilage or within an openly accessible area of the campus. These habitats comprised areas of lawn and flower beds with shrubs and other perennial largely non-native plant species. Note that this habitat was mapped as Urban within the baseline plan of the Site (Appendix A).

Figure 15 – Vegetated garden

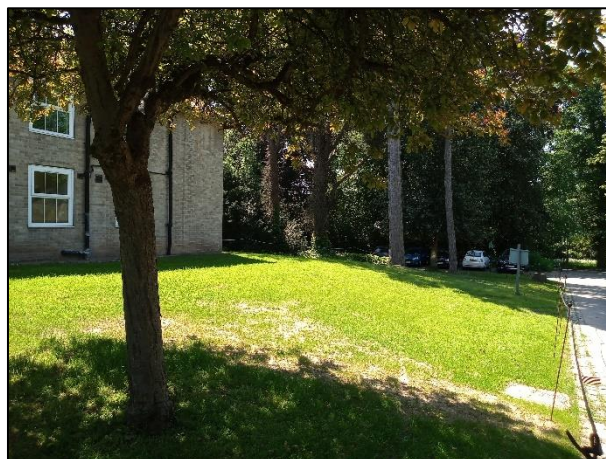


3.3.40. As explained in section 3.3.4, the above habitat was classed as present within a location ecologically desirable but not in local strategy. No condition assessment is required for the above habitat, however the total area of vegetated garden contributes 0.39 habitat units to the overall baseline assessment.

Individual trees (poor condition) - 11

3.3.41. Scattered individual trees (poor condition) were found across the Site and were classed as urban trees due to the context of the Site. A variety of ages and sizes were present including deciduous and coniferous species. Most of the stands were young to intermediate in age and featured a lack of deadwood and fungal growths, with management including pruning wounds evident. The stands were classed as in poor condition due to their managed nature, high number of non-native species, although most were oversailing vegetation beneath.

Figure 16 - Individual trees - 11



3.3.42. The individual trees (poor condition) on Site passed two of six condition criteria and, achieved poor condition.

- Criterion A, fail: The trees are non-native species or less than 70% within the block are native.

- Criterion B, pass: Automatic pass for individual trees: The tree canopy was predominantly continuous with gaps in canopy making up less than 10% of the total area.
- Criterion C, fail: majority of stands were not mature.
- Criterion D, fail: There was evidence of an adverse impact on tree health by human activity.
- Criterion E, fail, Natural ecological niches for vertebrates and invertebrates are largely not present.
- Criterion F, pass, More than 20% of the trees canopies are oversailing vegetation beneath.

3.3.43. The above habitat had a medium strategic significance, within a location ecologically desirable but not in local strategy, contributing a total of 66.26 habitat units to the on-Site baseline biodiversity value.

Individual trees (moderate) - 11

3.3.44. Scattered individual trees were found across the Site and were classed as urban trees due to the context of the Site. A variety of ages and sizes were present including deciduous and coniferous species. Most of the stands were intermediate to old in age and featured some deadwood and fungal growths, although management including pruning wounds were present. The vast majority of stands were classed as in poor condition due to their managed nature, high number of non-native species, although most were oversailing vegetation beneath.

Figure 17 - Individual trees - 11



3.3.45. The individual trees (moderate) on Site passed four of six condition criteria and, achieved moderate condition.

- Criterion A, pass: The trees are predominantly native species or at least 70% within the block are native.
- Criterion B, pass: Automatic pass for individual trees: The tree canopy was predominantly continuous with gaps in canopy making up less than 10% of the total area.
- Criterion C, fail: majority of stands were not mature.
- Criterion D, fail: There was evidence of an adverse impact on tree health by human activity.
- Criterion E, pass, Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities ivy or loose bark.
- Criterion F, pass, More than 20% of the trees canopies are oversailing vegetation beneath.

3.3.46. The above habitat had a medium strategic significance, within a location ecologically desirable but not in local strategy as detailed in 3.3.4, contributing a total of 134.29 habitat units to the on-Site baseline biodiversity value.

3.4. Habitats (Linear)

Line of Trees (w1g6)

3.4.1. Lines of trees were found across the Site, largely comprising intermediate to old stands of broadleaved species. Some of the stands were noted as veteran and featured deadwood and fungal growths. These likely experienced a regular management regime including pruning wounds present across most stands. The vast majority of the lines of trees were classed as in moderate condition due to their native status, continuous canopy cover and most were oversailing vegetation beneath. Lines of trees on Site equated to a combined total of 2.64 km in length, some of which were found as avenues along access roads as seen in Figure 18 below.

Figure 18 – Line of trees (w1g6)



3.4.2. The line of trees on Site passed four of five condition criteria and, achieved moderate condition.

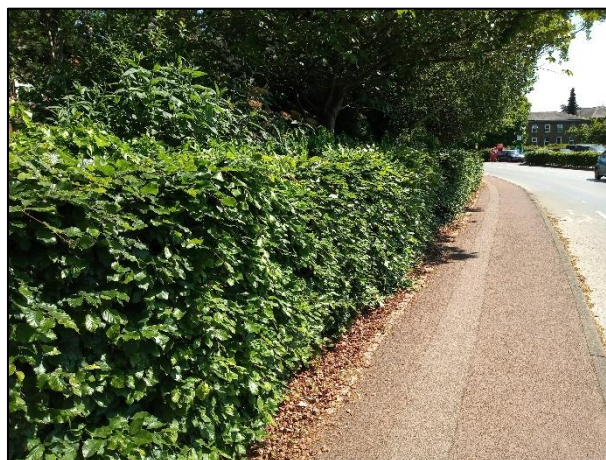
- Criterion A, pass: The trees are predominantly native species or at least 70% within the block are native.
- Criterion B, pass: The tree canopy was predominantly continuous with gaps in canopy making up less than 10% of the total area.
- Criterion C, pass: One or more trees has veteran features and or natural ecological niches for vertebrates and invertebrates, such as presence of standing and attached deadwood, cavities, ivy or loose bark.
- Criterion D, fail: There was no undisturbed naturally-vegetated strip of at least 6 m on both sides to protect the line of trees from human activities. This was because most lines of trees were found as avenues along access roads.
- Criterion E, pass, at least 95% of the trees are in a health condition.

3.4.3. The above habitat had low significance and was within a location ecologically desirable but not in local strategy as detailed in 3.3.4, contributing a total of 11.62 hedgerow units to the overall on-Site baseline biodiversity value.

Native Hedgerow – (h2a)

3.4.4. Several native hedgerows were found across the Site, often acting as separating buffers between gardens and car parks or grassed areas. Native hedgerows on Site were largely single species dominated by beech, hawthorn and yew. All hedgerows were heavily managed to maintain a dense compact vegetative feature on Site. For the sake of the baseline assessment a blanket approach has been taken, meaning all hedgerows have been assumed good condition and of a similar height and width. Height of hedgerows were assessed as greater than 1.5 m average across the length of hedgerow. With a width of greater than 1.5 m average along the length. Gaps within native hedgerows on Site were largely absent, due to regular management regimes. With gapping between the ground and base equating for less than 0.5 m for greater than 90% of its length and gaps in hedgerow accounting to less than 10% of the total length and no canopy gaps greater than 5 m.

Figure 19 – Native hedgerow (h2a)



The native hedgerows on Site passed six of eight condition criteria and, achieved good condition:

- A1 – Height, pass: >1.5 m average along length.
- A2 – Width, pass: The hedgerow was approximately 1.5 m average along length.
- B1 – Gap at hedge base, pass: The gap between ground and base of canopy was <0.5 m for >90% of length.
- B2 – Hedge canopy continuity, pass: Gaps make up <10% of total length and no canopy gaps were >5 m).
- C1 – Undisturbed ground and perennial vegetation, pass: >1 m width of undisturbed ground with perennial herbaceous vegetation was present for >90% of length when measured from the outer edge of the hedgerow. This was present on one side of the hedge only, with tarmac road on the adjacent side.
- C2 – Undesirable perennial vegetation, fail: Plant species indicative of nutrient enrichment of soils dominated >20% cover of the area of undisturbed ground.
- D1 – Invasive and neophyte species, pass: >90% of the hedgerow and undisturbed ground was free of invasive non-native and neophyte species.
- D2 – Current damage, fail: <90% of the hedgerow or undisturbed ground was free of damage caused by human activities.

3.4.5. The above habitat had low significance and was within a location ecologically desirable but not in local strategy as detailed in 3.3.4, contributing a total of 6.29 hedgerow units to the overall on-Site baseline biodiversity value.

Non-native and Ornamental Hedgerow - (h2b)

3.4.6. Several non-native and ornamental hedgerows were found across the Site, species comprised entirely single species of cherry laurel, laurel species and yew. A 300 m long ornamental hedgerow was found bordering the Boots office building, located to the south-west of the Site (Figure 20, below). Other ornamental hedgerows were present within the campus gardens and acted as dividing barriers between garden sections.

Figure 20 – Non-native and ornamental hedgerow (h2b)



- 3.4.7. Non-native and ornamental hedgerows are classed as very low distinctiveness and no condition assessment is required as this habitat is fixed at poor condition. The above habitat was within a location ecologically desirable but not in local strategy, reasons for which are detailed in section 3.3.4, contributing to 1.90 hedgerow units to the overall on-Site baseline biodiversity value.

3.5. Species

Plants

- 3.5.1. A number of invasive plant species were identified from within the study area during the desk study, including but not limited to Himalayan balsam and Japanese knotweed. The closest records of these two species in particular were 380 m south and 410 m south respectively. There were also many records within the study area for Nottinghamshire Rare Plant Register species including the vulnerable corn spurrey and field garlic.
- 3.5.2. A stand of Japanese knotweed was identified near the centre of the Site, located within a wooded area (Target Note 6). This was the only invasive plant species identified on Site, however an in-depth invasive plant survey was beyond the scope of the survey. Additionally, due to the stage of scrub growth, some vegetated areas were difficult to access, such that invasive plants may have been present but obscured or inaccessible. Deadly nightshade (*Atropa belladonna*) was recorded within the woodland to the centre of the Site, which is a notable species at a local level. Bluebells (*Hyacinthoides non-scripta*) were also recorded within the wooded areas of the Site. This species is protected from digging up and trading under Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

Birds

- 3.5.3. Approximately 80 records of bird species were identified from within the study area during the desk study. Of the Schedule 1 species identified in the study area, it is only considered that peregrine falcon and black redstart could potentially breed on Site, utilising the large chimney stack and plethora of industrial buildings and green roofs, respectively. Important habitats on Site for the species identified within the desk study include the woodlands and scrub, due to the number of woodland and garden species present within the study area. A notable amber listed species identified during the desk study was tawny owl, a species which requires large areas of woodland for breeding and foraging.
- 3.5.4. The Site contained suitable nesting and foraging habitat for a variety of garden and woodland bird species, due to the presence of woodland, hedges and scrub. Several nest boxes were noted throughout the survey on mature trees, three of which were found to support active great tit (*Parus major*) nests at the time of survey. The scrub provided nesting suitability for a range of passerines, including song thrush, bullfinch and dunnock (all SPI), that were all recorded during the survey. The grassland present was not considered suitable for any ground nesting species due their limited size, level of disturbance and mowing regime, however green woodpecker and kestrel were both observed foraging over the less intensively managed areas of grassland. The lack of suitable waterbodies on Site limits its suitability for water fowl and wetland species, but with Highfields Lake adjacent to the south, there is some opportunity for waterfowl to be present on Site, such as geese and ducks, that may be found foraging within the grassland.

Great crested newt

- 3.5.5. Four records of great crested newt (GCN) were identified within the study area during the desk study, the closest and most recent of which was in 2017 1.57 km south east of the Site. This record is likely beyond several major dispersal barriers for GCN, including the A6005 and A52. During the desk study, one licence to destroy 1 ha of GCN habitat from 2017, 1 km south-west of the Site, was identified, similarly this record is likely beyond several dispersal barriers for GCN, the A6005 and several minor roads.
- 3.5.6. One ornamental and one non-priority ponds were present on Site, with four additional waterbodies identified within 500 m of the Site. Habitat Suitability Index assessments of the waterbodies were beyond the scope of the survey at this time.
- 3.5.7. The terrestrial habitat on Site was considered to be suitable for terrestrial phase GCN, including the woodlands with fallen deadwood, dense hedgerows and scrub. However, the buildings, roads and footpaths present on Site are likely to impede dispersal of GCN across the Site. Several major roads, including the A52 and A6005 adjacent to Site also limited the potential for GCN to commute into the Site from off-Site waterbodies.

Reptiles

- 3.5.8. Only one reptile record was identified during the desk study, this was for a slow worm in 2013, 860 m south east of the Site. This approximate location is considered likely to be beyond several barriers to dispersal for slow worm, including the A6005 and A52.
- 3.5.9. The majority of habitat on Site was limited in its suitability for reptiles due to its overall managed condition, with the regularly mown grasslands and absence of features such as rubble piles or compost heaps. With the presence of roads and buildings throughout and surrounding the Site, this reduces connectivity within the Site and to any surrounding habitat. However, areas were noted where the grassland was less intensively managed, with dense scrub banks and areas of bare ground that could be used for sheltering, foraging and basking. These areas were somewhat isolated and surrounded by hardstanding road systems, such that the Site offered limited suitability for reptiles on Site, with limited terrestrial connectivity for reptiles moving into or within the Site.

Bats

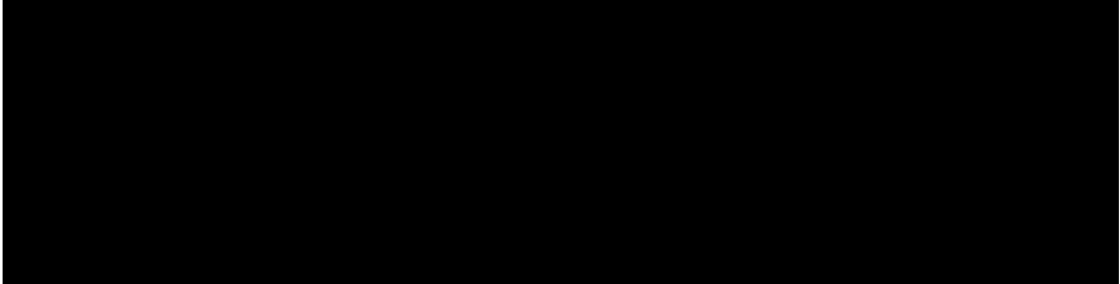
- 3.5.10. Nine species of bat were identified within the study area during the desk study. It is not confirmed whether any of these records pertain the location of roosts; however, one licence to destroy the resting place (roost) of common pipistrelle from 2015 was identified 1 km north of the Site, whilst EMEC Ecology are involved in a licence involving a maternity roost for soprano pipistrelle, located within the Florence Boot Hall on Site.
- 3.5.11. The Site was assessed as being of High suitability for foraging and commuting bats, in line with best practice guidelines (Bat Conservation Trust, 2016). This was due to the amount of woodland, scrub and grassland present in addition to the university lake located on the southern border. These habitats were connected within the Site and to the surrounding landscape, including Wollaton Park to the north and Highfields Park to the south, both of which feature a multitude of suitable commuting and foraging habitat including woodlands and waterbodies.

Badger

3.5.12.



3.5.13.



Terrestrial invertebrates

3.5.14. A total of 12 species of notable terrestrial invertebrate were identified within the study area during the desk study. One of these was an SPI, white-letter hairstreak, whilst the remaining are of local importance.

3.5.15. Due to the variety of habitats on Site, including woodland, scrub and grassland, it is considered likely to be suitable for a variety of terrestrial invertebrate species. Deciduous and coniferous tree species were found on Site, likely offering a range of host species for terrestrial invertebrates. Additionally, invertebrate ‘hotels’ were identified within the small orchard to the centre of the Site, potentially supporting a range of breeding and over-wintering solitary bees and wasps. Bare sandy banks were identified on Site, which offered similar opportunities for invertebrates

Otter

3.5.16. No records of otter were identified within the study area during the desk study.

3.5.17. There was no suitable aquatic habitat on Site for otter, and Highfields Lake adjacent to the south was not considered suitable for otter due to its lack of connectivity to any other suitable waterbodies or watercourses. Therefore, it is considered likely otter are absent from Site and this species will not be discussed further within this report.

Water vole

3.5.18. A total of six records of water vole were identified within the study area during the desk study. The closest of these records was 1.63 km south east, with the most recent being from 2017 1.79 km south east. Both of these records are likely from within waterbodies (River Leen) that have no direct connectivity to Site and are beyond significant barriers to dispersal for water vole, including the A54, A6005 and Woodside Road.

3.5.19. There was no suitable aquatic habitat on Site for water vole, and Highfields Lake adjacent to the south was not considered suitable for water vole due to its isolation from any other suitable waterbodies or watercourses and its lack of suitable foraging habitat which has been over grazed by water fowl. Tottle Brook further to the south was overgrown and isolated,

therefore also considered unsuitable for water vole. Therefore, it is considered water vole are absent from Site and will not be discussed further within this report.

Additional SPI

- 3.5.20. Records for additional SPI included 13 records of common toad, the closest of which was 1 km south of the Site, and 31 records of hedgehog, the closest of which was 910 m south east of the Site.
- 3.5.21. The Site was considered suitable for European hedgehog due to the presence of woodland and scrub throughout, providing sheltering, hibernating, foraging and commuting habitat.
- 3.5.22. The Site was not considered suitable for brown hare due to a lack of appropriate habitat such as large arable fields and boundary hedgerows. Although, considered largely unsuitable for common toad due to a lack of suitable waterbodies and connectivity, this species is widely found in urban and sub-urban environments, such that this species may be present on Site.

4. Assessment of Effects and Recommendations

4.1. Proposed scheme design

- 4.1.1. Currently there are no proposals in place for the Site, so the likely effects on ecological receptors cannot be assessed. However, some general recommendations have been discussed regarding surveys or impact avoidance measures that may be required should there be any works proposed in the future. It is recommended that the below assessments and recommendations are updated once detailed plans are available.

4.2. Designated sites and HPI

Statutory and non-statutory designated sites

Recommendations

- 4.2.1. There were a total of eight statutory and 11 non-statutory designated Sites identified with the study area. As no specific proposals are currently in place, it cannot be discussed if there would be any impacts to these sites as a result of any future proposed work. However, should any significant work be planned that may result in the impact of these designated sites, then discussion with the Local Planning Authority and Natural England may be required.

HPI

Recommendations

- 4.2.2. A total of three HPI totalling over 100 parcels were identified on Site. Therefore, any future works proposed on Site will likely have an impact upon these habitats. Therefore, specific assessment of these habitats will likely be required to inform mitigation and recommendations of impact avoidance upon these habitats prior to the commencement of any future works.

4.3. Habitats

Recommendations

- 4.3.1. Where feasible, habitats should be retained and protected. Where this is not possible, further surveys, mitigation and compensation may be required, depending on the ecological value of the habitat to be affected.
- 4.3.2. Temporary storage of plant or machinery should be on hardstanding away from retained habitats to avoid unnecessary degradation, or disturbance to protected species that may be present. No storage of materials, equipment and plant will take place under the 'drip-zone' of trees (i.e. under their canopy). Best practice will be followed (i.e. BS5837:2012 Trees in Relation to Construction) to ensure individual mature trees are not adversely affected. Full arboriculture assessments may be required where trees could be affected by works on Site.

4.4. Biodiversity Net Gain (Baseline BIA)

- 4.4.1. Total on-Site baseline habitat units equate to 745.97 with a further 19.81 hedgerow units. It is deemed that with further enhancement of habitats, the Site's baseline units are likely to be increased.

Recommendations

- 4.4.2. As no current plans for development are proposed on-Site, only a BNG baseline is provided within this report. Broad enhancement/retention recommendations are made below, which will improve biodiversity units/reduce habitat unit loss on Site:

Lowland Acid Grassland

- 4.4.3. The above habitat passed three out of five criteria, largely due to failing essential criterion A (required to score higher than poor). Recommendations to increase the condition from poor to moderate could include the seeding of the area to increase the number of species representative of lowland acid grassland. A species mix such as Naturescapes N12 Acid Soils Meadow Mixture is recommended. Seeding of areas of bare ground would likely pass criterion C, ensuring retention of at least 1% coverage of bare ground across the habitat parcel. The above habitat supports a very high distinctiveness, for which any loss is deemed unacceptable. This habitat needs to be retained and not impacted in any way.

Modified Grassland

- 4.4.4. The above habitats passed five of seven criterion, failing essential criterion A, resulting in a poor condition. Recommendation to enhance this habitat and achieve a moderate condition could include, supplementary seeding using a flowering lawn mix, which can withstand close, regular mowing. A species mix such as Naturescapes N14 Flowering Lawn Mixture is recommended. The above habitat failed criterion E, with greater than 10% bare ground coverage. Seeding using the aforementioned seed mix, of some areas of bare ground would enable this criterion to be passed, provided that between 1 and 10% bare ground is retained across this habitat parcel.

Other neutral grassland

- 4.4.5. The poor condition other neutral grassland on Site passed four of six criteria, failing essential criterion A, resulting in a poor condition. Seeding with a N4 Summer Flowering Butterfly & Bee Meadow Mixture will allow this habitat to achieve moderate condition. Due to the presence of sub-optimal species, the above habitat failed criterion E. Removal of said species, inclusive but not limited to creeping thistle, spear thistle, dock, nettle and creeping buttercup would ensure that this criterion passes.

Traditional orchard

- 4.4.6. It is advised that traditional orchards, a high distinctiveness habitat, is retained and left free of any impacts, as any loss of this habitat will result in a significant loss of units and will require the same habitat in order to replace it.
- 4.4.7. The above habitat passed five of eight criteria to achieve moderate condition. A lack of veteran trees was noted, with very limited deadwood and sub-optimal ground flora. Veteranisation of existing trees could be achieved by creating wounds from saws, imitating natural damage caused by high winds, browsing herbivores, lightning strikes and fungal attacks. Such management should only be carried out by a contractor appropriately experienced in this process. This would also increase the level of deadwood present within this habitat, resulting in a pass of criterion B. Artificially accelerating the level of standing and fallen deadwood could be achieved by taking cut logs from other areas of the Site and fixing to existing trees or simply leaving on the ground within the above habitat. This would speed up the process of increasing

the level of deadwood present with subsequent natural deadwood to mature at a later stage. Due to the presence of species indicative of sub-optimal conditions, the above habitat failed criterion H. Removal of said species, inclusive but not limited to creeping thistle, spear thistle, dock, nettle and creeping buttercup would ensure that this criterion is passed. Seeding with a N4 Summer Flowering Butterfly & Bee Meadow Mixture is recommended as this will increase the ground flora diversity and maintain a pass for criterion G, whilst reducing the dominance of sub-optimal species.

Mixed scrub

- 4.4.8. The above habitat achieved poor condition, passing only one of five criteria. The below recommendations will allow the mixed scrub to increase from poor to moderate condition. It is recommended that grading the scrub to increase structural and age diversity, whilst ongoing management to maintain a good mixture of saplings, immature and mature shrubs, will likely pass criterion B, whilst clearing any non-native species such as rhododendron and cherry laurel will enable a pass of criterion C. It is recommended a well-developed edge is created with scattered scrub and tall grassland present, enabling a pass of criterion D. Creation of glades and rides within larger blocks of scrub will allow a pass of criterion E.

Other broadleaved woodland

- 4.4.9. As with traditional orchards, any loss of woodland on Site will result in a significant loss of units. Woodland habitats are a habitat that is very hard to replace due to the time it takes for woodlands to establish and reach the required condition.
- 4.4.10. The above habitat achieved a score of 28 out of 39 possible criteria, resulting in moderate condition. Achieving a good condition for the above habitat is likely difficult at this stage, however there are measures that could be adopted to ensure the overall improvement with a future goal of increasing to a good condition where possible. Although rhododendron and cherry laurel add to the aesthetics of the Site, these species can quickly outcompete native woodland and shrub species, reducing the suitability for native fauna and reducing the overall biodiversity value of the Site. Removal of the aforementioned species is proposed within the native woodland blocks, followed by planting of native woodland shrub species to increase the biodiversity value of the woodland. Native woody species, including but not limited to pedunculate oak, elder, hazel, whitebeam, beech, wild cherry, wayfaring tree (*Viburnum lantana*), spindle (*Euonymus europaeus*) and field maple (*Acer campestre*) can all be sought from Naturescape. Native woodland ground flora could be improved with supplementary planting within the woodlands. The N10 Woodland Meadow Mixture from Naturescape is recommended, which includes species that are all heavily shade tolerant.

Mixed woodland

- 4.4.11. Management options listed within recommendations for the broadleaved woodland (above) are also proposed within the mixed woodland on Site. In addition to these, for the areas of mixed woodland, the removal of non-native rhododendron, cherry laurel and Japanese knotweed are recommended. Japanese knotweed removal requires suitably licenced contractors working within the legal parameters of this species. EMEC Land Management are experienced in this process and would be able to assist with the removal of this invasive species.

Wood pasture and parkland

- 4.4.12. The above habitat achieved poor condition after passing three of five criteria. Increasing the level of deadwood, reducing impacts from human activities and appropriate management of ground flora surrounding trees are all options for increasing this habitat to moderate condition. Creation of standing and fallen deadwood is recommended to pass criterion D. This can be achieved as detailed in section 4.4.6. Ground flora should be allowed to grow with a reduced mowing regime enacted, which will increase the sward height, providing a varied structure across this habitat, beneficial to a wide range of faunal species. Wood pasture and parkland is a very high distinctiveness habitats for which any loss is deemed unacceptable. As such, this habitat is required to be retained and not impacted in any way.

Individual trees – poor condition

- 4.4.13. The above habitat achieved poor condition, passing two of six criteria. Retention of non-native species, where these are not outcompeting native species is recommended. Supplementary planting of native species to increase the number of natives to above 70% (native to non-native ratio) is recommended to enable a pass for criterion A. Planting of species of local provenance, including pedunculate oak, rowan, whitebeam, elder, beech, silver birch, Scots pine and birch are recommended. Achieving criterion D (provision of decaying wood) may not be possible due to health and safety concerns on-Site. Regular pruning is likely required to ensure limb drop do not impact the pedestrian movements across Site. However, artificially installing cut sections of logs to existing stands will not pose any direct risk health and safety and will be an effective and quick method for increasing the level of deadwood on Site. Creation of ecological niches may be possible with the provision of veteranisation of trees which are away from human activities. Note that said management options should only be undertaken by suitably experienced contractors, so that creation of appropriate habitat is achieved. Additionally, provision of bird and bat boxes would increase the ecological niches if installed within individual trees on Site. It is deemed that the above recommendations would increase the likelihood of achieving moderate condition for the individual trees on Site supporting poor condition.

Line of trees

- 4.4.14. The above habitat achieved moderate condition after passing four of six criteria. Recommendations to increase the condition to good, could include the creation of a six meter buffer on both sides of the tree line, free from anthropological activities. This is likely not possible where tarmac roads are present adjacent to this habitat, but should be sought where possible.

4.5. Species

Plants

Recommendations

- 4.5.1. Prior to the commencement of any proposed works on Site, a detailed botanical survey may be required to determine the presence and extent of additional invasive, protected or notable plant species. As Japanese knotweed was identified as a small stand within a larger area of woodland, it is unlikely this species will spread to any neighbouring land. However, it is strongly advised that this species is removed from the Site following appropriate

methodology. Any English bluebells should be retained and protected on Site, or translocated if works pose a direct threat to this species.

Birds

Recommendations

- 4.5.2. Any vegetation removal on Site, including trees and scrub, has the potential to damage and destroy active birds nest if works are undertaken during the bird nesting season (March to August inclusive).
- 4.5.3. Any required vegetation clearance, including removal, reduction, or pruning of any trees, hedgerows, scrub or shrubs, should be undertaken outside of the main bird nesting period, taken to be from March until August, inclusive. Should this not be possible, then a nesting bird check should be undertaken immediately (within 24 hours) prior to the clearance by a suitably experienced Ecologist. In the event that an active bird nest is identified; either by the Ecologist during the check or at any point during the works, then works should immediately cease and, if not present, the Ecologist contacted. The Ecologist will advise on a suitable buffer to be established around the nest, within which no works must take place until it is confirmed by the Ecologist that all young have fledged, and the nest is no longer active.
- 4.5.4. Where possible, trees and scrub should be retained within any proposals, or if this is not possible, then compensation of bird nesting and foraging habitat should be undertaken for the loss of this habitat. Retention of grassland and a reduced maintenance regime should be adopted to ensure foraging suitability of grassland bird species is enhanced / maintained.

Great crested newt

Recommendations

- 4.5.5. Works on Site in close proximity to waterbodies or suitable GCN terrestrial habitat could result in the destruction of his habitat and the killing or injuring on individual GCN.
- 4.5.6. All ponds on and within 500 m of the Site that are not considered to lie beyond significant barriers to dispersal should be subject to Habitat Suitability Index (HSI) assessments prior to the commencement of any future works. Dependant on the results of these assessments, environmental DNA (eDNA) surveys for great crested newt, to determine the presence or likely absence of this species on Site may be required. This type of survey involves the collection of water samples from the relevant waterbody, before sending the samples to a laboratory for analysis. Surveys for great crested newt eDNA can only be undertaken between 15th April and 30th June. Should the waterbodies test positive for great crested newt eDNA, then a suite of 'traditional' surveys may be required to determine population size class, as this is not possible from eDNA alone. This includes six surveys by suitably licensed ecologists using a range of techniques, such as searching vegetation for newt eggs, searching for newts within the waterbody using torchlight and trapping the waterbody for newts. If surveys result in GCN presence, a licence from Natural England may need to be sought to undertake any works that could impact waterbodies or terrestrial habitat.
- 4.5.7. If the HSI assessments and eDNA demonstrate the likely absence of GCN on Site, then the following Precautionary Method of Works (PMW) should be adhered to, to reduce the risk of killing or injury of individual GCN that may pass through the Site.

- The works should take place during the GCN breeding period (generally March – June, depending on local temperatures), when the species is most likely to be present within aquatic habitat, as opposed to terrestrial habitats such as those provided by the Site.
- Before works commence, all contractors will be made aware of the potential for GCN to be encountered during works.
- The working footprint will be kept to a minimum.
- If GCN are encountered at any time during works then all works must cease immediately until further advice is provided by a suitably licensed ecologist.
- In advance of works, habitats and potential refugia will be checked by a suitably licensed ecologist for great crested newt.
- Following the check, habitat degradation within working footprint will take place, to deter great crested newt from moving on to the Site. This must be maintained to prevent the Site becoming attractive to GCN during the works.
- Any brash or log piles will be dismantled methodically and by hand, taken out of the working area and used to create habitat piles in an undisturbed area of the Site.
- If vegetation clearance is undertaken during the active season, no more than two weeks prior to works commencing on Site, all vegetation within any working areas, where required, will be cut or removed using handheld machinery (i.e. strimmer, brush cutter, chainsaw) to a height of no less than 150 mm.
- The working area must be left for a minimum of two days to allow any newts that may be present to move out of the immediate area. A second cut using hand-held machinery (such as a strimmer or brush cutter) will be then carried out, to a height of 50 mm.
- The area will then be subject to hand searches for newts within the cleared areas. This must be completed by the suitably licensed ecologist, after vegetation strimming is completed and immediately prior to the commencement of works.
- Other amphibians encountered at any time during works will be moved to a safe location away from the works and placed within a similar habitat to which they were found.
- Any holes or trial pits associated with works will be covered overnight to prevent amphibians from becoming trapped within them. If holes must be left open, a means of escape, such as plank will be provided.

Reptiles

Recommendations

- 4.5.8. It is considered reptiles are unlikely to be present on Site despite its overall size, due to the limited suitable habitat present and a lack of nearby records. However, they are a mobile species and their presence cannot be entirely ruled out. Therefore, to reduce the risk of harm

to individuals of widespread reptile species that may pass through the Site during the works, PMW should be implemented. These should include:

- The works should take place when reptiles are likely to be active, outside of the hibernation period (taken to be from October to March, depending on local temperatures), to enable individuals to be able to move out of harm's way if present.
- Before works commence, all contractors will be made aware of the potential for reptiles to be encountered during works.
- The working footprint will be kept to a minimum.
- If reptiles are encountered at any time during works, then all works must cease immediately until further advice is provided by a suitably experienced ecologist.
- In advance of works any potential refugia will be checked by a suitably experienced ecologist for reptiles.
- Following the check, habitat degradation within working footprint will take place, to deter reptiles from moving on to the Site. This must be maintained to prevent the Site becoming attractive to reptiles during the works.
- Any brush or log piles will be dismantled methodically and by hand, taken out of the working area and used to create habitat piles in an undisturbed area of the Site.
- No more than two weeks prior to works commencing on Site, vegetation within any working areas, where required, will be cut or removed using handheld machinery (i.e. strimmer, brush cutter, chainsaw) to a height of no less than 150 mm.
- The working area must be left for a minimum of two days to allow any reptiles that may be present to move out of the immediate area. A second cut using hand-held machinery (such as a strimmer or brush cutter) will be then carried out, to a height of 50 mm.
- The area will then be subject to hand searches for reptiles within the cleared areas. This must be completed by the suitably experienced ecologist, after vegetation strimming is completed and immediately prior to the commencement of works.
- Any holes or trial pits associated with works will be covered overnight to prevent reptiles from becoming trapped within them. If holes must be left open, a means of escape, such as plank will be provided.

Bats

Recommendations – Roosting bats

- 4.5.9. Any works undertaken on buildings or trees could result in the destruction or disturbance of active bat roosts, or the killing or injuring of individual bats.
- 4.5.10. Should any works be proposed on Site to buildings, structures or trees, or should additional lighting be proposed, then direct or indirect impacts to bat roosts may result. As such, a PRA for bats will need to be undertaken of all the trees, buildings and structures to be affected.

The PRA would be undertaken both internally and externally, where access is permitted, and include the identification and assessment of the BRP of any Potential Roost Features (PRFs) present, in addition to a systematic search for any evidence of bats. Evidence looked for included live or dead bats, droppings, feeding remains, staining from fur oils and urine and scratch marks. Dependent on the BRP assigned to the PRFs, further nocturnal surveys may be required to determine the presence or likely absence of roosting bats, according to the Bat Conservation Trust Guidelines (Collins, 2016).

- 4.5.11. If bat roosts are identified during the presence/likely absence surveys, then an EPSL issued by Natural England may be required to enable the works to take place lawfully. Licences are usually only issued following the granting of full planning permission and discharge of all relevant planning conditions. EPSLs require survey data from the current or most recent survey season. Natural England generally suggest at least 30 working days for their assessment of a licence application; however this can be longer during busy periods.

Recommendations – Commuting and foraging bats

- 4.5.12. Any works undertaken to the woodlands, scattered trees and scrub on Site could result in the loss or severance of foraging and commuting route for bats.
- 4.5.13. Should any works be undertaken on Site that could result in the direct or indirect impact of foraging and commuting habitat for bats, such as woodland, scattered trees or scrub, it may be necessary to complete a suite of bat activity transects.
- 4.5.14. In line with best practice guidelines (Bat Conservation Trust, 2016) for sites with High suitability habitat for foraging and commuting bats, up to two survey visits per month (April to October) are recommended. At least one of the surveys should comprise a dusk and pre-dawn or dusk to dawn survey, undertaken within one 24-hour period. This should be in combination with the deployment of a static bat detector at three locations per transect, set to collect data on five consecutive nights per month.
- 4.5.15. Lighting on Site prior to, during, and on completion of construction and into the operational phase, should be kept to a minimum to reduce the likelihood of disturbance to crepuscular and nocturnal fauna within and adjacent to the Site. Any lighting proposed should be designed sensitively to wildlife, following the guidance set out in Bats and Artificial Lighting in the UK (Bat Conservation Trust and Institute of Lighting Professionals, 2018) and should include (but is not limited to):
- No lighting of or lighting directed at the on-Site or off-Site buildings, trees or hedgerows.
 - Any external security lighting should be set on motion-sensors and short (<1 minute) timers.
 - LED luminaires should be used, with a warm white spectrum (<2700 Kelvin) to reduce the blue light component and with wavelengths higher than 550 nm.
 - Column heights should be carefully considered to minimise light spill and only luminaires with an upward light ratio of 0% and with good optical control should be used.

Badger

Recommendations

- 4.5.16. Ground works undertaken in suitable badger sett digging habitat such as woodland, grassland and scrub could result in the damaging or destruction of active badger setts or the killing or injuring of individual badgers.
- 4.5.17. Further survey for badger should be undertaken across the Site prior to the commencement of any proposed works, to determine the location and status of any badger setts that may be present. The survey will ideally be undertaken during winter/spring before herbaceous vegetation has grown tall and may potentially obscure evidence of badger activity.
- 4.5.18. If the survey confirms that an active badger sett is present within 30 m of any proposed works and it is not possible to redesign the proposals to avoid impacts to the sett, then a licence from Natural England may be required to close the sett. The licensed closure of badger setts can only be undertaken between July to November inclusive.
- 4.5.19. If badger setts are found, but are more than 30 m away from any proposed works, and where these works do not include piling which would require a 50 m buffer, no licence will be required. However, the PMW below are recommended to avoid risk of entrapment or injury of badgers that may pass through the Site during the construction phase:
- Contractors will be made aware of the potential presence of badger on Site.
 - No open trenches, pits, holes or any other excavation which has the capacity to entrap badgers or other wildlife will be left open overnight. Excavations will be backfilled or completely covered at the end of each day.
 - If it is not possible to backfill or cover any excavations and they must be left open, a means of escape must be provided to allow any animals which may fall in to escape on their own. This can be achieved by placing a suitably sized plank of wood in the hole, ensuring that the top of the plank extends out of the hole, which will allow animals to climb out.
 - If a mammal hole is identified within 30 m of the works, works must cease and the hole must be inspected by a suitably experienced ecologist to assess the likelihood of impacts to badger prior to works continuing.
 - Cutting tools will not be left in on Site where they might injure animals.
 - If badgers are encountered during works, all works must cease immediately until the badgers have left the area of their own accord.

Terrestrial invertebrates

Recommendations

- 4.5.20. If any works result in the loss of habitat such as mature trees, grassland or scrub, it may be necessary to undertake surveys for terrestrial invertebrates. The requirement for further survey can be determined once detailed plans for the Site are known.

- 4.5.21. Habitats suitable for terrestrial invertebrates should be retained where possible, including areas used for sheltering such as dead wood and habitat piles and larval food plants, such as elm species for white-letter hairstreak.

Additional SPI

Recommendations

- 4.5.22. If any new fencing is proposed as a result of future works on Site, hedgehog highways should be installed in these fences. This involves created a 13x13 cm gap at the base of the fence to allow the movement of hedgehogs. This could also be implemented in any existing fencing on Site.
- 4.5.23. Any vegetation removal works, specifically to scrub, could result in the loss of hedgehog sheltering, hibernating, foraging and commuting habitat or result in the killing or injuring of individual hedgehogs.
- 4.5.24. Contractors will be made aware of the likely potential presence of the above species, including European hedgehog on Site. Vegetation clearance, reduction and pruning will be undertaken with care to avoid disturbance to sheltering or hibernating animals. Any debris from works will not be left on Site and any holes, trenches or trial pits associated with works will be covered overnight or fitted with egress boards to prevent animals becoming trapped. Any hedgehogs found within the works area during construction will be carefully relocated to a sheltered location with plenty of vegetation cover, in an area off Site or within the Site away from the works and that will remain undisturbed.

5. Enhancement

5.1. Enhancement proposals

5.1.1. Specific enhancement recommendations on Site will be dependent upon the Site proposals and the completion of the baseline BIA. However, general enhancements are provided below that would be beneficial to wildlife using the Site. It should be noted that the below measures should still take into account protected species that may already be supported by the Site. For instance, new features should not be added to a tree with BRP via veteranisation without consultation with a suitable qualified Ecologist, as this in itself could disturb, damage or destroy an existing bat roost or an active bird nest.

- A variety of bat boxes could be installed on mature trees and buildings throughout the Site. These could include the Beaumaris Woodstone Bat Box for buildings or the Improved Crevice Bat Box for trees, both of which can be found at www.nhbs.com. These should be installed at a height of 4 m, on south and west facing aspects, with a clear line of sight to the box, this is especially important on trees. The boxes should be placed in groups of two or three on different aspects and away from any artificial lighting.
- A variety of bird boxes could be installed on mature trees and buildings throughout the Site. These could include Vivara Pro Seville 28mm and 32mm WoodStone Nest Boxes on trees and Vivara Pro WoodStone House Sparrow and Swift boxes on buildings, all of which can be found at www.nhbs.com. The standard nest boxes should be placed on trees at height of 3 m on north and east facing aspects with a clear line of sight to the box. These boxes should be placed at least 20 m apart. The house sparrow boxes should be placed at a height of 4 m on buildings on north and east facing aspects and close to woodland or scrub. Two or three of these boxes can be placed in close proximity. The swift boxes should be placed at the eaves of buildings at a minimum height of 4 m on north and east facing aspects. Three or four of these boxes should be placed in close proximity.
- Hedgehog boxes, such as the Hedgehog Nest Box from www.nhbs.com could be installed across the Site. These should be placed in the bottom of hedgerows and scrub and in woodland margins, away from busy roads, at least 50 m apart.
- Mature trees within the woodlands could be veteranised to improve the trees for roosting for bats and invertebrates. This is achieved by the controlled damaging of mature trees to increase the rate at which cavities and other features beneficial to wildlife form on a tree.
- Variety of invertebrate hotels such as the National Trust Apex Insect House from www.nhbs.com could be installed across the Site. These should be placed on south facing aspects that receive full sunlight throughout the year and are close to a variety of habitats including wildflower meadows, woodland and scrub.
- Creation of additional green-roofs where possible will utilise ecologically devoid areas, offering a range of habitat structures which will benefit invertebrate species and in turn, species of bird. Further advice should be sought from EMEC Ecology, prior to the planning of any green or brown roof on Site.

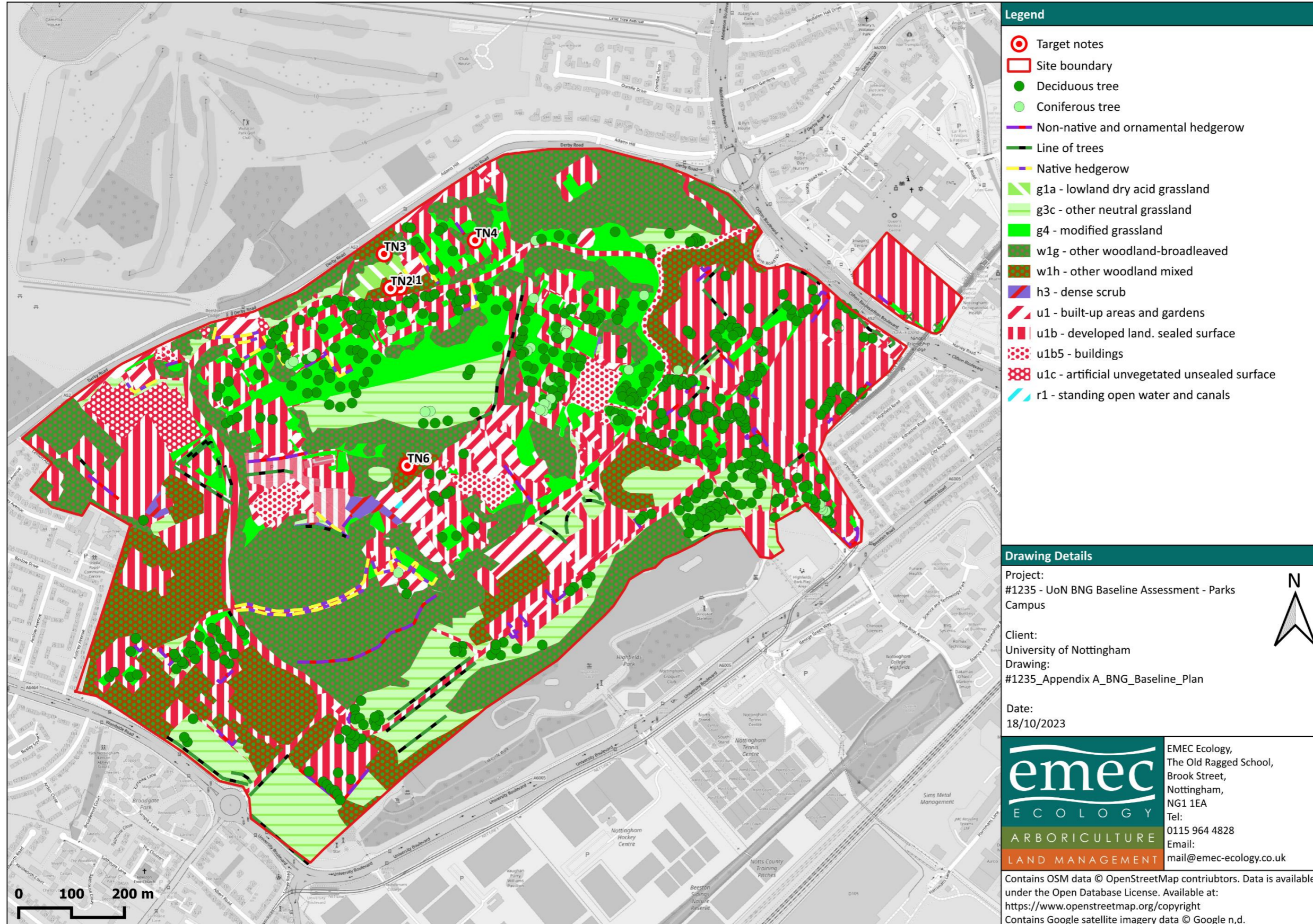
References

- British Standards Institution (2013). *BS 42020:2013 Biodiversity: Code of practice for planning and development*. British Standards Institution, London.
- British Standards Institution (2022). *BS 42021:2022 Integral nest boxes – Selection and installation for new developments – Specification*. British Standards Institution, London.
- Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). *The UK Habitat Classification User Manual Version 1.1*. Accessible at: <https://ukhab.org/>.
- Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). *UK Habitat Classification – Habitat definitions V1.1*. Accessible at: <https://ukhab.org/>.
- CIEEM (2017a). *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2017b). *Guidelines for Preliminary Ecological Appraisal 2nd Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2020). *Guidelines for Accessing and Using Biodiversity Data in the UK* Chartered Institute of Ecology and Environmental Management, Winchester.
- CIEEM (2021). *Biodiversity Net Gain Report and Audit Templates* Chartered Institute of Ecology and Environmental Management, Winchester, UK.
- Collins, J. (ed.) (2023). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (4rd Edition)*. The Bat Conservation Trust, London.
- English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.
- Institute of Lighting Professionals (2018). *Bats and artificial lighting in the UK*. The Bat Conservation Trust, London.
- Joint Nature Conservation Committee (JNCC) (2010). *Handbook for Phase 1 Habitat Survey: a technique for environmental audit*. JNCC, Peterborough.
- MAGIC Site Check Report [online]. Accessible at: www.magic.gov.uk.
- Ministry of Housing, Communities and Local Government (February 2021). *National Planning Policy Framework*, London.
- Natural England (2021). *The Biodiversity Metric 3.1 (JP039)* [online]. Accessible at: <http://publications.naturalengland.org.uk/publication/6049804846366720>.
- Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). *Evaluating the suitability of habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal 10 (4), 143-155.
- Stace, C. A. (2019). *New Flora of the British Isles*. Fourth Edition. C&M Floristics.
- Stanbury, A., Eaton, M., Aebischer, N., Balmer, D., Brown, A., Douse, A., Lindley, P., McCulloch, N., Noble, D. and Win, I. (2021). *The status of our bird populations: the fifth Birds of Conservation Concern*

in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. British Birds 114.

UKHab (2020). *UK Habitat Classification Basic Edition: Suggested Symbology for Maps.*

Appendix A: UK Habitat Plan



Legend

- ⊙ Target notes
- Site boundary
- Deciduous tree
- Coniferous tree
- Non-native and ornamental hedgerow
- Line of trees
- Native hedgerow
- g1a - lowland dry acid grassland
- g3c - other neutral grassland
- g4 - modified grassland
- w1g - other woodland-broadleaved
- w1h - other woodland mixed
- h3 - dense scrub
- u1 - built-up areas and gardens
- u1b - developed land, sealed surface
- u1b5 - buildings
- u1c - artificial unvegetated unsealed surface
- r1 - standing open water and canals

Drawing Details

Project:
#1235 - UoN BNG Baseline Assessment - Parks Campus

Client:
University of Nottingham

Drawing:
#1235_Appendix A_BNG_Baseline_Plan

Date:
18/10/2023



emec
ECOLOGY
ARBORICULTURE
LAND MANAGEMENT

EMEC Ecology,
The Old Ragged School,
Brook Street,
Nottingham,
NG1 1EA
Tel:
0115 964 4828
Email:
mail@emec-ecology.co.uk

Contains OSM data © OpenStreetMap contributors. Data is available under the Open Database License. Available at: <https://www.openstreetmap.org/copyright>
Contains Google satellite imagery data © Google n.d.

Appendix B: Categories for Assessing Bat Roost Potential¹⁴

Bat Roost Potential Level	Roosting Habitats	Foraging and Commuting Habitats
Confirmed	Evidence of roosting bats in the form of bats, bat droppings, urine stains, grease marks and scratch marks	N/A
High	A structure or tree with one or more potential roosting sites that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	<p>Continuous high quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.</p> <p>High quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats, such as broadleaved woodland, tree-lined watercourses and grazed parkland.</p> <p>Site is close and connected to known roosts.</p>
Moderate	A structure or tree with one or more potential roosting sites that could be used by bats due to their size, shelter, protection, conditions, and surrounding habitat but unlikely to support a roost of high conservation status.	<p>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.</p> <p>Habitat that is connected to the wider landscape that could be used by bats for foraging, such as trees, scrub, grassland or water.</p>
Low	<p>A structure with one or more potential roosting sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitats to be used on a regular basis or by a larger number of bats (i.e. unlikely to be suitable maternity or hibernation).</p> <p>A tree of sufficient size and age to contain potential roosting features but with none seen from the ground, or feature seen with only very limited roosting potential.</p>	<p>Habitats 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.</p> <p>Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</p>
Negligible	No features on site likely to be used by roosting bats	No features on site likely to be used by commuting or foraging bats.

¹⁴ Collins (2016)

Appendix C: Legislative Information

Receptor	Legislation	Offences
Badger	Protection of Badgers Act 1992	<p>Wilfully kill, injure or take a badger.</p> <p>Intentionally or recklessly damage, destroy or obstruct access to a badger sett. Disturb a badger in its sett.</p> <p>It is not illegal to carry out disturbance activities in the vicinity of setts that are not occupied.</p>
Bats	Conservation of Habitats and Species Regulations, 2017 (as amended)	<p>Deliberately capture, injure or kill a bat.</p> <p>Deliberate disturbance of bats.</p> <p>Damage or destroy a breeding site or resting place used by a bat.</p> <p>The protection of bat roosts is considered to apply regardless of whether bats are present.</p>
	Wildlife and Countryside Act 1981 (as amended) ⁴ S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.
Birds	Wildlife and Countryside Act 1981 (as amended) ⁴	<p>Intentionally kill, injure or take any wild bird.</p> <p>Intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built.</p> <p>Intentionally take or destroy the nest or eggs of any wild bird.</p> <p>Schedule 1 species Special penalties are liable for these offences involving birds on Schedule 1 (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover).</p> <p>Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.</p>
Great Crested Newt	Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	<p>Deliberately capture, injure or kill a great crested newt.</p> <p>Deliberate disturbance of a great crested newt.</p> <p>Deliberately take or destroy its eggs.</p> <p>Damage or destroy a breeding site or resting place used by a great crested newt.</p>
	Wildlife and Countryside Act 1981 (as amended) ⁴	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a great crested newt in such a place.
Hedgerows	Hedgerows Regulations 1997	Intentionally or recklessly remove or permits another person to remove an important hedgerow.

Receptor	Legislation	Offences
Non-native Invasive Plants	Wildlife and Countryside Act 1981 (as amended)	Allow to grow or spread in the wild, any plant included in Part II of Schedule 9 of the Act.
Otter	Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019	Deliberately capture, injure or kill an otter. Deliberate disturbance of otters. Damage or destroy a breeding site or resting place used by an otter.
	Wildlife and Countryside Act 1981 (as amended) ⁴	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an otter in such a place.
Protected Plants	Wildlife and Countryside Act 1981 (as amended)	Intentionally pick, uproot or destroy the wild plant.
Reptiles	Wildlife and Countryside Act 1981 (as amended) ⁴	Intentionally kill or injure any common reptile species.
Water Vole	Wildlife and Countryside Act 1981 (as amended) ⁴	Intentionally kill, injure or take water voles. Intentionally or recklessly damage, destroy or obstruct access to any structure or place used by a water vole for shelter or protection. Disturb a water vole in such a place.
Wild Mammals	Wild Mammals (Protection) Act 1996	Intentionally inflict unnecessary suffering to any wild mammal.
Species and Habitats of Principal Importance	Natural Environment & Rural Communities Act 2006 S.40 (which superseded S.74 of the Countryside & Rights of Way Act 2000).	N/A, however public bodies have a duty to regard species and habitats of principal importance in their policy or decision making.

Site Designation	Legislation	Protection
Special Area of Conservation (SAC)	Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019.	Planning controls are effected through Part 2 of the Conservation of Habitats and Species regulations 2017 (Reg 21) and Part 6 (Regs 61- 67).
Special Protection Area (SPA)	EC Directive on the conservation of natural habitats and of wild fauna and flora (92/42/EEC). EC Directive on the conservation of wild birds (79/409/EEC).	

Wetland of International Importance (Ramsar site)	Convention on Wetlands of International Importance especially as Waterfowl Habitat 1971 (the Ramsar Convention).	The legislation for the Site of Special Scientific Interest which will underpin each designation also applies. These sites are given protection through policies in Local Development Plans.
National Nature Reserve	National Parks and Access to the Countryside Act 1949. Wildlife and Countryside Act 1981.	It is an offence to carry any potentially damaging operation.
Site of Special Scientific Interest (SSSI)	Wildlife and Countryside Act 1981 (as amended)	It is an offence to carry out or permit to be carried out any potentially damaging operation. SSSIs are given protection through policies in Local Development Plans.
Local Nature Reserve (LNR)	National Parks and Access to the Countryside Act 1949	LNRs are given protection through policies in Local Development Plans.
Local Sites	There is no statutory designation for Local Sites.	Local Sites are given protection through policies in Local Development Plans.