OXFORDSHIRE
STRATEGIC RAIL FREIGHT INTERCHANGE

DCO Submission

Environmental Statement

Chapter 6: Ecology including Arboriculture
Appendix 6.1: Ecological Appraisal Report

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On behalf of
Oxfordshire Railfreight Limited

Prepared by FPCR Ltd.
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ES6.1: Ecological Appraisal Report

Client

Oxfordshire Railfreight Limited

Project

Ardley, Oxfordshire Strategic Rail Freight Interchange (OxSRFI)

Date

~~March~~ October 2026

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1.0 NON-TECHNICAL SUMMARY

Oxfordshire Railfreight Ltd. commissioned FPCR Environment and Design Ltd. to undertake an ecological appraisal of land south of Ardley, proposed for the construction of a Strategic Rail Freight Interchange and associated infrastructure.

The study aims were to identify the habitats and species present within the Application Site and, where relevant, the wider area influenced by the proposals, to assess features of ecological value and the potential constraints to, and anticipated impacts resulting from the development. A further aim was to highlight opportunities for mitigation, compensation and enhancement within the scheme's design to help avoid or minimise any negative effects on biodiversity.

A series of ecological surveys were carried out across the site to support this assessment. The findings are summarised in this report, with detailed methodologies and results for protected and notable species provided in the accompanying appendices.

From the outset, the scheme has been designed with ecology and landscape in mind, embedding biodiversity net gain principles in order to minimise losses of priority habitats and identify opportunities for ecological enhancement.

Habitat losses will be mitigated through the creation and enhancement of high-value habitats. The proposals will deliver extensive green infrastructure, including species-rich grasslands, calcareous grassland, deciduous woodland, scrub and wetlands suitable to support priority fauna and that will link to habitat features in the wider landscape, thereby providing corridors for wildlife movement and supporting the wider conservation goals of the Ardley and Heyford Conservation Target Area. The development will furthermore contribute to the biodiversity objectives of the Ardley Cutting and Quarry SSSI by creating limestone exposures and calcareous grassland suitable to sustain priority butterfly species, and by enhancing breeding opportunities for great crested newts.

Construction will be managed in line with best practice and licensing requirements to protect protected species, with appropriate long-term management to ensure that the biodiversity value of habitats is prioritised.

In summary, the proposals will deliver a robust ecological framework that connects with the wider landscape, supports biodiversity targets, and provides lasting benefits for a wide range of species, including those of conservation importance.

2.0 INTRODUCTION

2.1 The following Ecological Appraisal Report has been prepared by FPCR Environment and Design Ltd. (FPCR) on behalf of Oxfordshire Railfreight Ltd. to support a planning application for the construction of a Strategic Rail Freight Interchange (SRFI) at Ardley, Bicester (central OS grid reference SP533263), herein referred to as 'the Application Site'.

Development Proposals

2.2 Full details of the Proposed Development are provided separately in the Environment Strategy (ES) Chapter 2: Proposed Development, however in brief, the Proposed Development consists of the following:

- Construction of an intermodal freight terminal and associated infrastructure;
- Construction of warehousing and ancillary buildings;
- New road infrastructure and improvement works to the existing road network, and related traffic management measures;
- Strategic landscaping and tree planting to provide screening and improve habitat connectivity;
- New foot and cycle links and associated sustainable drainage;
- Earthworks and demolition of some existing structures within the Main Site, and
- Renovation and change of use of retained residential and agricultural buildings.

Site Location and Context

2.3 The Application Site, as defined by the Order Limits (Figure 1), is located south and south-east of Ardley. The SRFI with associated infrastructure and industrial units including the proposed Heyford Park Link and Secondary Site Access to the west is collectively referred to as the 'Main Site', and new highways links and highways improvements as the 'Highway Works Areas'.

2.4 The Main Site is located between the B430 to the east, and the former RAF Upper Heyford airfield to the west and lies immediately south of the Chiltern Railway line. This area encompasses Ashgrove Farm and a Biffa 'In Vessel Compositing' facility and is dominated by arable and neutral grassland field compartments with hedgerows trees, scrub and neutral grassland at the field margins. Other habitats present include stands of plantation broadleaved woodland, lowland calcareous grassland, coniferous woodland, scrub, ephemeral vegetation, tall forbs, small waterbodies, and a section a tributary of Padbury Brook to the northwest, Ashgrove Brook (a tributary of the Gagle Brook) through the centre of the Main Site. Habitats associated with the farmstead include buildings, modified grassland, introduced shrub, bare ground, hardstanding and unsealed surfaces.

2.5 The proposed rail track connections to the northeast and northwest of the Main Site cut through the linear Ardley Cutting and Quarry Site of Special Scientific Interest (SSSI) that extends along the Chiltern Railway line at this point and encompasses rail track embankment habitats to the north and south, in addition to Ardley Wood Quarry Berks, Bucks and Oxon Wildlife Trust (BBOWT) Nature Reserve to the north of the rail tracks.

2.6 The Highways Works Areas primarily comprise works centred around Junction 10 of the M40 to the northeast of the Main Site and Chiltern Railway, construction of Ardley Bypass and Principal Site Access to the immediate north-east of the Main Site and crossing the Chiltern Railway line, and Middleton Stoney Relief Road to the southeast of the Main Site. Existing habitats within these areas are characterised by arable fields bound by native hedgerows with some tree planting associated with the screening of the current highways infrastructure. Other habitats present include scrub, balancing ponds, neutral grassland

road verges, and in the case of the route of the proposed Middleton Stoney Relief Road, linear woodland alongside the B4030 and a section of Gagle Brook and associated riverine tree corridor.

2.7 A field compartment north of the route of the Middleton Stoney Relief Road and west of Gagle Brook is proposed for habitat enhancement as part of the overall biodiversity net gain strategy.

2.8 Surrounding land use is largely dominated by arable land with planted tree groups associated with screening functions of highways infrastructure, and agricultural fields that extend from the southern boundary and form much of the surrounding landscape. The Viridor Ardley Energy Recovery Facility ('Viridor ERF'), Valencia Waste Management Facility and Ardley Landfill Site lie to the east of the Main site to the opposite side of the B430, with an active minerals quarry (Ardley/Dewars Farm Quarry) located to the south of the waste facilities.

Report Aims and Objectives

2.9 The main objectives of the study were to determine habitats and species present within the Application Site, and where relevant the wider area (taking into account 'Zones of Influence[1]' (ZoI)) and assess their ecological value and any potential ecological constraints to or impacts anticipated as a result of the development proposals. Additional objectives were to identify opportunities for mitigation, compensation and enhancement within the development design appropriate to avoid or otherwise minimise potential ecological impacts.

2.10 To inform this assessment, a suite of ecological surveys has been undertaken across the Application Site. The results of these surveys are discussed where relevant within this report, with details of protected/notable species survey methodologies and results included in the following separate, appended reports:

- Ardley Cutting and Quarry SSSI Botanical Survey Report (Appendix ES6.2, FPCR, 2025);
- Bat Survey Report (Appendix ES6.3, FPCR, 2026);
- Great Crested Newt Survey Report (Appendix ES6.4, FPCR, 2026);
- Bird Survey Report (Appendix ES6.5, FPCR 2026);
- Badger Survey Report (Confidential Report) (Appendix ES6.6, FPCR, 2026);
- Butterfly Survey Report (Appendix ES6.7, FPCR, 2025),
- Arboricultural Assessment (Appendix ES6.8, FPCR 2026)
- Biodiversity Net Gain Report (Appendix ES6.9, FPCR 2026).
- Shadow Habitat Regulations Assessment (Appendix ES6.10, FPCR 2026)

Letter of No Impediment Agreement (LONI)

2.11 Natural England has been consulted with regard to potential impacts to protected sites and fauna and proposed mitigation strategies as part of their DAS consultation process. The initial consultation resulted

[1] The 'zone of influence' is the area over which important ecological features (on-site or off-site) may be affected as a result of a proposed development and associated activities. The extent of a ZOI can vary for different ecological features, dependant on the sensitivity of each to environmental change.

in a LONI for protected species (GCN and badger) being issued on 01/02/23 based on the development proposals current at the time and prior to the scheme being placed temporarily on hold.

2.12 Natural England have subsequently confirmed[2] that the LONI has no expiration date providing survey data is maintained up to date and that any such updates align with the results previously submitted to Natural England during their initial assessment and granting of the LONI.

2.13 A LONI for bats was issued by Natural England on 30/04/26 that confirmed that "*on the basis of the information and proposals provided, Natural England sees no impediment to a licence being issued, should the DCO be granted*".

~~2.12~~2.14 Consultation with Natural England has been resumed. The final details of the mitigation provision will be subject to their agreement, including the provision of appropriate mitigation of the loss of embankment habitats from within the SSSI and protected species mitigation to be secured via appropriate licencing.

3.0 LEGISLATION AND POLICY

3.1 This report has been prepared to establish an Ecological Baseline and to conduct an Ecological Impact Assessment of Important Ecological Features as informed by relevant international, national and local legislation and policy.

3.2 The national policy and legislation most relevant to this assessment include:

- The Conservation of Habitats and Species Regulations 2017 (CHSR) (as amended) in relation to the European Protected Species (EPS) great crested newt *Triturus cristatus* (GCN) and bats (all species); and European protected sites i.e. Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Internationally protected "Ramsar Sites" (collectively known as "National Site Network site" following the UK's exit from the EU). Annex II bat species of particular relevance in relation to SACs designated for bats.
- The Wildlife and Countryside Act 1981 (WCA) (as amended) in relation to all wild birds (including Schedule 1 species), other animals (notably Schedule 5 species), flora (those listed in Schedules 8 and 9) and SSSIs;
- The Environment Act 2021 which covers a range of environmental protections and enhancements including requiring developments to demonstrate a biodiversity net gain following publication of secondary legislation;
- Protection of Badgers Act (PBA) 1992 which protects badgers from killing or harm;
- Natural Environmental and Rural Communities (NERC) Act 2006 in relation to various priority species and habitats;
- Hedgerow Regulations 1997 made under Section 97 of the Environment Act 1995;
- National Planning Policy Framework (NPPF) 2024 which sets out the Governments planning policy for England including measure to conserve and enhance the natural environment by protecting and enhancing value landscapes, recognising the value and wider benefits of natural capital and minimising impacts/providing net gains for biodiversity;
- Local Nature Reserves (LNR) as designated most recently by the NERC Act 2006;
- Non-statutory protected local sites including County Wildlife Sites (CWS), Sites of Importance for Nature Conservation (SINC), Local Wildlife Sites (LWS) and Ancient Woodland Inventory (AWI) sites;

[2] Via email received 30.01.25.

- Local Biodiversity Action Plans (LBAP); and
- British Trust for Ornithology's (BTO) Birds of Conservation Concern (BoCC).

3.3 At a County level, priority sites, habitats and species are identified within guidance jointly produced by the Berks, Bucks and Oxon Wildlife Trust (BBOWT), Oxfordshire County Council (OCC) and the Thames Valley Environmental Records Centre (TVERC)[3].

4.0 METHODOLOGY

Desktop Study

4.1 In order to compile existing baseline information, relevant ecological information was obtained from:

- TVERC (most recently: March 2025);
- Defra Multi Agency Geographic Information for the Countryside (MAGIC) website[4], and
- NBN Atlas[5]

4.2 In addition, the following resources were interrogated for additional information and context:

- Colour 1:25,000 OS base maps[6]; and
- Aerial photographs from Google Earth[7].

4.3 The geographical extent of the search area for biodiversity information was related to the significance of sites and species and potential zones of influence as follows:

- 15km around the Application Site for sites of International Importance (e.g. SACs, SPAs, and Ramsar sites);
- 2km around the Application Site for statutory sites of National or Regional Importance (e.g. SSSIs and National Nature Reserves), and bat records from within the last 20 years, and
- 1km around the site for non-statutory designated sites of County Importance (e.g. Sites of Importance for Nature Conservation (SINC)/Local Wildlife Sites (LWS) and protected or otherwise notable species records from within the last 20 years, including species of Principal Importance under S41 of the NERC Act 2006.

[3] BBOWT, OCC and TVERC 2014. Biodiversity and Planning in Oxfordshire. Available at: https://www.oxfordshire.gov.uk/sites/default/files/file/countryside-access/wholedocument.pdf [Accessed 24.08.25].
[4] www.natureonthemap.naturalengland.org.uk/MagicMap.aspx [Accessed 24.08.25].
[5] https://nbnatlas.org [Accessed 20.01.26].
[6] www.ordnancesurvey.co.uk [Accessed 24.08.25].
[7] www.maps.google.co.uk [Accessed 24.08.25].

Field Survey

UKHab Survey

4.4 A field survey was conducted on 10.06.25-11.06.25 and 17.06.25-18.06.25 by an experienced botanist with a Field Identification Certificate (FISC) level 3. Survey methods broadly followed the UK Habitat Classification System[8] (UKHab) to map habitats present onsite. This involved a systematic walk over of the Application Site to classify the broad habitat types and identify any Habitats of Principal Importance (HPI) for the conservation of biodiversity as listed within Section 41 (S41) of the NERC Act 2006. Habitats were broadly mapped in the field using a detailed topography map produced for the scheme using pens or pencils as appropriate.

4.5 Where feasible, target notes and species lists were compiled for individual areas and assessments of abundance were made using the DAFOR scale. Vascular plant nomenclature follows Stace (2010)[9]. Whilst the species lists collected should not be regarded as exhaustive, sufficient information was gained during the survey to enable classification and assessment of broad habitat types and identify features likely to be of interest.

4.6 The survey was extended to assess the suitability of habitats and other features to support protected and notable fauna species.

4.7 The section of the Application Site located within the Ardley Cutting and Quarry SSSI and adjacent habitats were subject to detailed habitat survey on 03.07.25-04.07.25 by an experienced (FISC level 5) botanist from FPCR. Full details of this survey are provided in the and Ardley Cutting and Quarry SSSI Botanical Survey report (ES6.2, FPCR, 2025).

4.8 A veteran tree survey and assessment was undertaken on 30th June 2026 by an experienced arboriculturist from FPCR in accordance with guidance contained within British Standard 5837:2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter referred to as BS5837). Trees were reviewed in accordance with both the NPPF definition for veteran trees and the lower threshold set by The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024. Only those trees identified for removal as part of the Proposed development were subject to the latter assessment. As such the resulting list identifies impacted trees but should not be viewed as an exhaustive list of BNG veterans on-site.

Previous Surveys

~~4.7~~4.9 Prior to the June 2025 UKHab survey the majority of the Application Site[10] had previously been subject habitat survey by ecologists from FPCR on several occasions since 2018, the most recent of which are summarised below:

- Survey of the Main Site on 17.05.21-18.05.21 by an experienced botanist with FISC level 4.
- Survey of the Highway Works Areas on 28.06.21-29.06.21 and 11.08.21-12.08.21, with additional areas subsequently incorporated into the revised Order Limits surveyed on 15.09.22 (all FISC level 4 surveyor).

~~4.8~~4.10 Survey of the SSSI habitats within the Application Site and adjacent on 15.06.22-17.06.22 (FISC level 6 surveyor).

Hedgerows

[8] Butcher, B., Edmonds, B., Norton, L., and Treweek, J. (n.d.). The UK Habitats Classification System V2. UKHab. Retrieved July 26, 2024, from https://ukhab.org/

[9] Stace, C.A. (2010). New Flora of the British Isles. (3rd Ed.). Cambridge: Cambridge University Press

[10] The exceptions being relatively minor additional sections subsequently added to the Order Limits in association with the Highway Works Areas.

~~4.9~~4.11 Hedgerows were assessed in accordance with the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997 to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and Defra guidance[11] .

~~4.10~~4.12 An assessment of the archaeological importance of hedgerows as defined under the Act is outside the scope of this assessment.

River Condition Analysis / Morph survey

~~4.11~~4.13 Watercourse sections encompassed within the Application Site and adjoining sections were subject to a habitat survey on 10.06.25-11.06.25 during low / normal flow conditions with weather conditions being cloudy but dry throughout the survey. Three watercourses were subject to survey: i) a tributary of Padbury Brook that runs west to east from Kennel Copse Woods to Junction 10 of the M40, with two sections present in the north of the Site; ii) a section of Gagle Brook that runs north to south in the southeast of the Site, across the proposed route of the Middleton Stoney Relief Road and through Burntclose Copse and crossing the B4030; and iii) a tributary of Gagle Brook (Ashgrove Brook) that runs south through the Main Site from two sources in the northeast.

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~~4.12~~4.14 To inform a Biodiversity Net Gain (BNG) assessment the survey methodology incorporated a River Condition Assessment (RCA) by an experienced ecologist accredited for undertaking Modular River Physical Survey (MoRPh) field surveys. The number of MoRPh sections, and subsequently the length of each watercourse, surveyed varied for each watercourse due to the length of watercourse within and adjacent to the Site.

~~4.13~~4.15 The survey of each MoRPh included an assessment of any aquatic habitats or associated features that might be impacted by the Scheme. All surveys points were sampled by working downstream.

~~4.14~~4.16 The desk top survey component of the survey to determine river type (including a measurement of the sinuosity and elevation of each watercourse) was undertaken on 12.06.25.

~~4.15~~4.17 A summary of the RCA MoRPh sections is provided in Table 1.

Table 1: RCA MoRPh Sections Parameters

River Section	Length within Site boundary	Number of MoRPh5 sections	MoRPh5 ref	Survey Bank	Watercourse width	MoRPh survey length	Total length of river surveyed
Padbury Brook Tributary	c.730m	5	KC-A to KC-C J10-A to J10-B	Largely right bank (J10-B left bank)	<5m	10m	250m
Gagle Brook	c.1,370m	7	GB-A to GB-G	Largely right bank (C, D and F left bank)	<5m	10m	350m
Tributary of Gagle Brook	c. 2,550m	10	ToGB-A to ToGB-I TAG	Largely right bank (A, b and TAG both banks)	<5m	10m	500m

Invasive Plants, Notifiable Weed Species and Other Notable Flora

[11] Defra 2007. *Hedgerow Survey Handbook. A standard procedure for local surveys in the UK*. 2nd Edition. Defra, London.

4.164.18 Consideration was given to the presence of non-native invasive species listed on Schedule 9 of the WCA 1981 (as amended) and the presence of any notable weeds including those covered under the Weed Act 1959 (where population is significant enough to be considered injurious).

Fauna

4.174.19 Following the initial assessment of the Application Site for protected/notable species potential, a series of further surveys were completed, the most recent of which were undertaken in 2025.

4.184.20 An overview of the targeted species surveys is provided below, with further Information on the survey methodologies employed for bats, GCN, breeding birds, wintering birds, and butterflies detailed within the relevant species reports (Appendices ES6.3 to ES6.7).

Bats

4.194.21 A suite of bat surveys was undertaken across the site in 2025 ~~(with nighttime walkovers, static detector surveys and trapping surveys still continuing)~~ that included:

- Internal/external building inspections;
- Nocturnal surveys of buildings;
- Hibernation survey of the farmhouse cellar;
- Ground based and aerial assessment of trees;
- Nocturnal surveys of on-site buildings and of target trees inaccessible for aerial survey;
- Nighttime walkover (flightpath and transect) surveys;
- Static detector surveys, and
- A targeted trapping survey using mist nets and harp traps.

4.204.22 The above surveys were informed by fieldwork previously undertaken across the majority of the Application Site, including surveys by FPCR in 2018, 2019, 2020 and 2021, and a hibernation survey in February 2023. Further details of the above methodologies are provided within the Bat Survey Report (Appendix ES6.3, FPCR, 2026).

Great Crested Newt *Triturus cristatus*

4.214.23 Aquatic habitats present within the Application Site were assessed for their potential to support breeding GCN, and terrestrial habitats for their potential to provide suitable areas of rest or shelter for the species. Aerial images and OS maps were reviewed for the presence of ponds and other static waterbodies within 500m of the Application Site and a habitat suitability index (HSI) assessment was then undertaken of on-site ponds and accessible waterbodies within 500m where suitable habitat connectivity to the Application Site was also identified (88 waterbodies in total).

4.224.24 Presence/absence surveys were subsequently undertaken of accessible waterbodies between late March and May 2025. These surveys did not encompass waterbodies within the adjacent Upper Heyford former airfield and associated land, as these were instead subject to survey by 4 Acre Ecology as part of ~~ongoing~~ surveys undertaken in support of a neighbouring application. A single third-party pond with restrictions to access was surveyed via eDNA analysis of water samples.

4.234.25 The above surveys were informed by fieldwork previously undertaken across the Application Site and surrounding area, including HSI and presence/absence surveys by FPCR in 2018, 2021 and 2022 (Highway

Works Areas only in 2022), and eDNA survey of waterbodies with restricted access in 2020. Further details of the above methodologies are provided within the GCN Survey Report (Appendix ES6.4, FPCR, 2026).

Bird Surveys

~~4.24~~4.26 A series of four surveys wintering bird surveys was undertaken across the Application Site and areas of adjacent habitat once per month between November 2024 and February 2025 inclusive, with surveys timed between dawn and early afternoon.

4.27 A series of six breeding bird surveys was also undertaken across the Application Site and areas of adjacent habitat in 2025. This comprised dawn survey visits completed in March, April, May, June, and early July, and a single dusk survey in early June 2025. A further three surveys were subsequently undertaken in 2026 of two additional arable fields to the northwest of the Main Site.

~~4.25~~4.28 The survey methodology was largely based on that of territory mapping[12], whereby standard BTO species codes and symbols for bird activities were used to identify birds and denote activity, sex and age where appropriate. Surveys were undertaken during suitable weather conditions, paying particular attention to features such as hedgerows, trees, areas of scrub and woodland.

~~4.26~~4.29 These surveys were informed by breeding bird surveys previously undertaken within the Main Site and adjacent habitats May 2021, and April, May and June 2020, with these surveys updating the original surveys undertaken across a smaller survey area in April, May and June 2018. The Highways Works Areas had previously been subject to a suite of three breeding bird surveys split across consecutive seasons, with survey visits in June 2021, April 2022 and May 2022.

~~4.27~~4.30 Winter bird surveys had previously been undertaken across the Main Site monthly in January, February, November and December 2019, with the field data updated via a suite of four surveys undertaken monthly between November 2022 and February 2023 inclusive. Wintering bird surveys were undertaken of the Highways Works Areas monthly between December 2021 and February 2022 inclusive.

~~4.28~~4.31 Further details of the above methodologies are provided within the Bird Survey Report (Appendix ES6.5, FPCR, 2026).

Badgers *Meles meles*

~~4.29~~4.32 A badger survey was undertaken across the Application Site in March and April 2025 comprising an initial site visit to map current latrine sites, followed by the provision of coloured bait over the course of a three-week period at each of the active main setts identified, using a different colour of pellet marker for each. Walkover surveys were then undertaken to check all known latrines for the presence of coloured main sett markers to determine clan boundaries. A similar bait-marking exercise had been conducted by FPCR in March and April 2022 that provided background and furth context to the territory assessment. Walkover surveys to record evidence of badger activity has also been undertaken in April 2018, August 2020 and May 2021.

~~4.30~~4.33 In addition, any incidental evidence of badger activity identified during the suite of other surveys undertaken across the site were also recorded.

~~4.31~~4.34 Further details of the above methodologies are provided within the Badger Survey Report (Appendix ES6.6, FPCR, 2026).

Butterflies

[12] Bibby, C.J., N.D. Burgess and D.A. Hill, 2000: Bird Census Techniques: 2nd Edition. London: Academic Press.

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~~4.32~~4.35 A series of eleven walked transects were undertaken throughout accessible sections of the Ardley Cutting and Quarry SSSI and adjacent embankment top habitats between May and July 2025 to provide a description of the butterfly assemblage present during this period. Transects were timed approximately weekly throughout May and June 2025 and fortnightly in July and were completed during suitable weather conditions.

~~4.33~~4.36 The transects were walked at a slow, steady pace during which all butterfly and day-flying moths observed were noted with a particular focus on any key butterfly species listed within the citation (small blue *Cupido minimus,* brown argus *Aricia agestis*, dark green fritillary *Speyeria aglaja*, green hairstreak *Callophyrus rubi* and Duke of Burgundy *Hamearis lucina*). Transects incorporated short stops of three minutes duration where there was a clear view into the SSSI.

~~4.34~~4.37 Further details of the above methodologies are provided within the Butterfly Survey Report (Appendix ES6.7, FPCR, 2025).

~~4.35~~4.38 In addition to the above the botanical survey of the SSSI habitats included inspection of a random selection of cowslip *Primula veris* and primrose *Primula vulgaris* specimens (Duke of Burgundy host plants) for eggs and for evidence of caterpillar feeding.

Reptiles

~~4.36~~4.39 Habitats present within the site were considered for their potential suitability to support reptile populations, including the presence of features providing opportunities for reptiles to bask, forage and/or hibernate, and areas of varied vegetation structure in sheltered locations with sunny aspects and connectivity to other suitable reptile habitats. This assessment was based on the methodology detailed in the Herpetofauna Workers Manual[13] and the Froglife Advice Sheet[14].

~~4.37~~4.40 A reptile presence/absence survey was undertaken among on-site areas identified as offering potentially suitable reptile habitat. These surveys were taken to update a similar suite of survey visits completed within the same habitats in July-September 2021. On each occasion the survey was undertaken based on the methodology detailed in the Herpetofauna Workers Manual, the Froglife Advice Sheet, and Natural England standing advice. Survey methods involved a search for basking reptiles on/under naturally occurring and also 420 strategically positioned artificial refugia (432 refugia in 2021). These were placed in locations that offered the most suitable habitat for common reptiles, i.e. structurally diverse grassland habitats with areas of longer grassland/short vegetation and wetland features, two weeks prior to the initial survey. Natural and artificial refuges were then subsequently checked on seven survey occasions.

~~4.38~~4.41 Guidelines recommend that surveys are undertaken during the following periods:

- At temperatures of between 9°C and 18°C;
- On sunny/cloudy days with little or no wind;
- Between 07:00-11:00 hrs ('AM survey') and between 16:00-19:00 hrs ('PM survey') (note: if temperatures are suitable the surveys can be undertaken outside of these periods).

~~4.39~~4.42 In addition, industry guidelines also recommend:

- Using regularly spaced corrugated tin sheeting/similar (0.5m^2) as artificial refugia, with a black upper side;

[13] Gent T. and Gibson, S. (eds). 2003. *Herpetofauna Workers Manual* (revised reprint). JNCC, Peterborough.

[14] Froglife, 1999. Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation. *Froglife Advice Sheet 10.* Froglife, Halesworth.

- Approaching refugia from a downwind direction, casting no shadow and making sure not to disturb basking animals when checking;
- That lifting and replacing tins, to check for the presence of reptiles underneath, is undertaken with care to avoid potential harm to any animals present;
- That the location and number of tins are mapped to aid survey and avoid the possibility of leaving tins in situ upon completion of the survey.

Table 2: Reptile Survey Dates and Weather Conditions

Date	Start Time	Temperature °C	Cloud Cover %	Wind Beaufort Scale (0-12)	Other
24.04.25	09:15am	13	90-100	1-2	Cloudy with patchy sun
02.05.25	08:15am	13	50-60	1-2	Sunny, overcast
21.05.25	08:40am	15	20-30	1-2	Bright, clear, sunny
03.06.25	13:30pm	15	50-60	1-3	Bright, sunny, rain earlier in the day
25.06.25	08:30	16	30-40	1-2	Cloudy with patchy sun
03.09.25	16:00	18	20-30	1-2	Rain earlier in the day
16.09.25	09:25	15	60-70	2-3	Overcast, bright, sunny spells

Population Assessment

4.404.43 Where reptiles are confirmed present, the populations are assessed in accordance with the population level criteria as stated in the Key Reptile Site Register[14]. This system classifies reptile populations into three categories (Table 3) based on the total number of adult animals observed during individual survey occasions.

Table 3: Key Reptile Site Survey Assessment Categories[15] *

Species	Low Population (No. of Individuals)	Good Population (No. of Individuals)	Exceptional Population (No. of Individuals)
Adder	<5	5 – 10	>10
Common lizard	<5	5 – 20	>20
Grass snake	<5	5 – 10	>10
Slow worm	<5	5 – 20	>20

*Figures in the table refer to the maximum number of adults seen by observation and / or under tins (placed at a density of up to 10 per hectare, by one person in one day)

Riparian Mammals

4.414.44 Targeted surveys for evidence of water vole *Arvicola amphibius* and otter *Lutra lutra* were undertaken by suitably experienced ecologists from FPCR along all suitable watercourses and ditches within and adjacent to the Application Site on 27/05.25 and 21/08/25, including relevant sections of Padbury Brook Tributary, Ashgrove Brook and Gagle Brook. Surveys for water vole and otter had also previously been undertaken across the Application site in June and September 2021, with additional survey of Padbury Brook undertaken in September 2022.

Water Vole

[15] Herpetofauna Groups of Britain and Ireland (HGBI) 1998. Evaluating local mitigation/translocation programmes: maintaining best practice and lawful standards. HGBI advisory notes for amphibian and reptile groups. HGBI c/o Froglife, Halesworth. (Unpublished).

~~4.42~~4.45 Standard methodology followed that outlined within The Water Vole Mitigation Handbook[16] including a search of watercourse banks and margins for evidence of:

- *Latrines* - distinct piles of water vole droppings found near nest sites, at the ranges of territorial boundaries and where the animals enter and leave the water;
- *Burrows* - burrow entrances are typically wider than high with a diameter between 4-8cm. Generally, these burrow entrances are located at the water's edge;
- *Feeding Stations* - areas with distinct neat piles of chewed lengths of vegetation cut at 45 degrees along pathways or haul out platforms along the water's edge;
- *Footprints* - identifiable prints in soft margins of the watercourse, and
- *Runways* - low tunnels that are pushed through the vegetation and often leading to burrows or feeding stations.

Otter

~~4.43~~4.46 The survey methodology assessed the likely status of otter within the Application Site following the methodology detailed in the New Rivers and Wildlife Handbook[17].

~~4.44~~4.47 Due to the unlikely observation of otter during surveys, these concentrated on locating field signs indicating otter presence or use. Such field signs include:

- *Spraints* – characteristic sweet-smelling, black tar-like (where fresh/relatively recent i.e. within a few weeks) or grey crumbly (when old) faecal deposits usually containing fish scales, bones and occasionally invertebrate exoskeleton and bird feathers.
- *Footprints* – In good substrate typically asymmetrical and showing five toes arched around a large pad and, depending on substrate, webbing and claw marks. Poorer, generally coarser substrates do not often enable the identification of otter footprints.

~~4.45~~4.48 Additional signs of otter presence may occur, although without additional evidence are usually not conclusive proof of current otter presence:

- *Feeding remains* – Remains of fish
- *Slides/haul-outs* – Routes into and out of the water, which are usually associated with terrestrial routes such as short cuts around meanders or along traditionally, used otter paths/routes.
- *Couches/hovers* – above ground resting place. Usually associated with cover such as dense scrub, rushes or reed, flood debris or fallen trees. Many couches are rarely used whilst others more so. Difficult to prove use without radio tracking.
- *Holts* – below ground resting site usually associated with sprainting. Sometimes used with greater frequency than couches and can be important for breeding (natal holts) where other signs are usually absent. Notoriously difficult to find or prove without radio tracking.

~~4.46~~4.49 Descriptions were made of each watercourse surveyed to aid the identification of any appropriate enhancement and/or mitigation opportunities for either species.

~~4.47~~4.50 Windrush Ecology additionally undertook a series of seven survey visits for evidence of water vole and otter to inform the neighbouring Dewars Farm application (on dates: 14/04/21, 23/07/21; 31/05/23, 26/06/23, 19/07/23, 09/08/23, 12/09/23, 06/09/24 and 20/01/25). On each occasion a systematic search of riverine

[16] Dean, M., Strachan, R., Gow, D. and Andrews, R. 2016. *The Water Vole Mitigation Handbook*. The Mammal Society, London.

[17] Holmes, N., Ward, D. and Jose, P. 1994. *The New Rivers and Wildlife Handbook*. Royal Society for the Protection of Birds.

and adjacent habitats was undertaken for water vole and otter field sign in accordance with industry guidance[18]. These each encompassed the brook section between the rail track southern embankment in the north to the point at which it meets the southern extent of Trow Pool, then Trow Pool itself and the ditch section extending northeast from here to the M40 (a c.1.7km length in total). Windrush Ecology recorded no evidence of water vole or otter presence.

Other Species

4.484.51 Hedgerows, plantation woodland and small broadleaved woodland stands within the Application Site were considered unsuitable to support hazel dormouse *Muscardinus avellanarius*, given the absence of hazel *Corylus avellana* from the majority of the site, and hazel occurring only rarely to (locally) occasional within relatively small areas of established scrub such as alongside the Ardley Cutting and Quarry SSSI and elsewhere in widely scattered hedgerow sections scrub and woodland stands. Furthermore, no hazel dormouse records were returned from the local area via the desk study.

4.494.52 Hazel was rarely occurring within the mature deciduous woodland bordering the Gagle Brook corridor (W11), however as the most established woodland locally this was considered the most likely section to support hazel dormouse, if present locally. A nut search was therefore undertaken within the Gagle Brook corridor for evidence of hazel dormouse feeding remains in March 2025. The methodology involves searching for opened hazelnuts that have the characteristic markings left by the dormice, being nuts with a relatively neat round hole in the shell with a smooth inner rim and typically with tooth marks at an angle to the hole on the nut surface.

4.504.53 The potential for other protected and/or notable species to occur within the Application Site was assessed during the habitat surveys, within the context of the habitats present.

Limitations

4.514.54 The UKHab survey took into consideration the presence of invasive non-native species, however this survey did not constitute a full survey for the presence of this group which would come with its own survey requirements.

4.524.55 Sections of grassland verge flanking the M40 and small sections flanking junction 10 could not be safely accessed for the purpose of direct survey. Descriptions were therefore made from a distance using binoculars and from inference from data collected through survey of neighbouring verges of the A508, and from available desk study data. From this sufficient information was available to provide an adequate assessment of the habitats present and their potential to support protected/notable species.

4.534.56 Small stretches of the Ashgrove Brook and the Padbury Brook Tributary were inaccessible due to the presence of dense bankside vegetation. These sections represented a small minority of the watercourse sections surveyed however, and as such it is considered this limitation did not represent a constraint to the habitat assessment or to targeted surveys for water vole and otter.

4.544.57 Access to the Ardley Cutting and Quarry SSSI along the railway embankments was strictly controlled by Network Rail and limited to access on specific dates to be booked months in advance, with a requirement for surveyors to be accompanied at all times by a member of Network Rail's Asset Protection team or accredited staff. As such it was not possible to incorporate this area into nocturnal surveys or other survey visits requiring considerable flexibility to ensure data collection during suitable weather conditions. Surveys within the SSSI were therefore limited to the habitat surveys undertaken in July 2025 and June

[18] Dean, M. et al. 2016. *The Water Vole Mitigation Handbook*. The Mammal Society, London, and Strachan, R. & Moorhouse, T. 2011. *Water Vole Conservation Handbook*. Wildlife Conservation Research Unit.

2022, which each included consideration of the suitability of habitats for protected/notable fauna, and recorded any incidental evidence observed. Otherwise, these habitats were surveyed from habitats bordering the SSSI and associated cutting, using binoculars where appropriate. Reptile refugia could not be placed within suitable rail track embankment habitats, hence were instead placed as close to the SSSI boundary as possible. Whilst it was not possible to subject this area to regular and repeated survey, sufficient data was gathered to enable a broad assessment of the suitability of the SSSI habitats to support target faunal species and taxa.

~~4.55~~4.58 Small areas of woodland adjacent to Gagle Brook had been cleared in mid/late summer prior to the August 2025 riverine mammal survey that impacted a c.30m length of the brook corridor. The works had cleared marginal vegetation from the adjacent section of the Gagle Brook and had also resulted in tree debris falling into the brook. The remainder of the brook corridor remained intact however and was considered to allow for determination of the presence/probable absence of water vole and otter.

~~4.56~~4.59 Limitations to the Bat, GCN, bird and butterfly surveys are discussed within the relevant Appendices. No other limitations specific to this survey influenced this assessment.

5.0 RESULTS

Desktop Study

Sites with a Statutory International Nature Conservation Designation and Sites on the National Site Network

5.1 A single statutory site of international importance was identified present within 15km of the Application Site (Figure 1a). Oxford Meadows SAC lies approximately 13.6km to the south and supports lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*), an Annex I habitat for which it is considered to be one of the best examples in the UK. The SAC furthermore is the only known outstanding locality for the Annex II species creeping marshwort *Apium repens*.

5.2 The Application Site lies outside of the Impact Risk Zones (IRZs) identified for the four constituent SSSIs encompassed by the Oxford Meadows SAC: Cassington Meadow SSSI, Yarnton and Pixey Meads SSSI, Wolvercote Meadow SSSI and Port Meadow SSSI. IRZs reflect the particular sensitivities of individual SSSIs in conjunction with any corresponding European site underpinned by the SSSI designation and provide a rapid risk assessment that considers whether a proposed development is likely to affect a SSSI.

Sites with a Statutory Nature Conservation Designation

5.3 Ardley Cutting and Quarry SSSI is notified for its geological and biological interest lies partly within the Main Site, along the embankments of the Chiltern Railway line cutting, and is crossed by the proposed route of the Ardley Bypass to the northwest, with the Application Site coinciding with four SSSI IRZs.

5.4 The geological interest of the SSSI concerns Jurassic rock exposures whereas the biological interest primarily comprises limestone (calcareous) grassland, along with scrub, ancient woodland and wetland habitats. This designation also supports fauna interest including calcareous grassland butterflies including small blue, brown argus, dark green fritillary, green hairstreak and Duke of Burgundy and part of a GCN population[19].

5.5 Ardley Trackways SSSI is designated for its geological interest. A small section of this SSSI (c.0.6ha) located to the opposite side of the rail tracks to the proposed southeastern rail track connection extends into the

[19] English Nature. 1999. *Ardley Cutting and Quarry SSSI Citation.* Available at: https://designatedsites.naturalengland.org.uk/PDFsForWeb/Citation/1000903.pdf [Accessed 20.08.25].

Application Site at its easternmost extent. The inclusion is solely to provide a receptor location for great crested newts captured in the vicinity during licenced pre-works trapping. Habitats associated with this SSSI will be retained within the scheme with no losses anticipated from this site. Ardley Trackways SSSI is therefore not considered further in this appraisal.

5.6 No other statutory site of national importance designated for nature conservation value was identified within 2km of the Application Site.

5.7 Part of Heyford Park drains to Gallos Brook which drains into the Western Fen SSSI catchment. The Application Site however has no hydrological connectivity to Gallos Brook[20] therefore no potential impact pathway to Western Fen SSSI is identified.

Non-Statutory Designations and Conservation Target Areas

5.8 A single non-statutory site coincides with the Application Site boundary, and 14 non-statutory sites are present within 1km, detailed in Table 4 and shown in Figure 1a.

Table 4: Non-Statutory Designated Sites

Site Name (Ref: Fig 1a)	Designation	Distance and Orientation from Site	Summary of Designation
Upper Heyford Airfield (6)	LWS	Adjacent to western boundary	Supports species-rich calcareous areas, along with small areas of broadleaved plantation woodland and water tanks. Notable species include bee orchid *Ophrys apifera,* dwarf thistle *Cirsium acaule,* skylark *Alauda arvensis*, corn bunting *Emberiza calandra*, grey partridge *Perdix perdix*, tree sparrow *Passer monanus* and GCN.
Ardley Fields Quarry (10)	LWS	Adjacent to and slightly within the north easternmost extent of the Main Site	A restored quarry within the northern section of Ardley Trackways SSSI that supports improved grassland, rough grassland, young planted trees, species-rich grassland, ponds and wet ditches.
Ardley Fields Ponds West (11)	LWS	15m east	Restored area of grassland with ponds on ex-landfill which support breeding GCN populations and aquatic plants.
Stoke Wood (7)	LWS	200m east	A good-sized woodland block encompassing ancient woodland as well as more recently established woodland. The adjacent eastern track supports a good population where silver-wash fritillaries *Argynnis pahia* and white admiral *Limenitis Camilla* have been recorded.
Ardley Fields Ponds East (12)	LWS	670m east	Restored area of grassland with ponds on ex-landfill which support breeding GCN populations and aquatic plants.
Trow Pool (13)	LWS	Adjacent to eastern boundary	Two shallow ponds that have formed via the damming of a small stream. The larger pool is used for fishing and the smaller pool is surrounded by dense vegetation. Rare bottle sedge *Carex rostrata* has been recorded on site as well as invasive New Zealand Pygmyweed *Crassula helmsii*.
Ardley Road Verge Nature Reserve (16)	DWS	Within and adjacent to south part of eastern boundary	The verge and associated grassland supports rank grassland, rough calcareous grassland, scrub and hedgerows. The sward is grass dominated by includes species-rich areas with a range of broadleaved herbs, including species typical of unimproved grassland such as field scabious *Knautia arvensis*, greater knapweed *Cenaurea scabiosa*, meadow vetchling *Latyrus*

[20] https://environment.data.gov.uk/catchment-planning/WaterBody/GB106039030130 [Accessed 04.02.26].

Site Name (Ref: Fig 1a)	Designation	Distance and Orientation from Site	Summary of Designation
			pratensis and lady's bedstraw *Galium verum*. The wider central section of the site supports a population of the rare plant meadow clary *Salvia pratensis*.
The Heath (20)	pDWS	Adjacent to south-west boundary	Comprises mature broadleaved woodland where ground flora mostly comprises dog's mecury *Mercurialis perennis* with a population of spurge laurel *Daphne lureola* and small patches of bluebell *Hyacinthoides non-scripta* and wood anemone *Anemone nemorosa*.
Trackway adjacent to The Gorse (21)	pDWS	Adjacent to south-western boundary	A green lane with species-rich hedgerows. The path side verge has rough grassland with frequent woodland herbs which include dog's mercury *Mercurialis perennis*, spurge laurel and a population of over 250 early purple orchids *Orchis mascula*.
Kennel Copse (22)	pDWS	Adjacent to the western boundary of the Main Site	A woodland fragment that supports several ancient woodland indictor flora. A brook flows north from Crowfoot Pond. Whilst not highlighted as supporting ancient woodland within the Cherwell pDWS citation, it is shown as Ancient & Semi-Natural Woodland on the magic.defra.gov.uk site.
Ardley and Heyford (26)	CTA	Across the site	Encompasses a limestone plateau between Ardley and Upper Heyford and supports approximately 50% of the calcareous grassland in the Cherwell District.
Tusmore and Shellswell Park (25)	CTA	200m east	Encompasses the parks and woodland at Tusmore and Shelswell Parks and a number of ancient woodland near Stoke Lynne, including Stoke Wood LWS.
Middleton Stoney Cricket Ground (14)	pLWS	890m southwest	Cricket ground encompassing an area of lowland calcareous grassland.
Shakespeare Drive (King End Conservation Area) (17)	DWS	130m north of B4030 works	Urban site encompassing semi-improved grassland with lines of trees and marginal strips of plantation woodland. Central waterlogged areas support elements of lowland meadow.
Digging Copse (28)	Ancient woodland	490m east	No further information provided.
Gruntill Copse (30)	Ancient woodland	550m east	No further information provided.
Kirdy's Copse (36)	Ancient woodland	620m east	No further information provided.
Key: LWS – Oxfordshire Local Wildlife Site, pLWS Oxfordshire proposed Local Wildlife Site, DWS – Cherwell District Wildlife Site, pDWS – Proposed Cherwell District Wildlife Site, CTA – Conservation Target Area			

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5.9 In addition to the above, a section of Burntclose Copse located along the Gagle Brook corridor outside but immediately adjacent the Application Site does not have non-statutory designated site status, however supports an area of ancient and semi-natural woodland, and as such is considered relevant to this appraisal.

Oxfordshire Local Nature Recovery Strategy

~~5.9~~5.10 The Application Site is located almost entirely within the Ardley and Heyford Conservation Target Area (CTA). The CTA has five targets: i) calcareous grassland, ii) hedgerows, iii) grassland management, iv) great crested newt, and v) geological conservation.

~~5.10~~5.11 Whereas CTAs have historically been used in local planning in Oxfordshire to identify areas of priority for biodiversity these were recently superseded by the Oxfordshire Local Nature Recovery Strategy (LNRS) priority areas published in November 2025[21].

~~5.11~~5.12 The Oxfordshire LNRS describes and maps numerous habitat enhancement priorities for the county. Priority areas identified are displayed as separate layers within an interactive Local Habitat Map[22], with some locations encompassed within multiple priority opportunity zones.

~~5.12~~5.13 The Application Site coincides with several such zones, including (but not limited to) the following:

- PM05 Create areas of calcareous species-rich grasslands in suitable locations, particularly slopes;
- PM06 Create areas of neutral species-rich grasslands in suitable locations;
- PM09 Create new areas of lowland meadow by creating and restoring meadows in suitable locations (particularly on floodplains);
- PM30 Create new areas of habitat that contain a matrix of habitat types including small woodland patches, scattered trees, scrub, and grassland;
- PM38 Create new woodland by planting trees (or enabling their natural regeneration) using species that are suited to the soil type and site conditions;
- PM42 Restore river diversity and manage rivers and their riparian (riverside) habitats to achieve good ecological condition that supports species;
- PM55 Create new, varied ponds in suitable locations across all habitat types to increase biodiversity and create more clean water habitats;
- PM214 Retain, manage, plant, and connect up blackthorn *Prunus spinosa* hedgerows, trees, and scrub for black hairstreak *Satyrium pruni* and brown hairstreak *Thecla betulae* butterflies, and
- PM215 Create or enhance suitable flower-rich grassland habitats with plentiful populations of violets and light patches of scrub for the dark green fritillary.

~~5.13~~5.14 Fauna listed within the LNRS Species Priorities List that are considered relevant to the Application Site and adjacent habitats comprise:

- Amphibians: great crested newt.
- Birds: farmland birds (corn bunting *Emberiza calandra*, grey partridge *Perdix perdix*, lapwing *Vanellus vanellus*, linnet *Linaria cannabina*, skylark *Alauda arvensis*, tree sparrow *Passer montanus*, yellowhammer *Emberiza citrinella*, and yellow wagtail *Motacilla flava flavissima*), curlew *Numenius arquata*, stone curlew *Burhinus oedicnemus*, swift *Apus apus*, house martin *Delichon urbicum*, tawny owl *Strix aluco*, and willow tit *Poecile montanus*.
- Butterflies: brown hairstreak, dark green fritillary, Duke of Burgundy, small blue, white admiral *Limenitis camilla*, and white-letter hairstreak *Satyrium w-album*;
- Mammals: bats, hazel dormouse, hedgehog *Erinaceus europaeus*, otter, water vole.
- Plants: meadow clary *Salvia pratensis*;
- Reptiles: common lizard *Zootoca vivipara*.

Protected and Notable Species

[21] https://www.oxfordshire.gov.uk/residents/environment-and-planning/local-nature-recovery-strategy-lnrs [accessed 18.12.25].
[22] https://experience.arcgis.com/experience/ea43e0bc07c044ef8ca4b16803c5e59c?views=View-5 [accessed 18.12.25].

~~5.14~~5.15 Several protected and noted species records were returned from TVERC from within 1 km of the site (Figures 1b-1e), mainly comprising herpetofauna and bird records. These included small numbers of records from within the Application Site of badger, common lizard, grass snake *Natrix natrix helvetica*, great crested newt, smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria*, grizzled skipper *Pyrgus malvae*, brown hairstreak *Thecla betulae*, and meadow clary, and single records of small heath *Coenonympha pamphilus*, woodpigeon *Columba palumbus* and lapwing records

Bats

~~5.15~~5.16 Bat records returned from the search area included field records of common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *P. pygmaeus*, Nathusius' pipistrelle *P. nathusii*, brown long-eared bat *Plecotus auritu*as, Daubenton's bat *Myotis daubentonii*, *Myotis* sp., noctule *Noctule nocula*, Leisler's bat *Nyctalus leisleri*, barbastelle *Barbastella barbastellus*, and serotine *Eptesicus serotinus*.

~~5.16~~5.17 Survey work undertaken by a third-party consultancy in 2008 recorded a brown long-eared bat and possible pipistrelle *Pipistrellus* sp. roost within one of the farm buildings within the site (evidence in the form of bat droppings and moth wings), albeit no bats were recorded emerging from this building during nocturnal surveys undertaken.

Amphibians and Reptiles

~~5.17~~5.18 Several amphibian records were returned from within 1km of the site, including common lizard, grass snake, GCN, smooth newt and common frog records from within the Application Site.

Terrestrial Mammals

~~5.18~~5.19 A number of badger records were provided by the desktop study, including road casualties of located on the B430 adjacent to the site, and along the A4100 and the A4030.

~~5.19~~5.20 No records of water vole were returned from the search area, however a single sprint record of otter *Lutra lutra* was returned from Trow Pool LWS just north of a field compartment within the Application proposed for habitat enhancement.

~~5.20~~5.21 A small number of brown hare *Lepus europaeus* records were returned, the closest from within Middleton Stoney.

~~5.21~~5.22 Hedgehog records were also returned, mainly from Bicester but including two records within Middleton Stoney.

~~5.22~~5.23 Two polecat *Mustela putorius* records were returned located to the southeast and northwest of the Baynards Green junction of the A43 and B4100.

Birds

~~5.23~~5.24 Several protected and notable bird species were returned by the desktop study, including species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (*as amended*), amber / red Birds of Conservation Concern 4 (BoCC[23]) or under Section 41 of the NERC Act 2006. Species including corn bunting, dunnock *Prunella modularis,* fieldfare *Turdus pilaris,* grey partridge, house sparrow *Passer domesticus*, lapwing, marsh

[23] Eaton MA, Aebischer N., Brown A., Hearn R., Lock L., Musgrove A., Noble D., Stroud D. and Gregory R.D. 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* 108:708-746.

tit *Poecile palustris*, meadow pipit *Anthus pratensis*, skylark, song thrush *Turdus philomelos* and yellowhammer (for full list see Figure 1c).

5.245.25 The current occupant of Ashgrove Farm provided a record of barn owl *Tyto alba* roosting within one of the farm buildings within the Main Site.

Plants

5.255.26 A small number of records of notable plant species listed on the Oxfordshire's Threatened Plants list were returned with dates ranging between 2005 and 2018. Species included bottle sedge, marsh pennywort *Hydrocotyle vulgaris*, many-leaved sedge *Carex divulsa* subsp. *leersii*, pale St John's-wort *Hypericum montanum*, pale sedge *Carex pallescens*, and night-flowering catchfly *Silene noctiflora*.

5.265.27 A small number of England Red List Species were also returned which included dwarf spurge *Euphorbia exigua*, bloody crane's-bill *Geranium sanguineaum* and hoary plantain *Plantago media*. Of these, the closest records comprised a bloody crane's-bill record from within the adjacent Ardley Road Verge Nature Reserve DWS

5.275.28 Three records of meadow clary and six records of bluebell *Hyacinthoides non-scripta*, species listed on Schedule 8 of the Wildlife and Countryside Act, were also returned from within the Ardley Road Verge Nature Reserve DWS and Stoke Wood LWS.

Invertebrates

5.285.29 A small number of notable invertebrate records were returned including records of brown hairstreak, grizzled skipper, dingy skipper *Erynnis tages*, small blue, and small heath butterflies, in addition to beetle and moth records. These were mostly associated with the Ardley Cutting and Quarry SSSI and Stoke Wood LWS (for full list see Figure 1e).

Invasive Species

5.295.30 A small number of non-native and invasive plant species were also provided and included records of Nuttall's waterweed *Elodia nuttalli*, Canadian waterweed *Elodea canadensis* and New Zealand pymyweed, all associated with Trow Pool LWS. In addition, two records of signal crayfish *Pacifasticus leniusculus* were also recorded from this LWS.

Field Survey

Habitats/Flora

5.305.31 Habitat descriptions of the site are provided below. The locations of the habitats described are provided in Figures 2a-2f, and the list of botanical species recorded is provided in Appendix A.

5.315.32 Few instances of habitat modification or transition were noted to have occurred between the 2025 survey and the habitat surveys previously undertaken in 2021 and 2022. Reference is made to such occurrences where noted.

Arable Land

5.325.33 Arable compartments by their nature supported little semi-natural vegetation and have limited structural and botanical diversity. These compartments were generally large, recorded to be sown with sown with wheat *Triticum* sp., oat *Avena sativa*, barley *Hordeum vulgare,* maize *Zea* sp.,rapeseed *Brassica napus* and

flax *Linum usitatissimum* over the survey period. Non-cereal crops included sugar beet *Beta vulgaris*. Narrow neutral grassland margins were present at the edges of the arable fields that were recorded to be largely unmanaged during the spring and early summer and cut in late summer/autumn. These margins were generally c.1-2m wide but with some c.5-6m at field corners within the Main Site and areas of arable land set aside such as G105 and G106 in the north-west of the main site. Occasional arable weeds recorded encroaching into the arable fields from the margins included common field speedwell *Veronica persica*, black-grass *Alopecurus myosuroides*, and shepherd's purse *Capsella bursa-pastoris*.

~~5.33~~5.34 The neutral grassland field margins supported grasses and forbs typical of unmanaged arable edge/hedge bases including locally abundant false-oat grass *Arrhenatherum elatius* and occasional cock's-foot *Dactylis glomerata* with localised patches of annual meadow grass *Poa annua*, barren brome *Bromus sterilis* and soft brome *Bromus hordeaus* and rare occurrence of perennial rye-grass *Lolium perenne*. Herbaceous species included locally frequent patches of common nettle *Urtica dioica*, locally occasional field bindweed *Convolvus arvensis*, rare occurrence of field forget-me-not *Myosotis arvensis*, broadleaved dock *Rumex obtusifolius*, cut-leaved crane's-bill *Geranium dissectum*, scarlet pimpernel *Anagallis arvensis* and scentless mayweed *Tripleurospermum inodorum*.

~~5.34~~5.35 During the 2025 survey it was noted that three fields located within the south of the site (fields G108, G109 and G110) were not in current active arable production and had been left uncultivated throughout the 2025 growing season. As such, these fields were becoming colonised by grassland species and herbaceous arable weeds including false oat-grass, rough meadowgrass *Poa trivialis*, soft brome, cock's-foot, sow-thistle species *Sonchus sp*., creeping thistle *Cirsium arvense*, spear thistle *Cirsium vulgare*, common ragwort *Jacobae vulgaris*, white clover *Trifolium repens,* greater plantain *Plantago major*, green alkanet *Pentaglottis sempervirens*, selfheal *Prunella vulgaris*, red clover *Trifolium pratense* and birds foot trefoil *Lotus corniculatus*.

~~5.35~~5.36 The margins of the arable fields that surrounded the Biffa Composting Facility additionally supported rare occurrences of common fumitory *Fumaria officinalis*, field scabious *Knautia arvensis*, goat's-beard *Aruncus diocius*, lesser stitchwort *Stellaria graminea* and a single bee orchid *Ophrys apifera* recorded (in 2020 but not 2025).

Modified Grassland

~~5.36~~5.37 Small areas of modified grassland small holdings and fields were present within the site within the Ashgrove farmstead, which were recorded to be grazed by a mixture of cattle and sheep at the time of the survey. The grassland sward was recorded to be grazed short (c.5cm) and dominated by course grasses including perennial rye-grass. Herb and ruderal species were also recorded present within the sward, comprising frequent white clover and common nettle and occasional or rarely occurring species including ribwort plantain *Plantago lanceolata*, daisy *Bellis perennis*, broad-leaved dock, creeping thistle and spear thistle.

~~5.37~~5.38 Modified grassland also formed lawns within Ashgrove Farmstead. These were frequently managed via mowing and comprised a short sward. Species were dominated by perennial rye-grass and rough meadow grass, with a very limited number of forbs including greater plantain, creeping buttercup *Ranunculus repens* and dandelion *Taraxacum* sp. agg.

~~5.38~~5.39 Within the north of the main site was a grassy farm track (G87) and in the south another grassy farm track (G116), both dominated by perennial rye-grass.

~~5.39~~5.40 Continuous sections of road verge and roundabout habitat located along Middleton Stoney Road in the south-east of the site supported modified grassland. These were frequently managed via regular mowing, with some recently established verges associated with newly constructed urban development seeded with

a hard-wearing lawn mixture with limited herbaceous diversity. Other areas were dominated by perennial ryegrass.

~~5.40~~5.41 Modified grassland road and pavement verges were present within Ardley village in the north of the site and were frequently managed via mowing.

Neutral Grassland

~~5.41~~5.42 Three grassland fields (G1, G2 and G3) within the northern half of the Main Site supported a more diverse range of grasses including frequent soft brome, locally frequent creeping bent *Agrostis stolonifera* and rare occurrence of smooth meadow-grass *Poa pratensis*, and a higher occurrence of common herbs such as bulbous buttercup *Ranunculus bulbosus*, common mouse-ear *Cerastium fontanum*, lesser trefoil *Trifolium dubium*. In damper areas adjacent to a ditch rare occurrence of hard rush *Juncus inflexus* and occasional creeping buttercup were noted. These fields also exhibited a short sward and were subject to either cattle or sheep grazing. A field compartment northwest of the composting facility supports small number of bee orchids.

~~5.42~~5.43 Neutral grassland fields were also present immediately south of the road that bisects the main site. The sward was unmanaged in 2025 and was dominated by false-oat grass with a uniform sward to 1m in height. Additional grass species included locally occasional cock's-foot and creeping bent, occasional soft brome and rare occurrence of red fescue *Festuca rubra* agg. and Yorkshire fog *Holcus lanatus*. Herb species were recorded in localised patches and included occasional and rarely occurring bird's-foot trefoil, common centaury *Centaurium erythraea*, common mouse-ear, creeping buttercup, lesser trefoil, perforate St John's-wort *Hypericum perforatum* and ribwort plantain. Additional species included included common sorrel *Rumex acetosa*, glaucous sedge *Carex flacca*, sweet vernal grass *Anthoxanthum odoratum* and a small number of bee orchids. A small number of pyramidal orchids *Anacamptis pyramidalis* were recorded within a localised patch of shorter sward, and yellow rattle *Rhinanthus minor* was recorded within the sward of G111 located between Ardley Quarry and the arable land to the south.

~~5.43~~5.44 A series of roundabouts and associated grass road verges were present within the northern part of the Highway Works area within the vicinity of Junction 10 of the M40 and within the southern part of the Highways Works area within the vicinity of Junction 9 of the M40. Larger areas of adjacent planted screening comprised species-rich flowering sward likely established using a seed-mix with a significant proportion of flowering species such as red clover, lady's bedstraw *Galium verum,* kidney vetch *Anthyllis vulneraria*, ribwort plantain and ox-eye daisy *Leucanthemum vulgare* and pyramidal orchid were recorded. The presence of woolly thistle *Cirsium eriophorum*, pyramidal orchid and quaking grass *Briza media*, all species commonly recorded in calcareous conditions reflected the underlying freely draining lime-rich loamy soils. These species in the context of the other species and habitat recorded are not however indicators of calcareous grassland classification in these areas.

~~5.44~~5.45 A small number of road verges towards the north of the northern Highway Works Area and to the north of the Baynards Green roundabout and along the southern part of the B430 were noted to have a good diversity of species. Parts of the sward was characterised by frequent false-oat grass with patches of cock's-foot to c.0.5m in height. Herb species were dominated by ox-eye daisy with locally frequent black medic *Medicago lupulina*, common knapweed *Cenaurea scabiosa* and ox-eye daisy, locally occasional common ragwort, cut-leaved crane's-bill, ribwort plantain, and with pyramidal orchid and kidney vetch recorded rarely occurring along the verge. Road verges in the south were noted to support less ruderal species and were dominated by false-oat-grass with locally frequent patches of meadow-vetchling, frequent common knapweed and St John's-wort, locally occasional patches of agrimony *Agrimonia eupatoria* and rare occurrence of field scabious.

~~5.45~~5.46 The verge located on an east facing slope adjacent to the M40 supported rough false oat-grass dominated grassland with occasional cock's-foot and frequent creeping bent, and rare occurrence of herbaceous species such as spear thistle, common ragwort and wild carrot *Daucus carota*. This area is regularly managed but with some scrub encroachment from planted areas along the arable boundary fence line.

~~5.46~~5.47 Road verges along the B4030 and B430 were similarly comprised of frequent false oat-grass with locally occasional perennial rye-grass and creeping bent which were regularly managed via mowing and with well-worn areas created by informal footpaths. Agrimony *Agrimonia eupatoria* was recorded in rare occurrence and several areas supported suckering blackthorn samplings which had established from the adjacent hedgerows.

~~5.47~~5.48 Areas of urban road verges along Middleton Stoney Road located within Bicester were managed via summer mowing within following herbaceous flowering and non-mowing during mid to late spring and early summer. These verges appeared to be seeded with a flowering lawn mixture, comprising herbaceous species such as common knapweed, birds-foot trefoil, lesser trefoil, oxeye daisy, ribwort plantain, red clover, great burnet *Sanguisorba officianalis*, yarrow *Achilllea millefolium* and common centaury.

~~5.48~~5.49 Within the south-west of the site within and next to the village of Middleton Stoney was a frequently mown grassland road and pavement verge and a utilities works and compound which supported neutral grassland.

~~5.49~~5.50 Linear semi-mature woodland that included frequent horse chestnut and sycamore provided screening to the south and west of a utilities works in the south-west of the site adjacent to the Gagle Brook corridor.

~~5.50~~5.51 Located between the interior open yard areas of Ashgrove Farmstead were former hardcore areas that had succeeded since 2021 into a closed unmanaged neutral grassland sward.

~~5.51~~5.52 An area of rough grassland was located to the north of the railway cutting, to the west of Ardley Wood Quarry woodland. Well-worn footpaths were located around the perimeter of the field where the sward was short (to c.3cm), with taller areas between 0.5-1m that supported dense stands of common nettle, hogweed *Heracleum sphondylium* and woolly thistle. Grass species comprised locally abundant creeping bent with locally frequent false-oat grass, occasional cock's-foot and locally occasional soft brome and tufted hairgrass *Deschampsia caespitosa*. Herbs included creeping cinquefoil *Potentilla reptans* formed locally frequent patches in shorter sward areas with patches of ruderal vegetation that supported locally abundant field bindweed. In addition, the sward supported dense patches of bramble Rubus fruticosus agg. scrub and areas of sward left unmanaged had succeeded to an area of dense scrub that was also encroaching from the periphery woody vegetation. The southern edge of the field adjacent to Ardley Wood Quarry supported a small number of recently planted saplings that comprised a mix of native and non-native cultivars including English oak *Quercus robur*, beech *Fagus sylvatica*, Japanese flowering cherry *Prunus 'Pink Perfection'* and Japanese crab apple *Malus floribunda* with dominant common nettle within the ground flora.

~~5.52~~5.53 Small areas of neutral grassland north of the railway line and surrounding pond P52 had not received any improvement, and some were periodically grazed, however these grass dominated areas were relatively small comprising locally abundant false oat-grass, occasional cock's-foot and locally occasional patches of smaller cat's tail *Phleum bertolonii*. A mix of other grasses were also present including ox-eye daisy, common bent, soft-brome, crested dog's-tail *Cynosurus cristatus*, red fescue and Yorkshire fog with herbs including yarrow, wild carrot, wild parsnip *Pastinaca sativa*, lady's bedstraw, mouse-ear hawkweed *Hieracium pilosella* and perforate St John's-wort. A patch of giant horsetail *Dequisetum telmateia* was recorded at the top of the slope adjacent to the fence line separating the woodland edge.

~~5.53~~5.54 Rough neutral grassland was recorded to the south of the railway line within the Valencia Waste Management Facility site where the sward was dominated by false-oat grass with occasional ruderal species distributed

throughout the sward and included common ragwort, creeping thistle and spear thistle. A higher abundance of herbs was recorded immediately south of the railway boundary fence where the sward was much shorter and included occasional and rarely recorded black medic, creeping cinquefoil, mouse-ear hawkweed, red clover and bee orchid. A fenced-off area of the sward to the south of pond P20 was characterised by abundant common couch *Elytrigia repens* with locally frequent creeping bent, occasional Yorkshire fog and timothy *Phleum pratense* and rare occurrence of wild parsnip. Other areas of rough grassland included compartments to the east of the M40 that were also unmanaged and where the sward was dominated by false oat-grass with encroaching bramble and other scrub species.

~~5.54~~5.55 A grassland field in the south of the site to the east of Middleton Road supported a neutral grassland sward that supported frequent yellow oat-grass *Trisetum flavescens*, occasional crested dog's-tail, Yorkshire fog and false oat-grass and locally occasional red fescue. Herb species were notably more diverse than other areas and included frequent ox-eye daisy, occasional common bird's-foot trefoil and ribwort plantain with rare occurrence of common vetch *Vicia sativa*, smooth tare *Ervum tetraspermum*, grass vetchling *Lathyrus nissolia* and yellow rattle. Correspondance with the landowner confirmed that the field had once been part of a Higher Level Stewardship scheme but had been out of the scheme for at least 15 years. In addition, a small number of pyramidal orchids were noted within the wider part of the field outside of the Application Site.

SSSI Lowland Calcareous and Lowland Meadow Grassland

~~5.55~~5.56 Full details of the survey undertaken within the Ardley Cutting and Quarry SSSI is provided in the Ardley Cutting and Quarry SSSI Botanical Survey Report (Appendix ES6.2, FPCR, 2025).

~~5.56~~5.57 The habitats present within the boundary of the SSSI, predominantly on the banks of the railway cutting and extending within the former quarry area to the south supported a number of lowland calcareous grassland and lowland meadow communities, significant areas of encroaching mixed scrub and centrally an area of other broadleaved woodland. The SSSI is subject to irregular management, limited to scrub clearance and a mowing regime for the grassland habitats, however no evidence of recent management was noted during the 2025 survey, with the exception of localised rabbit grazing.

~~5.57~~5.58 Generally, on the flatter embankment tops the most common habitat was a tall unmanaged grassland characterised by false oat-grass, but featuring a number of calcareous grassland indicators, representative of NVC community MG1d *Arrhenatherum elatius* grassland: *Pastinaca sativa* subcommunity. False oat-grass was constant within the sward, generally growing together with a mixture of tor-grass *Brachypodium pinnatum*, upright brome *Bromus erectus* and yellow oat grass. Tall bulky indicators were well represented throughout, particularly wild parsnip, greater knapweed *Cenaurea scabiosa*, woolly thistle, ox-eye daisy, lady's bedstraw and field scabious. Although broadly speaking, MG1 is a neutral grassland type, the *Pastinaca* sub-community generally develops from calcareous grassland when they become unmanaged. Under UKHab, stands with a close correspondence with MG1d that meet the broad habitat definition, such as those recorded within the SSSI should be recorded as lowland meadow, rather than lowland calcareous grassland.

~~5.58~~5.59 The steeper mid-slopes were characterised generally by a mixture of upright brome dominated grassland, broadly representative of NVC community CG3 *Bromus erectus* grassland, and an upright brome / tor-grass community representative of NVC community CG5 *Bromus erectus* - *Brachypodium pinnatum* grassland. These communities were characterised by salad burnet *Sanguisorba minor*, glaucous sedge, greater knapweed, common bird's-foot-trefoil, dwarf thistle *Cirsium acaule* and ox-eye daisy, along with a varied mix of calcareous associates at lower frequencies, notably horseshoe vetch *Hippocrepis comosa*, wild liquorice *Astragalus glycyphyllos*, sainfoin *Onobrychis viciifolia*, common rock-rose *Helianthemum nummularium* and dropwort *Filipendula vulgaris*. In a very small number of locations a short tight sward

was present that had resulted from localised rabbit grazing. Here species-richness was very high with 21-27 species/m^2 noted. These areas represent exceptionally species-rich limestone grassland are of considerable significance and indicative of the conservation benefits of regular management of these habitat types.

~~5.59~~5.60 Locally where the gradients of the lower slopes of the embankment were reduced, most extensively to the north-west, a lowland calcareous grassland consistent with NVC community CG4 *Brachypodium pinnatum* grassland was recorded. Here tor-grass formed dense tussocks, with greater knapweed, field scabious, ox-eye daisy, woolly thistle, glaucous sedge and lady's bedstraw generally occasional to frequent associates. Species richness in this community was generally lower, owing to the tussocky nature of the sward

Ardley Road Verge Nature Reserve DWS

~~5.60~~5.61 The DWS supports a mosaic of disturbed calcareous grassland, scrub, woodland and hedgerows. An old road alignment runs from north to south to the west of the wider central verge area. The tarmac road featured an ephemeral / short perennial community dominated by mosses, which was heavily desiccated at the time of the survey in June 2025. The eastern flank of this former road featured an earth bund c.1-2m wide over which a mosaic of tall forbs, ephemeral vegetation and scrub was developing. Garlic mustard *Alliaria petiolata* was frequent throughout, with occasional common ragwort, creeping thistle, white campion *Silene latifolia* and false oat grass; and rarely occurring mugwort *Artemisia vulgaris*, welted thistle *Carduus crispus*, bittersweet *Solanum dulcamara* and wild basil *Clinopodium vulgare* also present.

~~5.61~~5.62 The main area of the DWS, to the east of the small bund and located predominantly outside the Application Site comprised a disturbed, heavily rabbit grazed area of calcareous grassland, which evidently had some recent management to reduce encroaching scrub cover. The resulting community featured a high proportion of bare ground in mosaic with tall forbs and shorter species rich areas. Grass cover was low overall (an average of 11% recorded in the 2 quadrats taken), with only false oat-grass and tor-grass recorded as occasional, and downy oat-grass *Avenula pubescens*, sheep's fescue *Festuca ovina* and Yorkshire fog rarely occurring at this location. The community was herb rich with perforate St John's-wort, greater knapweed, germander speedwell *Veronica chamaedrys*, ox-eye daisy and black horehound *Ballota nigra* frequent to locally frequent, and agrimony, ribwort plantain, hairy St John's-wort *Hypericum hirsutum* and woolly thistle occasionally occurring. To the south of the habitat, and outside of the Application Site was a small population of meadow clary, located within two small fenced-off areas.

~~5.62~~5.63 The Western extent of the DWS was formed by a band of secondary woodland characterised by field maple *Acer campestre* and blackthorn, with ash *Fraxinus excelsior*, English elm *Ulmus procera*, hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and purging buckthorn *Rhamnus cathartica* minor components of the canopy and understorey. The ground flora within this area was typical of secondary woodlands, formed primarily of bare ground with frequent garlic mustard and occasional common ivy *Hedera helix* and common nettle.

~~5.63~~5.64 The existing road verge noted to the east of the DWS along the B430 and extending southwards supported g3c5 Arrhenatherum grassland. False oat-grass was abundant in a tall unmanaged sward, along with occasional soft-brome, cock's-foot and tor-grass. Ruderal species such as hogweed and creeping thistle were prominent, along with frequent field scabious and occasional hedge bedstraw *Galium mollugo*, agrimony and field bindweed.

Tall Forb Vegetation

~~5.64~~5.65 Small areas of tall forb vegetation and also some larger areas set aside from arable production were present within the Main Site at field boundaries and locally disturbed areas, dominated by willowherb *Epilobium* sp. and common nettle, with frequently or occasionally occurring species including creeping thistle.

~~5.65~~5.66 A bund present within the Viridor ERF site was fully colonised and vegetated by tall forb vegetation.

~~5.66~~5.67 An embankment above a road verge south of the unnamed road that bisects the Main Site supported a mosaic of bramble scrub, grassland and tall forb species that comprised locally frequent patches of garlic mustard and hare's-foot clover *Trifolium arvense*, occasional patches of black medic, bramble, occasional common comfrey *Symphytum officinale*, creeping thistle and hemlock *Conium maculatum* and rare occurrence of weld *Reseda luteola*, wild teasel *Dipsacus follunum*, green alkanet and a mullein *Verbascum* sp.

Scrub

~~5.67~~5.68 Areas of scrub were mainly present within the Ardley Cutting and Quarry SSSI along both sides of the railway embankment (see SSSI section above) but small areas of scrub were additionally present across the wider Application Site.

Blackthorn Scrub

~~5.68~~5.69 The vast majority of blackthorn scrub was located within the Ardley Cutting and Quarry SSSI along the railway embankments however a single small semi-mature area of scrub dominated by blackthorn was present on a road verge in the north of the site along the B4100.

Bramble Scrub

~~5.69~~5.70 Some small patches of semi-mature and mature bramble dominated scrub were present along the railway cutting SSSI and bramble scrub was also recorded around the Ashgrove Farmstead. A mature patch of bramble scrub was located between grassland fields and Ashgrove Farmhouse and gardens, and further areas of early mature to semi-mature bramble scrub were located at the peripheries to hardcore and hardstanding yards.

Hawthorn Scrub

~~5.70~~5.71 Hawthorn scrub areas were solely recorded along the banks of the SSSI railway cutting and were semi-mature to mature in age.

Mixed Scrub

~~5.71~~5.72 Mixed scrub was the most frequently recorded scrub within the site, with most mixed scrub areas recorded within the railway cutting SSSI and adjacent to road junctions associated with the M40 junction 10. Mixed scrub areas were generally well established and semi-mature to mature in age and structure, with some areas being more scattered and some areas more dense, comprising several native species including dogrose *Rosa canina*, hawthorn, bramble, elder, hazel, dogwood *Cornus sanguinea* and wild cherry *Prunus avium*.

Hedgerows

~~5.72~~5.73 The network of hedgerows throughout the Application Site is formed by ~~106~~ 105 individual hedgerows and hedgerow sections. These were nearly all species poor, with the exception of 2~~4~~5 hedgerows: H3, H6, H40, H44, H48, H50, H54, H56, H65, H70, H86, H87, H89, H92, H93, H96, H97, H98, H103, H105, H106, H107, H108~~, H109~~ and H115 that averaged five or more species per average 30m section of hedgerow.

Hedgerows H48, H50, H65, H90, H96, H106, H108 and H115 were assessed as 'Important' according to the 'wildlife and landscape' criteria of the Hedgerow Regulations 1997. Most hedgerows had a relatively good structure with few gaps. All hedgerows with the exception of H112 were considered to qualify as both Habitats of Principle Importance under S41 of the NERC Act (2006) and local BAP habitats, supporting over 80% native species. A summary of the extent and ecological value of on-site hedgerows is provided in Appendix B.

5.735.74 All hedgerows contained abundant hawthorn with varying proportions of other species including blackthorn, elder, English elm, hazel, dog-rose and ash. Other species recorded less frequently included field maple, sycamore *Acer pseudoplatanus* and spindle *Euonymus europaeus*.

5.745.75 Flora recorded at hedge bases was largely ruderal in its composition with common robust grasses such as false oat-grass and barren brome together with bramble, common nettle, ground-ivy *Glechoma hederacea*, cleavers *Galium aparine* and ivy all frequent and often abundant throughout the hedge network.

Woodlands

5.755.76 The majority of tree cover comprised small plantations or tree groups at the peripheries of arable field compartments and screening belts/groups in association with the M40 junction.

Plantation Woodlands

5.765.77 16 small blocks of plantation woodland were present across the Main Site, within the site (W1-W10, W39, W48, W61-W64 on Figure 2a-2f).

5.775.78 Blocks W1, W3 and W5 comprised mixed plantation woodland where the canopy species included semi-mature specimens of occasional sycamore, Scot's pine *Pinus sylvatica*, ash, aspen *Populus tremula*, English oak and European larch *Larix decidua* with dense Leyland cypress *Cupressus* × *leylandii* at the edges of W1. Understory species included occasional elder, hawthorn and field maple and the ground flora was generally species-poor, either dominated by grasses (consistent with those recorded in adjacent grassland areas) or dominated by bare ground with occasional lords-and-ladies *Arum maculatum*, common nettle, cow parsley *Anthriscus sylvestris*, ground-ivy, garlic mustard and common ivy. Woodlands W61 and W62 comprised small mixed plantation woodlands associated with Ashgrove Farmstead where the canopy species included semi-mature Leyland cypress, sycamore and horse-chestnut *Aesculus hippocastanum* with no understorey species recorded, and a ground layer dominated by common ivy.

5.785.79 Woodland W63 was a small coniferous woodland located within the garden of Ashgrove Farmstead dominated by semi-mature Leyland cypress and yew *Taxus baccata*. Woodland W39 was a coniferous woodland located surrounding a double concrete water tank towards the northwest of the Main Site (pond P4).

5.795.80 Blocks W2, W4, W6 W8, W9, W10, W48 and W64 each comprised broadleaved plantation woodland, mostly forming narrow woodland belts at field boundaries and/or along a watercourse. Canopy species included ash, crack willow *Salix* x *fragilis*, English oak, goat willow *Salix caprea*, Norway maple *Acer platanoides*, alder, silver birch *Betulus pendula*, common lime *Tilia* x *cordata*, with generally sparse understoreys comprised of hawthorn, bramble, English elm and hazel and with a ground flora and a ground layer often dominated by common ivy.

5.805.81 Block W8 alongside a section of Ashgrove Brook comprised a hybrid black poplar plantation with some additional self-seeded trees and coppiced hazel adjacent to the watercourse. The ground flora was largely dominated by bramble, common nettle and garlic mustard, however indicators of more established

woodland including dog's-mercury *Mercurialis perennis* and enchanter's nightshade *Circaea lutetiana* were also rarely recorded.

~~5.81~~5.82 Several groups of early-mature and mature trees were present within the northern Highway Works Area, planted as buffers between the existing highway and farmland, along with formal planted groups, often in dense scrappy forms, situated on roundabouts (W17-W33, W35-W37, W47, W41-W43, W51 and W65-W69). Typical species within these areas included ash, blackthorn, English oak, field maple, hawthorn, silver birch, sycamore, wild cherry, hazel, holly *Ilex aquifolium*, elder, Scot's pine, white willow *Salix alba*, common lime, alder, wych elm, elm and beech. Planting lines were often visible, with regular spacing of planted specimens however tree seedlings were also establishing where areas of the canopy were more open. The ground flora was largely species poor, particularly where planting was dense, due to the resultant canopy shading, with more open areas dominated by grasses.

~~5.82~~5.83 Plantation woodland blocks identified on the Defra MAGIC website as Deciduous Woodland Priority Habitat were W2, W8 and W9 within the Main Site, W26, W28, W29, W31 and W32 within the J10 Highway Improvement Work area, and W41, W42 and W43 along the B4030. These areas are not however identified as Priority Habitat within the desk study data received from TVERC. Furthermore, as these areas were formerly planted, often with clear planting lines and canopy cover of any one species not exceeding 25%[24] they do not affiliate with any NVC community. Therefore, these areas are not considered to meet the Priority Habitat criteria[25].

~~5.83~~5.84 Some small broadleaved plantation blocks were located the edges of arable fields to the east and west of Ardley Road (W14-W16 and W49) that had a consistent, semi-mature age structure and were comprised of frequent ash and field maple with occasional hazel, blackthorn, hawthorn and rare occurrence of holly and English oak. The ground flora in these areas was species-poor and dominated by garlic mustard and ivy.

~~5.84~~5.85 Small linear lengths of broadleaved woodland and a mixed plantation woodland block were also located adjacent to urban road verges along Middleton Stoney Road located towards Bicester. These were located alongside road verges between the road and the adjacent urban developments (W55-W59). These had a consistent early mature to semi-mature structure and mostly comprised ash, field maple, hawthorn, wild cherry, English oak, sycamore, elm, wych elm and silver birch. The ground flora was again species-poor and locally dominated by garlic mustard and ivy.

~~5.85~~5.86 Linear semi-mature woodland that included frequent horse chestnut and sycamore provided screening to the south and west of a utilities works in the south-west of the site adjacent to the Gagle Brook corridor.

Semi-natural Broadleaved Woodland

~~5.86~~5.87 Semi-natural broadleaved woodland was a rarely occurring habitat within the Application Site, limited to linear sections along Ashgrove Brook south of Ashgrove Farm, a linear area east of the M40 J10 Highways Works, a section of the Gagle Brook corridor, and a narrow corridor bordering the B4030 close to Bicester.

~~5.87~~5.88 The western edge of Sycamore Grove woodland (W34) lies within the eastern extent of the M40 J10 Highway Works Area and comprised a mix of early mature and mature ash and sycamore with occasional silver birch and a sparse shrub layer of field maple, hawthorn and blackthorn. Regeneration was noted throughout, with scattered ash and sycamore seedlings and ground flora including locally frequent patches of dog's-mecury.

[24] Carey, P. and Butcher, B. 2018. *UK Habitat Classification Field Key.*

[25] JNCC 2008. UK Biodiversity Action Plan Priority Habitat Descriptions. *Lowland Mixed Deciduous Woodland* [Online] Available from: https://data.jncc.gov.uk/data/2829ce47-1ca5-41e7-bc1a-871c1cc0b3ae/UKBAP-BAPHabitats-30-LowlandMixedDecWood.pdf [Accessed 24.08.25]

~~5.88~~5.89 A linear area of lowland mixed deciduous woodland located to the south of the B4030 (W43) was dominated by ash and sycamore with less frequent common lime and field maple. The understorey was sparse with locally frequent patches of hawthorn located mostly at the peripheries. An area of ground flora adjacent to the road verge supported frequent cock's-foot and false oat-grass with rare occurrence of common knapweed, wild teasel and perforate St. John's-wort where the canopy was more open. Where the canopy was more densely growing the ground flora was species-poor and dominated by leaf letter with occasional wood dock *Rumex sanguineus* and garlic mustard.

~~5.89~~5.90 A section of lowland mixed deciduous woodland bordering the Gagle Brook is located within the Middleton Stoney Relief Road Works Area (W11). Canopy species comprised frequent ash with occasional sycamore, crack willow and horse-chestnut and rare occurrence of hybrid black poplar and beech, with an understorey of hawthorn, blackthorn, elder and wych elm. Established ivy cover was present and the arboricultural survey (Appendix ES6.8, FPCR 2026) recorded evidence of ash dieback caused by *Chalara faxinea* and horse chestnut leaf miner *Cameraria ohridella*. The ground flora was dominated by common ivy, with locally frequent cow parsley, occasional bramble and rare occurrence of wood avens *Geum urbanum*, hedge woundwort *Stachys sylvatica* and herb robert *Geranium robertianum*.

Trees and Tree Lines

~~5.90~~5.91 Numerous standard trees (largely associated with hedgerows) and tree lines were recorded across the site. These comprised largely semi-mature to mature specimens including abundant/frequent ash, English oak and horse-chestnut, with occasionally or rarely occurring species including goat willow, rowan *Sorbus aucuparia*, beech, larch and Scot's pine. Most standard trees were in good condition and provided a diversity of habitat structure, with a number also exhibiting branch socket cavities, hollowing and dead wood within their canopies.

5.92 Broadleaved trees and tree lines were additionally associated with urban habitats, with tree lines present bordering the B430 road in Ardley village, and saplings and immature standard trees planted in association with road infrastructure along Middleton Stoney Road.

Veteran Trees and Ancient Woodland

5.93 Three veteran trees (based on the definition of a veteran tree provided within the National Networks National Policy Statement (NNPS) were identified within the Application Site (trees T93, T150, and T152 within Appendix ES6.8), and a fourth such tree located outside of the Application Site boundary but within influencing distance (tree T170).

5.94 A further 27 trees present within the proposed development footprint were identified as BNG veterans (Figure 6). These include several dead and dying ash, some showing evidence of Ash die back (likely *Inonotus hispidus*).

5.95 Veteran trees have National level importance.

5.96 No ancient woodland is present within the Application Site. Two single ancient woodland stands are however located directly adjacent the Order Limits: Kennel Copse to the northwest of the Main Site, and Burntwood Copse adjacent to a proposed area of green infrastructure creation including broadleaved woodland planting to the east of the proposed Middleton Stoney Relief Road.

Buildings, Hardstanding and Other Structures

~~5.91~~5.97 Buildings and hardstanding associated with Ashgrove Farm were present within the north-east of the Main Site. These comprised a mixture of stone, metal and timber-built structures currently in use as residential properties, outbuildings, barns and workshops. Full building descriptions are provided in the separate Bat Survey Report (ES6.3, FPCR 2026). The buildings were recorded to support negligible vegetation at the time of survey.

~~5.92~~5.98 A small, dilapidated barn was present within a sheep grazed improved field to the south of the main area of farm buildings and hardstanding. The barn was constructed from corrugated metal panels, with several missing panels. This building supported dense ivy growth internally and on the roof.

~~5.93~~5.99 Areas of hardstanding around the farm buildings largely comprised concrete and tarmac roads, and unsealed surfaces largely comprised hardcore that supported very limited vegetation. A section in the northwest of the farm complex was recorded to have become overgrown with dense scrub in the form of bramble and butterfly-bush *Buddelia davidii* and areas of tall ruderal vegetation including creeping thistle, common nettle and willowherb.

~~5.94~~5.100 A single square, brick construction was present within the middle of a cattle grazed grassland field in the southern half of the Main Site. This supported no roof, door or windows. Internally, this structure was dominated by bare ground with improved grassland at the margins.

~~5.95~~5.101 The Biffa Composting Facility within the southern half of the Main Site comprises a building used as a reception, an office and welfare facility, composting tunnels, weighbridge, bio-filter and maturation pad.

~~5.96~~5.102 The bridge in the northeastern Highway Works Area that crosses he railway track supported a small number of forb species that had established within gaps in the mortar including rough hawk's-beard *Crepis biennis*, rosebay willowherb *Chamaenerion angustifolium*, Canadian fleabane *Erigeron canadensis* and male fern *Dryopteris filix-mas*.

Introduced Shrub

~~5.97~~5.103 Areas of introduced planting were present within the site in association with buildings and gardens, and with a small area of public open space and structural planting at the B4300 junctions.

Invasive Non-native Flora

~~5.98~~5.104 No invasive non-native flora were recorded present within the Application Site.

Waterbodies

~~5.99~~5.105 A total of seven static waterbodies were recorded present within the Application Site: P1, P2, P3, P4, SP1, P20 and P50.

~~5.100~~5.106 The Main Site encompassed three ponds (P1-P3 in Figure 2c and 2e), in addition to a double concrete water tank (P4) within an area of scrub and woodland in the north-west of the Main Site, and a disused swimming pool (SP1) within the grounds of Ashgrove Farm.

~~5.101~~5.107 The three ponds supported some marginal/emergent vegetation at the edges that included soft rush *Juncus effusus* and encroaching grasses with limited/no aquatic vegetation recorded. Pond P2 was heavily poached by cattle and a small watercourse (see relevant description below) flowed into and out of pond P3.

~~5.102~~5.108 Waterbody P4 comprised two open concrete lined square tanks set into the ground within an area of scrub and woodland that held water at the time of survey. One of the tanks was covered in duckweed, whilst the other supported occasional duckweed.

~~5.103~~5.109 The disused swimming pool had steep concrete walls and was surrounded by paving stones and a metal rail fence. It supported a patch of vegetation including bulrush *Typha* sp. and held shallow depth of water in spring 2022 but was recorded to by dry during subsequent surveys.

~~5.104~~5.110 P20 is located within the Ardley Cutting SSSI and within the Valencia Waste Management Facility land encompassed by the northern Highway Works Area (Figure 2d). The southern bank of this feature was gentry sloping and vegetated by adjacent grassland. The northern bank was a 2m vertical cutting which supported very little vegetation. P20 held shallow water at times through the year but was noted to be dry for much of the spring and summer seasons.

~~5.105~~5.111 Pond P50 is an attenuation basin surrounded by Junction 10 of the M40 and associated highways (Figure 2b). It supports significant of open water, with stands of abundant common reed *Phragmites australis* and locally frequent yellow flag iris *Iris pseudacorus* recorded at the margins and towards the centre of the feature, whilst locally frequent patches of common club rush *Schoenoplectus lacustris* and occasional water starwort *Callitriche stagnalis* were recorded closer to the margins. An adjacent attenuation feature to the south (P51) is surrounded by but excluded from the Application Site.

Watercourses

~~5.106~~5.112 The small brook forming a tributary of Padbury Brook in the north-western corner of the Main Site was characterised as having arable habitats along both bank tops, with a c.2m field margin along the southeastern bank and hedgerow along the northwestern bank. At the time of survey in 2025 sections of the channel were c.0.5-1.0m wide with some sections extending to c.3m width. The water depth was shallow (<10cm) in June 2025, and the watercourse had dried completely by July. Occasional to frequent willowherb was recorded along the margins. From the westmost extent, the northern bank was bordered by a woodland block for c.150m, and a tall native hedgerow for the remainder. The southern bank was dominated by tall (c.1m) grasses, herbaceous vegetation, and the field margin of an actively cropped cereal field.

~~[?Change 5.108 to: Padbury Brook crosses the J10 Highway Improvement Works area and is culverted where this passes beneath the A43 and the M40. Between these two culverts the channel is c.150cm wide and heavily reinforced along both bank faces and the channel bed. The section to the west of the M40 is more naturalised, c.300cm wide and with steep banks to c.1.5m height with a predominant substrate of silt with areas of pebbles. The water levels were between 5-10cm at the time of survey in June 2025 with some dry sections, with a high abundance of lesser duckweed Lemna minor indicative of eutrophic conditions. A hedgerow is present along the northern bank and the southern bank is dominated by tall ruderal vegetation and patches of dense scrub resulting in heavy shading of the channel. Faith – eastern section?]~~

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~~5.107~~5.113 Padbury Brook crosses the J10 Highway Improvement Works area and is culverted where this passes beneath the A43 and the M40. Between these two culverts the channel is c.150cm wide and heavily reinforced along both bank faces and the channel bed. The section to the west of the M40 is more naturalised, c.300cm wide and with steep banks to c.1.5m height with a predominant substrate of silt with areas of pebbles ~~and with a hedgerow located along the northern bank top~~. A hedgerow is present along the northern bank, and the southern bank is dominated by tall ruderal vegetation and patches of dense scrub resulting in heavy shading of the channel. The water levels were between 5-10cm at the time of

survey in June 2025, with some dry sections, with a high abundance of lesser duckweed *Lemna minor* indicative of eutrophic conditions. Padbury Brook to the ~~west~~ east of the M40 has shallow (<0.5m high) sloping banks largely dominated by uncut neutral grassland and tall ruderal vegetation. This was ~~was more naturalised, c.300cm wide and with steep banks to c.1.5m height. The water level was~~ also very shallow ~~at c.5-10cm~~ with a silt substrate and with some dry sections at the time of survey in June 2025, and was confirmed to be entirely dry at the time of an opportunistic check made in September 2026 (Appendix C). ~~A hedgerow is present along the northern bank and the southern bank is dominated by tall ruderal vegetation and patches of dense scrub resulting in heavy shading of the channel. Aquatic/marginal vegetation was also limited to blooms of lesser duckweed.~~

~~5.108~~5.114 Ashgrove Brook flows gently in a southerly direction through the Main Site from the edge of woodland W1 to the southern site boundary. The channel at the time of survey was c.1m wide and supported a shallow depth of water (c.20cm) along much of the channel length with some areas resembling ephemeral pools, though most of the watercourse north of Camp Road was dry. The base of the watercourse was silty and the banks supported a mixture of vegetation including species-poor semi-improved grassland, tall ruderal vegetation and plantation woodland. A combination of hedgerows and trees bordered the entire length of this watercourse, with some sections completely surrounded by woodland. Within woodland areas the bankside vegetation was heavily suppressed and mostly consisted of saplings, ivy, and bramble. Occasionally occurring aquatic vegetation was recorded along this watercourse.

~~5.109~~5.115 A wet ditch that forms a limb of the upper reaches of Ashgrove Brook borders the length of hedgerow H5. This ditch was approximately 0.5m wide and 1m deep at the time of survey with steep banks and supported shallow (c.20cm) standing water. Semi-improved grassland was present on the western bank, with the hedgerow to the east. Frequent aquatic and emergent vegetation was recorded within the ditch, along with occasional hard rush recorded at the margins.

~~5.110~~5.116 The section of the Gagle Brook crossed by the proposed route of the Middleton Stoney Relief Road was approximately 2m wide with gentle sloping banks between 0.5-1m in height, with a variable water depth and a substrate primarily comprised of earth with some leaf litter. FPCR recorded an average depth of 10-20cm in May 2025, however it was recorded as being mostly dry in August 2025. Furthermore, surveys undertaken by Windrush Ecology to inform a neighbouring application (Planning Ref MW.0049/23) recorded the brook as dry in July 2022, largely dry during the period May to August 2023, dry in September 2023 and September 2024 and very shallow (but with a discernible flow) in January 2025[26].

~~5.111~~5.117 The brook is lined on both sides by tall, mature woodland, resulting in heavy shading and very limited bankside vegetation. Ground cover on the banks largely consisted of sparse ivy and bramble, though some less overshaded areas within the channel supported aquatic species including water figwort and water mint *Mentha aquatica* and with occasional stands of fool's watercress *Apium nodiflorum* in areas where the canopy was more open. Some recent areas of tree clearance were noted in August 2025 that had resulted in some bankside areas with sparse vegetation cover and/or piles of cut arisings, some of which had also fallen into the brook channel.

Fauna

Bats

[26] Windrush Ecology 2023. Dewars Farm Quarry North-Eastern Extension Area, Ardley Road, Middleton Stoney, Oxfordshire OX27 7PH. *Ecological Impact Assessment*, September 2023, and Windrush Ecology 2025. Dewars Farm Quarry North-Eastern Extension Area, Ardley Road, Middleton Stoney, Oxfordshire OX27 7PH. *Ecology Walkover Survey Report*, May 2025.

~~5.112~~5.118 The full bat field data results are provided within the Bat Survey Report (ES6.3), however a summary of the 2025 survey results is provided below.

~~5.113~~5.119 Consultation records returned from within 2km of the Application Site included common and soprano pipistrelle, noctule, brown long-eared bat, barbastelle, and serotine. No internationally designated bat sites were identified within 15km of the site boundary.

~~5.114~~5.120 Activity surveys undertaken across the Application Site between 2022-2025 indicated the arable and grassland habitats that comprise the majority of the site generally support only infrequent bat activity, with activity more closely associated with field boundaries and other linear habitats including hedgerows, woodland edge habitat, and watercourse corridors. Common pipistrelle was the most frequently recorded species across all survey methods, with soprano pipistrelle, noctule and *Myotis* bats were also regularly recorded. Barbastelle was recorded infrequently during activity surveys, and serotine, Nathusius' pipistrelle and Leisler's bat rarely.

~~5.115~~5.121 Trapping surveys targeting suitable barbastelle commuting routes captured only two individual barbastelles, both adult males. The site is therefore not considered to coincide with the core foraging zone of any barbastelle maternity colony should one be present in the wider area.

~~5.116~~5.122 Emergence surveys confirmed the Ashgrove farmstead and neighbouring cottages support small (non-maternity) common pipistrelle roosts. The cellar of the main farmhouse additionally supports occasional hibernating brown long-eared bats (maximum count 1 individual).

~~5.117~~5.123 Inspection of semi-mature and mature trees within the proposed development footprint confirmed that several trees had potential to support roosting bats, though subsequent aerial and nocturnal surveys did not identify any tree roosts.

Great Crested Newts

~~5.118~~5.124 The full GCN field data results are provided within the GCN Survey Report (ES6.4), however a summary of the 2025 survey results is provided below.

Terrestrial Habitats

~~5.119~~5.125 The on-site habitats, dominated by intensely managed arable land and grazed semi-improved grassland, provide limited terrestrial opportunities for GCN, though habitats of elevated value to this species are present with the site in the form of woodland, hedgerow bases, semi-improved grassland field margins, scrub and areas of tussocky grassland, largely located within the Valencia Waste Management Facility and Ardley (capped) Landfill Site.

Aquatic Surveys

~~5.120~~5.126 Mean HSI scores calculated for the seven waterbodies present within the Application Site ranged from 0.49 for P3 (indicating poor suitability to support breeding GCN), to 0.8 for P50 (indicating excellent suitability). The disused swimming pool (SP1) was dry throughout the survey period hence was not subject to aquatic survey.

~~5.121~~5.127 In addition to P50 six other waterbodies had HSI scores indicating excellent suitability, four within the Valencia Waste Management Facility and Ardley Landfill Site (P19, P19A and P40 northeast of the rail tracks and P35 nearby but to the south of the rail tracks), a large pond within an area open greenspace within Ardley (P48), and the adjacent balancing pond to P50 (P51).

~~5.122~~5.128 Ponds P49, P52, P64 and P65 were dry throughout the surveys in 2025, and the owner of P21 confirmed this pond was also permanently dry. Pond P55 was presumed to remain dry (as recorded in

previous seasons). Ponds P1, P5, P24A, P25, P38, P43, P44, P59, P60 and P62 all dried out at some point during the survey season hence were not subject to the full suite of four survey visits (or six visits where GCN confirmed present).

~~5.123~~5.129 No evidence of GCN was detected via the eDNA analysis of water samples from P46 and no evidence of the species was recorded via presence/absence surveys of waterbodies P1, P2, P3, P5, P6, P7, P9, P10, P20, P22, P23, P37, P42, P43, P44, P45, P46, P50, P53, P54, P56, P57, P61, P62, P63, P66, P67, P73 or PY.

~~5.124~~5.130 Of the onsite ponds GCN were absent from SP1, P1, P2, P3, P20, and P50 during surveys in 2025, with a single GCN (adult female) recorded within the double concrete water tank. GCN were additionally recorded within 33 off-site ponds within the wider survey area and 10 airfield water tanks within the Heyford Park former military base.

~~5.125~~5.131 From analysis of the data it was concluded that the site sat in between four separate and largely off-site GCN meta populations with P4 forming part of Metapopulation 1 centred within the airfield, and P50 located within the M40 J10 Highway Work Area forming part of Metapopulation 4 to the northeast. The estimated class-sizes of the four metapopulations are summarised below

Metapopulation 1: located primarily within the Upper Heyford former airfield but also including part of the Main Site to the west. GCN confirmed present within P4, P56, P57, T1, T2, T4, T5, T6, T9, T12, T15, T16, T17, with the peak count of 337 indicating a large metapopulation size.

Metapopulation 2: located to the east of the Application Site and encompassing land within the Viridor ERF including existing GCN mitigation ponds east of the B430. GCN confirmed present within P8, P11, P12, P13, P14, P15, P16, P17, P18, with a peak count of 50 GCN indicating a medium sized metapopulation (11-100).

Metapopulation 3: located within the Ardley Bypass and eastern rail track connection area. GCN confirmed present within P19, P19a, P24, P24a P25, P26, P27, P28, P29, P30, P31, P32, P33, P34, P35, P36, P38, P40, P41 and P58. The peak count was 207 GCN confirming the presence of a large metapopulation (>100).

Metapopulation 4: Centred on the M40 J10 and associated northern Highway Works Area, and encompassing Ardley village. GCN were confirmed present within P48 and P51 with a peak count of 69 GNC indicating a medium metapopulation size (11-100).

~~5.126~~5.132 Outside of the metapopulation areas described above a small GCN population was also recorded present within ponds P59 and P60 adjacent to Lodge Farmhouse close to the proposed route of the Middleton Stoney Relief Road.

~~5.127~~5.133 Whilst the Main Site provided some suitable terrestrial habitats, the limited suitability of breeding habitat within the site meant that the potential commuting links between neighbouring meta populations was restricted due to intervening distances and lack of suitable ponds within the Main Site.

Breeding Birds

~~5.128~~5.134 A full discussion of the breeding bird survey data is provided within the Bird Survey Report (ES6.5), with a summary of the 2025 survey results provided below.

~~5.129~~5.135 A total of 80 bird species were recorded within the survey area (encompassing the Application Site and some additional adjacent habitats) during the six survey occasions in spring/early summer 2025 and three surveys of the smaller additional area undertaken in May and June 2026. Of these, nine species were recorded overflying the survey area only and therefore were considered to be non-breeders within the

Application Site. As such, these are not considered likely to be impacted by the proposed development as they do not interact with the habitats present.

~~5.130~~5.136 Of the remaining 71 species recorded across the Application Site, 41 appear on one or more of the following and are hereafter referred to as 'notable species':

- Schedule 1 of WCA;
- BoCC Red or Amber lists;
- Section 41 of the NERC Act 2006; and/or
- Local Biodiversity Action Plan

~~5.131~~5.137 The breeding bird species assemblages recorded were typical of the agricultural habitats present across the survey area and were consistent with those recorded during surveys previously undertaken across the site.

~~5.132~~5.138 Arable fields and associated field margins supported a relatively limited assemblage of breeding birds, though this includes grey partridge, skylark, yellow wagtail, linnet, corn bunting, yellowhammer, and reed bunting *Emberiza schoeniclus*, all declining farmland species of national conservation priority (Species of Principle Importance under Section 41 of the NERC Act 2006). Numbers of the above were typically low given the size of the survey area, though more significant populations of skylark and yellowhammer were present. Fallow fields additionally supported large transient flocks of woodpigeon and mixed flocks of foraging and loafing gulls, with the gull species observed to commute between the survey area and the adjacent Ardley ERF and pools within gravel pits at Ardley Quarry.

~~5.133~~5.139 Field perimeter hedgerows supported typical farmland species including yellowhammer, and grazed grassland fields were used by foraging rooks *Corvus frugilegus* and by smaller numbers of woodpigeon, gulls, other corvids, and passage wheatear *Oenanthe oenanthe*a and occasional flocks of redwing *Turdus iliacus* and fieldfare *Turdus pilaris*. Rougher grassland including across the capped landfill supported skylark, and hedgerows and scrub habitat supported linnet, yellowhammer, meadow pipit and small numbers of reed bunting, with denser scrub thickets along the railway embankments supporting additional species such as willow warbler *Phylloscopus trochilus* and bullfinch *Pyrrhula pyrrhula*. Mature tree standards support nesting stock dove *Columba oenas* and such features were utilised by breeding pairs of both barn owl *Tyto alba* and kestrel *Falco tinnunculus*, and woodland bordering Gagle Brook breeding tawny owl. Farm buildings and surrounding developed areas supported limited assemblages of breeding birds, largely limited to common and widespread species tolerant of anthropogenic disturbance such as house sparrow *Passer domesticus* and dunnock.

Wintering Birds

~~5.134~~5.140 A detailed summary of the wintering bird dataset is provided within the Bird Survey Report (ES6.5), with a summary of the winter 2024-2025 data provided below.

~~5.135~~5.141 A total 74 bird species were recorded within the survey area during these surveys, of which three species were only recorded overflying the survey area and therefore were not considered to be using the Application Site. Of the remaining 71 species, 36 are considered notable.

~~5.136~~5.142 The wintering bird species assemblages recorded were largely typical of the agricultural habitats present across the survey area and were consistent with those recorded during surveys undertaken in earlier seasons.

~~5.137~~5.143 Stubble fields supported foraging skylark and large mixed flocks of woodpigeon and stock dove in addition to transient groups of starling *Sturnus vulgaris* and winter thrushes, small flocks of rooks, and small to moderate numbers of snipe *Gallinago gallinago*, mistle thrush *Turdus viscivorus*, meadow pipit, and yellowhammer. Grey partridge was also recorded, as were foraging flocks of stock dove, woodpigeon, starling, and winter thrushes. A large field compartment south of Ashgrove Farm supported flocks of lapwing and golden plover *Pluvialis apricaria* early in the winter season. Non cereal/stubble arable field compartments supported mixed flocks of skylark, finches and buntings including corn bunting, yellowhammer, and reed bunting in addition to woodpigeon, meadow pipit, starling and mistle thrush. Birds of prey including sparrowhawk *Accipter nisus*, red kite *Milvus milvus*, and kestrel were all observed hunting in and around these compartments.

~~5.138~~5.144 The sheep-grazed grassland compartments across the Main Site supported a very limited assemblage of wintering birds that included small numbers of skylark and meadow pipit, moderately sized flocks of foraging redwing and fieldfare, and occasional mixed flock of gulls, predominantly lesser black-backed gull *Larus fuscus*. Ungrazed field compartments additionally supported hunting sparrowhawk, red kite, kestrel, and merlin *Falco columbarius*.

~~5.139~~5.145 The hedgerows, scrub and woodland provided roosting sites for resident and migratory overwintering species including wren *Troglodytes troglodytes*, dunnock, and bullfinch, in addition to flocks of winter thrushes and aggregations of finches. The small woodland blocks additionally supported goldcrest *Regulus regulus*, nuthatch *Sitta europaea*, treecreeper *Certhia familiaris*, great spotted woodpecker *Dendrocopos major* and green woodpecker *Picus viridis*, and the watercourses and ponds supported small numbers of mallard *Anas platyrhynchos* and moorhen *Gallinula chloropus*, with reed bunting also present within marginal vegetation close to the M40/A43 highways junction.

~~*5.140*~~*5.146* Barn owl regularly used a partially derelict outbuilding at the former Nevilles Farm as a winter roost site. This structure is located outside of the Application Site but at the eastern edge of a field that will be bisected by the Ardley bypass.

~~5.141~~5.147 In summary the Application Site and neighbouring habitats provides foraging and breeding habitat for a range of generalist and widespread bird species in addition to an assemblage of farmland specialist species including breeding skylark and yellowhammer populations of county-level significance and grey partridge, linnet, corn bunting, and reed bunting populations of local-level significance. The survey area furthermore supports overwintering populations of county-level significance for golden plover, skylark, corn bunting, yellowhammer, and reed bunting, and of local-level significance for grey partridge, lapwing, snipe, red kite, and meadow pipit.

Badger

~~5.142~~5.148 Site surveys across the Main Site and closely adjacent habitats recorded a total of 17 active and 11 inactive badger setts, including a single active main sett present on-site (S2) and one main sett closely adjacent to the southwestern boundary of the Main Site (S13). 12 active outlier setts were also noted, as were a single active annex sett, two active subsidiary setts, an inactive former main sett [redacted]

~~5.143~~5.149 The territory of Sett S2 encompasses the southwestern corner of the Main Site and predominately comprises agricultural land, the majority of this territory likely located beyond the Application Site to the west.

~~5.144~~5.150 Sett S13 is located within an area of off-site woodland (The Heath pDWS). Only a single latrine marker was recorded for this main sett, indicating this clan likely relies predominantly on the off-site woodland habitats to the south for foraging and commuting rather than the on-site arable land and grazed grassland.

~~5.145~~5.151 Unmarked latrines also were noted along the top of the southern rail embankment to the north of the Main Site.

~~5.146~~5.152 Surveys across the Highways Works Area and adjacent proposed biodiversity enhancement area north and east of Middleton Stoney recorded the presence of two active [redacted]

~~5.147~~5.153 [redacted], therefore are considered to potentially support the same clan, though no supporting marker data was recorded to suggest the movement of badgers between these setts during survey in March and April 2025. No latrine markers associated with sett S24 were recorded during survey. Markers associated with Sett 41 were only recorded to the west of this sett but did not extend into the Main Site.

~~5.148~~5.154 Sett S36 is located towards the northern extent of the northeastern Highway Works Area, closely adjacent to the A43. No latrine markers associated with this sett, indicating the Application Site does not provide a significant foraging resource this clan.

~~5.149~~5.155 The detailed habitat survey of the Ardley Cutting and Quarry SSSI habitats recorded a presumed main sett (seven holes, a mix of active and inactive) and 2-hole subsidiary sett with two latrines (both with no markers) within scrub habitats bordering the northern rail embankment north of the landfill. Survey access to this and adjacent embankment areas was strictly limited and therefore could not be included within the wider bait-marking exercise. No latrines were recorded along the field boundaries encompassed by the bait-marking survey to the northwest, west or south.

~~5.150~~5.156 Furthermore no badger setts were recorded in association with habitats adjacent to Junction 9 of the M40, or the proposed road improvements along the B4030 or Middleton Road.

~~5.151~~5.157 Badger are common and widespread in England and the Site is therefore considered to be of no more than Local value for this species. The Protection of Badgers Act 1992 however requires development proposal to have regard for this species.

~~5.152~~5.158 A full discussion of the badger survey data is provided within the Badger Survey Report (ES6.6).

Butterflies

~~5.153~~5.159 The butterfly transect surveys in 2025 recorded a total of 1,547 individual butterflies and 25 species. Records of small skipper *Thymelicus sylvestris* and Essex skipper *Thymelicus lineolaue* were combined due to the difficulty in differentiating between these species on the wing.

~~5.154~~5.160 The most frequently recorded species were marbled white *Melanargia galathea*, meadow brown *Maniola jurtina* and gatekeeper *Pyronia tithonus*, and the least frequently encountered butterfly species were brown argus (two records in one survey) and dark green fritillary (three records across two surveys) (both listed within the Ardley Cutting and Quarry SSSI citation) and painted lady *Vanessa cardui* (single record). Day-flying moth species recorded were six-spot burnet *Zygaena filipendulae* (single individual) and cinnabar moth *Tyria jacobaeae* caterpillars on common ragwort.

5.161 Small blue was recorded on 41 occasions and green hairstreak on five occasions. No evidence of Duke of Burgundy was recorded during the transect surveys, or any eggs or caterpillars of this species during inspection of host plants.

Reptiles

~~5.155~~5.162 The majority of habitats on site were considered to provide sub-optimal refuge and foraging opportunities for native reptile species due to the managed nature of the arable and open grassland habitats that dominated the site. The arable land was intensively managed and the grassland grazed short and lacked the structural diversity required. Limited opportunities were present for this species group however at the field perimeters, in the form of the grassland field margins, woodland edges, ponds/watercourses and hedgerows.

~~5.156~~5.163 The location of the 420 artificial reptile refugia are shown in Figure 3. The surveys recorded common lizard on five occasions across the Main Site and Highways Works areas (peak count 5 adults) and grass snake on five occasions (peak count six adults). A suite of eight surveys previously undertaken in 2021 had recorded a similar assemblage, comprising 22 common lizard records (peak count 4 adults), five grass snake records (peak count two adults), and a single adult slow worm.

~~5.157~~5.164 The 2025 survey results are summarised in Table 5 and locations shown at Figure 3. As such it is considered that the current application site supports a low population of common lizards, grass snakes and slow worms in accordance with Table 3.

~~5.158~~5.165 An incidental record was also made of a grass snake and a common lizard among habitats adjacent to the Quarry Cottages bridge to the northwest of Ardley Wood during one of the butterfly transects.

~~5.159~~5.166 On the basis of the reptile survey data recorded it is considered that the Application Site supports a good population of grass snake and common lizard and a low population of slow worm. The Application Site is therefore considered to be of local importance for reptile species.

Table 5: Reptile Survey Results

Date	Species						
	Adult M Common Lizard	Adult F Common Lizard	Unknown Adult Common Lizard	Juvenile Common Lizard	Adult Grass Snake	Juvenile Grass Snake	Adult M Slow Worm
24.04.25	0	0	0	0	0	1	0
02.05.25	0	1	0	0	0	0	0
21.05.25	0	0	1	1	5	1	0
03.06.25	0	1	0	0	0	1	0
25.06.25	0	1	0	0	0	0	0
03.09.25	0	0	0	0	6	3	0
16.09.25	1	1	3	0	1	6	0

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Riparian Mammals

Padbury Brook Tributary

~~5.160~~5.167 The bankside vegetation along the Padbury Brook Tributary provides some suitable foraging opportunities for water vole, but also creates a moderate level of overshading, particularly where bramble had begun to encroach.

~~5.161~~5.168 No evidence of water vole or otter was recorded along the Padbury Brook Tributary, nor were any signs or burrows of any other mammal noted.

Padbury Brook

~~5.162~~5.169 The highly engineered watercourse is small and narrow and supports only very shallow water levels. It is therefore considered unlikely to provide suitable foraging habitat for otter and only very limited potential for foraging and commuting water vole.

~~5.163~~5.170 No evidence of either species was recorded along the Padbury Brook during targeted surveys.

Ashgrove Brook

~~5.164~~5.171 No evidence of water vole or otter was recorded along Ashgrove Brook, though rat burrows and rat dropping were recorded in the section immediately south of Camp Road, within the woodland block.

Gagle Brook

~~5.165~~5.172 No evidence of water vole or otter was recorded within the Gagle Brook corridor during targeted surveys.

~~5.166~~5.173 Signal crayfish remains were noted adjacent to the brook channel, which were assessed to have likely been predated by a grey heron *Ardea cinerea* on the basis of the damage to the exoskeleton.

Hazel Dormouse

~~5.167~~5.174 Hazel dormouse is considered rare within Oxfordshire[27] and, excluding recent reintroduction sites, the Application Site lies at the northern limit of the species distribution range. Known populations within the county are primarily located to the southeast of Oxfordshire, around Henley-on-Thames.

~~5.168~~5.175 No hazel dormouse records were returned from TVERC from within 2km of the Application Site, and the Multi Agency Geographic Information for the Countryside (MAGIC) website identifies only two hazel dormouse European Protected Species Licences (EPSL) from within 30km, both located to southeast of Upper Arncott and dating from 2015. The closer of these is located c.7.4km from the proposed M40 J9 works and c.10.7km from the remainder of the Proposed Development (excluding within-highways works along the B4030). The corresponding distances for the second EPSL site are c.8.3km and c.11.3km respectively. Consultation with the NBN Atlas did not identify any records closer to the Application Site than the two Upper Arncott sites, i.e. no known records of hazel dormouse within 10km of the main Application Site.

~~5.169~~5.176 The species is generally closely associated with areas of dense woody vegetation cover with a wide diversity of woody species contributing to three-dimensional habitat complexity, diverse food sources, suitable nest sites and good connectivity to other areas of suitable habitat in the local landscape. Optimal habitat for hazel dormouse is considered to comprise woodland stands of >10ha[28] with good structural and plant species diversity and with habitat connectivity within the landscape (an average density of 10km hedgerow per km^2 is suggested[29]), or landscape including woodland areas greater than c.20ha if good habitat connectivity is lacking[30].

[27] Bullion, S., Wolton, R., and White, I. 2025. *Hazel Dormouse Conservation Handbook*. 3rd Edn. Mathews Ed. Mammal Society.

[28] Bright, P., Morris, P and Mitchell-Jones, T. 2006. *The Dormouse Conservation Handbook*. 2nd Edn. English Nature.

[29] Staley, J.T., Wolton, R. and Norton, L. 2020. *Definition of Favourable Conservation Status for Hedgerows*. UK Centre for Ecology and Hydrology. Natural England Publication. RP2943, and Staley, J.T., Wolton, R. and Norton, L.R. 2023. Improving and expanding hedgerows – recommendations for a semi-natural habitat in agricultural landscapes. *Ecological Solutions and Evidence* 4 e12209.

[30] Bright, P.W., Mitchell, P. and Morris, P.A. 1994. Dormouse Distribution: Survey Techniques, Insular Ecology and Selection of Sites for Conservation. *Journal of Applied Ecology* 31:329-339.

~~5.170~~5.177 Field boundary habitats within the Application Site are characterised by species-poor hedgerows with few if any standard trees that are intensively managed and subject to regular flailing. Woodland stands are few in number and small (<2.5ha), albeit with some limited connectivity among those adjacent to Ashgrove Brook. The only exception is the woodland corridor along the Gagle Brook west of the M40 that extends across c.14ha through the wide landscape, of which c.0.41ha lies within the Middleton Stoney Relief Road works corridor and a smaller c.0.08ha section is encompassed within the area proposed for the eastern rail track connection. A nest tube survey for the species was undertaken along an intervening section of the brook corridor and adjacent habitats in June-September 2023 for a neighbouring application (Planning Ref MW.0049/23). This recorded no evidence of the presence of hazel dormouse.

~~5.171~~5.178 With the exception of small sections of the Gagle Brook corridor the Application Site is therefore characterised by a mosaic of unsuitable and sub-optimal habitats for hazel dormouse with poor habitat structural complexity and very limited connectivity to areas of more suitable habitat in the wider landscape.

~~5.172~~5.179 The CDC and OCC Ecologists were consulted with regard to a best practice approach and proportional level of survey effort with regard to hazel dormouse. It was agreed that given the low suitability of habitats that will be impacted, a nut search methodology could be considered appropriate, as long as the results of such a search and of an updating consultation with TVRC were negative for the species.

~~5.173~~5.180 No evidence of hazel dormouse was recorded during the nut search. Whilst the survey did not find the minimum of 100 nuts that had opened by small rodents (excluding squirrel) required to enable a robust assessment this was a reflection of the rare occurrence of hazel and other nut/large seed/stone bearing species generally.

~~5.174~~5.181 Given the absence of species records, the poor quality and connectivity of on-site habitats generally, and the Application Site being located almost at the limits of the species' distribution range hazel dormice is considered very unlikely to be present within the Application Site, and further survey for the species was scoped out.

Other Notable Species

~~5.175~~5.182 During the suite of survey work across the site a small number of brown hare *Lepus europaeus* were observed within the site, primarily within the larger field compartments of the Main Site. Habitats within the site were also considered to provide some suitable opportunities for commuting and foraging hedgehog.

Invasive Non-native Fauna

~~5.176~~5.183 In addition to the observation of signal crayfish remains during the survey of riverine habitats along the Gagle Brook, this species was also observed on two occasions during nocturnal bat trapping surveys at the approximate location of the proposed road crossing of this brook.

5.184 No evidence of any other invasive fauna was recorded during surveys.

6.0 DISCUSSION

Sites with a Statutory International Nature Conservation Designation and Sites on the National Sites Network

6.1 Oxford Meadows SAC is an Internationally important site located c.13.6km to the south of the Proposed Development and therefore there will be no direct loss of habitats from the SAC as a result of the development. There are no direct terrestrial and hydrological links between the Proposed Development

and the SAC for wildlife. Threats to this lowland hay meadow habitat from outside of the boundary are identified[31] as human induced changes to hydraulic conditions, surface water pollution and invasive species. Development at the Site is unlikely to have any influence on these factors.

6.2 The Shadow Habitats Regulation Assessment that has been produced has concluded that alone, or in combination with other plans or projects, the Proposed Development is not likely to have a significant effect on the qualifying features of the Oxford Meadows SAC (see ES6.9, FPCR 2026).

Sites with a Statutory National Nature Conservation Designation Value

6.3 The rail connection component of the Proposed Development will connect to the existing railway running through the Ardley Cutting and Quarry SSSI at two locations north of the Main Site. Furthermore the Ardley bypass will arch over the SSSI with supporting infrastructure within the SSSI boundary. The direct loss of small areas of scrub, woodland, calcareous grassland and lowland meadow grassland are anticipated from within the SSSI, with further direct loss from within required construction zones. The remainder of this designation will be subject to direct effects such as dust, pollution and noise and habitats underneath the bypass will be subject to significant shading.

6.4 The sections of SSSI located within the site and to be affected by the proposed railway connection in the west and proposed bypass in the east were noted to be heavily encroached and overgrown with scrub. This SSSI unit has been classified by Natural England as 'Unfavourable Recovering'[32]. Although sections of the SSSI will be lost the losses will be mitigated for through the creation of new, and larger, areas of calcareous grassland on new cuttings created for the rail connection that will expose substantial subsoils with the same underlying limestone influence as noted elsewhere within the SSSI. Suitable methods to be employed include translocating material from areas lost, and/or the sowing of grassland seed collected from the SSSI. Areas of newly created calcareous grassland will be appropriately managed in the long term (for example via annual mowing in early spring or late summer) so that it does not become overgrown with scrub. As these new cuttings will form part of the site, access for management will not be hindered by the current access restrictions and therefore there will be more effect management than current.

6.5 The Ardley Wood Quarry BBOWT Nature Reserve forms part of the Ardley Cutting and Quarry SSSI, located to the north of the railway line. The realignment of the public right of way to the west of Nature Reserve may result in an increase of visitor pressure to this site. During the survey work an informal path was already evident within the proposed route location and as such, any further visitor use is unlikely to have any significant impact on existing ground flora, which comprises species-poor grassland that is being heavily encroached by ruderal species and bramble scrub. The Nature Reserve is already managed for recreation with an established network of well-worn paths and maintained infrastructure including wooden reinforced steps. Therefore, the small increase in use from the adjacent urban area and SRFI personal will not result in a significant increase in recreational effects on the Nature Reserve above that which it is already designated to accommodate.

6.6 Ardley Cutting and Quarry SSSI is considered to be in 'unfavourable-recovering' condition[33], and much of the SSSI supports habitats other than the qualifying lowland calcareous grassland habitats for which it was designated. Air quality issues are not identified by Natural England as a known pressure to the SSSI[34], with

[31] https://jncc.gov.uk/jncc-assets/SAC-N2K/UK0012845.pdf

[32] https://designatedsites.naturalengland.org.uk/UnitDetail.aspx?UnitId=1022421

[33] https://designatedsites.naturalengland.org.uk/SiteFeatureCondition.aspx?SiteCode=s1000903&SiteName=Ardley%20Cutting%20and%20Quarry%20SSSI

[34] https://designatedsites.naturalengland.org.uk/SitePressures.aspx?SiteGuid=30af95e3-5a50-e411-a6ba-000d3a2004ef&SiteCode=S1000903&SiteName=Ardley%20Cutting%20and%20Quarry%20SSSI

the only pressure highlighted being the encroaching scrub that is subject to management by the landowner (Network Rail) via removal of sections on a rotational basis.

6.7 An Air Quality Assessment (AQA) has been undertaken that predicts future NO_x, NH_3, Nitrogen and Acid deposition rates taking into account likely contributions resulting from the construction and operation of the Proposed Development (see ES Chapter 4: Air Quality and Odour).

6.8 The AQA identified no significant construction effect on the Ardley Cutting and Quarry SSSI as a result of NO_x or NH_3.

6.9 With regard to Nitrogen deposition, the background levels are considered to already be in exceedance of the critical load (10kg N/ha/yr) throughout much of the SSSI, and construction activities are predicted to result in some small increases in deposition rates (0.1 to 0.41kg N/ha/yr) along a c.290m section of the SSSI that extends from the west of the B430 to the point at which the Ardley bypass will cross over the SSSI corridor that will exceed the 1% screening level.

6.10 The Acid deposition background levels are also in exceedance of the critical load (1.0 keq/ha/yr) up to 200m from the M40 and B430 and some small additional increases are predicted in background Acid deposition levels within the SSSI (ranging from 0.01 to 0.04 keq/ha/yr) along a c.40m length between 10m and 50m northwest of the B430 road crossing, and a c.60m length extending from 10m to 70m southeast of the B430.

6.11 Given the proportionately very small increases in Nitrogen and Acid deposition rates modelled relative to existing background levels the construction phase will have a temporary not significant adverse effect on the SSSI and will not impact the conservation status of the site.

6.12 Increased nitrogen deposition along a c.80m length in the immediate vicinity of the proposed Ardley Bypass could result in a detectable alteration to grassland condition and species composition and impact the effectiveness of future management, representing a long-term, not significant adverse effect on the condition of the SSSI features within this section.

6.13 The operation of the site is predicted to exacerbate the existing acid deposition within the SSSI, though by with very small increases attributable to the operational site (<0.1keq/ha/yr) influencing SSSI habitats northwest of the B430 and southeast of the M40. Furthermore the underlying limestone soils are expected to have a buffering effect on the effect of acid deposition, therefore whilst some increases are anticipated these are anticipated to be minor and not significant within the context of the conservation status of the SSSI.

6.14 Predicted increases in NH_3 levels along a c.130m section in the immediate vicinity of the proposed Ardley bypass crossing of the SSSI will result in a long-term not significant adverse effect on the condition of the SSSI features at this location, the effect of NH_3 deposition elsewhere within the SSSI will be negligible.

6.15 The AQA indicates that NO_x emissions from the operational site will have a negligible effect on the SSSI habitats.

6.16 In light of the above, and within the context of the majority of the SSSI not comprising qualifying calcareous grassland habitat, and likely buffering effects, the Proposed Development is not considered likely to result in a significant change to the sensitive grassland for which the SSSI is notified, or to undermine the biodiversity objectives of the site. The creation and long-term management of extensive calcareous grassland and lowland meadow in close proximity to the SSSI will mitigate the minor adverse impacts arising as a result of elevated levels of airborne pollutants.

Basil Thyme *Clinopodium acinos* Mitigation Strategy

6.17 A single specimen of basil thyme, a species of principal importance and an Oxfordshire Rare Plant[35] with a conservation status of vulnerable was located on a narrow plateau within Ardley Cutting and Quarry SSSI, close to the M40 rail bridge at the eastern extent of the Application Site during survey in 2022, but not in 2025. At this stage it is unconfirmed whether there would be a direct loss of habitat from this area, and therefore a precautionary approach has been outlined on the assumption this area would be lost.

6.18 As basil thyme is usually an annual species[36], the translocation of individual plants would not provide a feasible mitigation strategy. Instead, translocation of turves of the grassland in which the plant was recorded would be required to ensure that the seedbank is also translocated. As detailed above, the creation of areas of calcareous grassland as part of the earthworks and landscaping will involve some translocation of areas of calcareous grassland within the SSSI that will be directly impacted. This would include the area which supports basil thyme if needed.

6.19 If the final scheme design enables the location of the basil thyme to be retained, there remains potential for impacts arising from dust deposition during construction. Measures will be implemented during the construction to ensure this and other key habitats are protected from construction impacts including dust dispersal in line within the Construction and Environmental Management Plan (CEMP) and subsequent phase-specific 'P-CEMP's to ensure there are no significant impacts from dust deposition.

Non-Statutory Designated Sites

6.20 Non-statutory sites are referred to in the National Planning Policy Framework (NPPF) as local sites and do not receive statutory protection. These sites do however receive policy protection as reflected in the NPPF, which suggests that Local Sites can have a fundamental role to play in meeting overall national biodiversity targets and that appropriate weight should be attached to designated sites when making planning decisions. The NPPF also requires recognition of the contribution that local sites make to wider ecological networks.

6.21 A single DWS is partially located within the site boundary and a further three LWS and two pDWS are located adjacent to the Application Site and ~~a~~ three more LWS located within 1km of the Application Site. Ardley Road Verge Nature Reserve DWS and the LWSs have been assessed as being of County level value, while the potential DWSs have been identified as being of Local level value.

~~6.21~~6.22 There will be no habitat loss from Ardley Road Verge Nature Reserve DWS. Currently the meadow clary population encompassed by this DWS and located just outside of the Application Site to the south is vulnerable due to its location within a road verge with regular disturbance from dust deposition and pollution from road traffic, as well as the risk of potential vandalism as it is currently located close to a layby.

~~6.22~~6.23 The Proposed Development exclude the meadow clary and therefore there will be no direct loss of individual plants. Furthermore, the development will provide significant additional areas of calcareous grassland within the green infrastructure and there will be opportunities to expand the current population through a two-step enhancement strategy as outlined below which will require a licence from Natural England to facilitate.

Meadow Clary Strategy Enhancement Strategy

[35] Erskine, S. E., Killick, H.J., Lambrick, C. R. and Lee, E. M. 2018. *Oxfordshire's Threatened Plants*. Pisces Publications.

[36] Plantlife. (undated). *Basil Thyme Clinopodium acinos - Species Fact Sheet.* Salisbury: Plantlife. https://www.plantlife.org.uk/download_file/view/2633/837

~~6.23~~6.24 Meadow clary is listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) and is therefore protected from intentional picking, uprooting or destruction.

~~6.24~~6.25 No direct loss of meadow clary plants is anticipated, however there remains potential for the species to have colonised adjacent proposed development areas subsequent to the most recent survey. Therefore an updating survey will be undertaken of habitats within and adjacent to the Ardley Road Verge Nature Reserve prior to construction commencing in the adjacent phase.

~~6.25~~6.26 Should any meadow clary be present within the development footprint it is proposed this would be translocated prior to the commencement of works to calcareous grassland habitat within the on-site green infrastructure. An methodology for translocation is outlined within the submitted Habitat Management and Monitoring Plan (ES6.11: HMMP) however as Meadow clary is a Schedule 8 species a licence from Natural England will be required to enable the translocation works, as such the final methodology would be formally agreed with Natural England as part of the licensing process.

~~6.26~~6.27 There will be some very localised habitat loss from the perimeter of Ardley Fields Quarry LWS which overlaps with the Ardley Cutting and Quarry SSSI along its southwestern edge. Any habitat loss from the eastern perimeter of this LWS will be confined to minor clearance to maintain the existing bridleway. These losses will be mitigated for as outlined above.

~~6.27~~6.28 It is anticipated there would be a small loss of Lowland Deciduous Woodland HPI from The Heath pDWS and a small loss of broadleaved woodland from the Trackway adjacent to the Gorse pDWS to facilitate a new footpath and improved road junction. The development design has sought to reduce these losses as far as possible, such that the losses will be in the order of 0.4ha and 0.1ha respectively~~-~~.

~~6.28~~6.29 There will be no direct habitat loss from Upper Heyford Airfield LWS, or from Kennel Copse pDWS that lie adjacent to the Main Site, or from the ancient woodland stand within Burntwood Copse adjacent the route of the proposed Middleton Stoney Relief Road. ~~however g~~Given the~~ir~~ location of these sites however there is potential for indirect impacts including physical damage to vegetation, in particular the root systems of trees, and the compaction of soil which can lead to direct mortality or alter the species and structural diversity of vegetation. They may also be at risk of accidental pollution events, dust deposition, and noise. The proposed development however incorporates a non-development semi-natural buffer (min. 30m from the non-designated sites, >15m from other off-site ancient woodland)~~ however~~, within which habitats such as woodland and semi-improved grassland will be established. Given the incorporation of the buffer planting and with the adoption of best practice measures, no significant adverse direct effects on these non-statutory designations are anticipated.

~~6.29~~6.30 The remaining non-statutory designated sites which comprise Ardley Fields Ponds East LWS, Ardley Field Ponds West LWS, Trow Pool LWS, Stoke Wood LWS, Tusmore and Shelswell Park CTA, Middleton Stoney Cricket Ground pLWS and Shakespeare Drive DWS lie sufficiently distant that there will be no risk of direct physical damage to retained vegetation and soils. Impacts could however result from accidental pollution events through spillages into wetland features, or increases in silt due to inappropriate design of site drainage, that can in turn lead to impacts upon off-site receptors by reducing water quality. Although Ardley Fields Ponds East LWS is located on the opposite side of the B430 there is potential for accidental pollution events to impact the ecological value of this designation.

~~6.30~~6.31 The magnitude of the distance separating the Application Site from all other non-statutory sites is considered sufficient to ensure that there will be no impacts to these features during construction.

~~6.31~~6.32 In terms of the completed development, the proposals comprise a rail freight scheme with associated industrial/business units and associated infrastructure. Given the Ardley Road Verge Nature Reserve DWS

largely lies within the boundary of the Main Site, it may be subject to an increase in creational activity due to access by SRFI personnel during utilisation of the realigned footpath. However, this path will be surfaced and the DWS protected by fencing with suitable signage indicating the sensitivity of the area. Given the creation of accessible multipurpose recreational routes through the Application Site and linking to the surrounding areas it is not anticipated that there would be an increase in recreational pressure on the Ardley Road Verge Nature Reserve or any more distant non-statutory designated site.

Habitats

~~6.32~~6.33 The following provides an assessment of those habitats that, except where indicated otherwise, fall outside the boundary of designated sites of nature conservation interest.

~~6.33~~6.34 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:

- Inclusion within specific policy, for example veteran trees and ancient woodland within the NPPF;
- A non-statutory site designation (e.g. LWS);
- Identification as Habitats of Principal Importance for the conservation of biodiversity as listed within Section 41 of NERC; and
- Habitats identified as being a Priority Habitat within the Local Biodiversity Action Plan (Oxfordshire LBAP) (lowland meadows, lowland calcareous grassland, ponds, rivers, lowland mixed deciduous woodland, arable field margins and hedgerows).

~~6.34~~6.35 Under the National Planning Policy Framework (NPPF) development should seek to contribute a net gain in biodiversity with an emphasis on improving ecological networks and linkages where possible. Biodiversity net gain for Nationally Significant Infrastructure Projects is scheduled to be made mandatory from May 2026. It has therefore been assumed that the Proposed Development will be required to deliver a 10+% biodiversity net gain. The Proposed Development shall also provide other enhancements for locally important wildlife, such as birds and bats.

~~6.35~~6.36 The retention and protection of key ecological features within the site; retained areas of the Ardley Cutting and Quarry SSSI and Ardley Road Verge Nature Reserve DWS as described above in conjunction with creation of extensive and diverse new green infrastructure will ensure that the above policies and safeguards are met. Furthermore a draft Statutory Biodiversity Metric has been completed to support the application. This metric demonstrate that the proposals are capable of achieving a biodiversity net gain in excess of the minimum 10% requirement of the Environment Act. Under the indicative proposals, the overall scheme is capable of achieving a gain of 13.7~~1.91~~% in habitat units, 13.8~~1.81~~% in hedgerow units and 11.0~~0.98~~% in watercourse units. A bespoke BNG calculation has additionally been undertaken specifically for the SSSI habitats and associated ~~mitigation~~ compensation areas, this demonstrates that the scheme is able to provide a 22.81~~.57~~% net gain to mitigate unavoidable impacts to SSSI habitats. Full details of the BNG assessment prepared for the Site are provided in the Biodiversity Net Gain Report Appendix ES6.9, FPCR 2026.

~~6.36~~6.37 The dominant habitats within the site, comprising arable land, modified grassland and neutral grassland pastureland, along with grassland field margins, tall forbs, bare ground, introduced shrub buildings and hardstanding are considered to be of limited botanical and ecological interest. The loss of these habitats would not result in significant adverse impacts to ecology and nature conservation.

~~6.37~~6.38 Scrub and neutral grassland are considered to be of site level ecological interest. These habitats have been retained where possible within the proposals and losses mitigated for within the green infrastructure.

~~6.38~~6.39 The lowland calcareous grasslands, lowland meadows, woodlands, hedgerows, semi-mature to mature trees, watercourse and ponds present within the site are of greater ecological value and provide foraging and shelter resources, and wildlife corridors through and around the site. Wherever possible these have been incorporated within the green infrastructure, connecting to the Ardley Cutting and Quarry SSSI, DWS and adjacent pDWSs, as outlined in the Illustrative Master Plan; however, there will inevitably be some loss or fragmentation to achieve a design layout that is function and sustainable.

~~6.39~~6.40 The hedgerows and trees at the site boundaries will be largely retained within the proposed scheme, along with Ashgrove Brook and the majority of woodland stands including W2, W6-W9, W14, W16, W17, W19, W22, W26, W30-35, W28, W41-W44, and W46-W64. The largest pond within the Main site, P3, will also be retained. Retained habitats are proposed to be buffered within the green infrastructure where possible and should be appropriately protected during development (using heras fencing or similar with appropriate signage).

6.41 Ancient Woodland is a material consideration within the planning process, and its importance is specifically recognised within the NNPS (and NPPF). The proposals would not however result in any loss of ancient woodland.

6.42 Ancient woodland neighbouring the Application Site within Kennel Copse and Burntwood Copse is located c.300m and c.50m respectively from the closest proposed groundworks. There are no hydrological pathways identified linking these woodlands to the working areas and both woodland stands will be buffered by significant green infrastructure. Policy compliant 15m buffer zones will be implemented throughout construction, secured by the CEMP and future phase specific CEMPs). As such no significant direct or indirect impacts to ancient woodland are identified.

6.43 NPPF veteran trees T150, T152 and T170 will be retained and sensitively buffered within the proposals within continuous green infrastructure that will fully encompass the associated root protection areas (see ES6.8: Arboricultural Assessment). As such no impacts are anticipated to these trees. It is however necessary to remove T93 to enable the development and a further 27 trees that met the lower threshold to qualify as Irreplaceable Habitat as defined by the Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024.

6.44 As a nationally significant infrastructure project, this loss is justified as 'wholly exceptional' in accordance with the NNPS (para 5.63), however a bespoke Veteran Tree Strategy will be implemented (see Appendix 4 within ES6.11: Habitat Management and Monitoring Plan) in order to retain cut veteran material on site within a dead wood reserve adjacent to Kennel Copse that will incorporate an area of monolith creation further enhanced with partially buried translocated veteran tree stumps and vertical log piles (using smaller cut material). The topsoil immediately surrounding removed veteran trees will be carefully stripped and collected and then redistributed around the base of the monoliths and relocated stumps to transfer microbial, fungal, and invertebrate communities associated with the original trees. Care will be taken to minimise compaction and retain soil structure during excavation, transport, and placement, and the finalised reserve area will be protected with fencing or other suitable barrier, with interpretive signage also installed.

~~6.40~~6.45 The proposals will compensate tree and woodland losses through the creation of substantial areas of native broadleaved woodland and smaller areas of other mixed woodland throughout the site-wide green infrastructure. This will include the corridors of structural planting largely surrounding the Main Site and alongside the newly constructed bypasses in addition to tree groups and larger woodland stands throughout the northwestern Highway Works Area and to either side of the Heyford Park Link Road. The

extent of native woodland and tree planting will therefore be significantly increased within the Application Site.

~~6.41~~6.46 A number of the hedgerows, along with pond P1, P2, P4 and woodland stands not listed above will be lost or partially lost to facilitate the development. Losses will be compensated via extensive new tree, woodland and hedgerow planting using locally native species. Three wildlife ponds are proposed to be created within the habitat corridor along the western boundary of the Main Site that will be designed to be suitable to support breeding GCN from the adjacent metapopulation and hence contribute to the aims of the Ardley and Heyford CTA.

~~6.42~~6.47 The majority of hedgerows are to be lost from the Main Site, as are small sections from within the Highway Works Areas. Of the eight hedgerows identified as Important under the Hedgerow Regulations five will be retained unmodified (H90, H96, H106, H108 and H115), whereas there will be partial losses from H48, H50 and H65. Assuming the total removal of those sections of H48, H50 and H65 encompassed by the Application Site (as a worst-case scenario) this will result in the loss of 320m of 'Important' hedgerow. To compensate for the overall hedgerow losses, additional native species planting will be provided throughout the green infrastructure and open space to add greater value than that is to be lost. The retained hedgerows will be included within green linkages and will be "gapped up" with diverse native species; this will increase species diversity, strengthen the hedgerows and improve the corridor for a range of foraging and commuting wildlife and provide nesting opportunities for breeding birds.

~~6.43~~6.48 Preference will be given planting species of local provenance within the hedgerows and woodland that will be nectar and fruit producing species to provide foraging for insects, birds and mammals. Suitable species include alder *Alnus glutinosa*, beech, silver birch, wych elm *Ulmus glabra,* wild cherry, hornbeam *Carpinus betulus,* English oak, rowan, goat willow, hawthorn, hazel, field maple, blackthorn, dogwood, elder, guelder rose *Viburnum opilus*, field rose *Rosa arvensis* and dog rose.

~~6.44~~6.49 Management of the hedgerows will be undertaken in an ecologically sensitive manner to enhance the nature conservation value. Such management will include:

- Allowing the hedgerow to reach at least a height of 3m. Once reached the hedgerow can be 'topped out' to maintain the height or to suit circumstances, with a width of at least 1.5m;
- A proportion of trees within the hedgerow such as English oak *Quercus robur* and field maple *Acer campestre* should be allowed to mature into standard trees to provide nesting and foraging opportunities for local wildlife and a varied habitat structure; and
- Grassland along the hedgerow base should be allowed to grow to provide a graduated sward height and habitat.

~~6.45~~6.50 The hedgerows and trees along the field boundaries of the Main Site are largely to be retained within the proposed scheme, along with Ashgrove Brook, the largest woodland stands within the Main Site (W2 and W8) and pond P3 located adjacent to W2. The retained habitats will be appropriately protected during development (using heras fencing or similar with appropriate signage as detailed within the CEMP/P-CEMP) and enhanced within the green infrastructure.

~~6.46~~6.51 The maintenance of tree root protection areas throughout construction will also ensure that trees are adequately protected. The protection measures should include consideration of BS5837 Trees in Relation to Construction Recommendations: 2012 for trees and hedges, which also applies to hedgerows with trees present (see the Arboricultural Assessment Report ES6.8, FPCR 2026).

6.476.52 The proposals will seek to compensate the loss of other neutral grassland and smaller areas calcareous grassland through the creation of substantial areas of such grasslands within informal areas of green infrastructure and thereby increase the extent of these habitats within the Application Site.

6.486.53 Four significant areas of species-rich grassland are proposed, in addition to smaller areas including habitat corridors along the road infrastructure and around and through the Main Site. The four areas include two areas of existing and relatively species-poor neutral grassland, one spanning much of the former landfill area within the site, the other comprising a field compartment west of Gagle Brook, that will be enhanced to species-rich neutral grassland. The two other areas currently support arable land, one to the northwest of the Main Site adjacent to the SSSI, the other to the south of the Main site. The southern area will be converted to support a matrix of neutral grassland that encompasses areas of native tree and shrub planting and the majority of the on-site attenuation. The northwestern area will support extensive open grassland including other neutral grassland, calcareous grassland (contributing to the aims of the Oxfordshire LNRS and Ardley and Heyford CTA) and lowland meadow, proposed to be created using translocated soils and green hay.

6.496.54 Due to the considerable size and scale of the scheme there is the need for an extensive drainage network, which shall provide the opportunity to create wetland features and balancing facilities that provide further gains for biodiversity through increasing the overall habitat diversity on site. Four of the large attenuation basins to the south of the Main Site will incorporate over-deepened sections that will hold water year-round and support native marginal flora, providing further biodiversity benefits to local wildlife.

6.506.55 The Proposed Development will require a short section of the Padbury Brook Tributary to be culverted under the northern rail siding however the remainder of this watercourse within the Application Site will be enhanced via the bank tops being taken out of agricultural use and the creation of adjacent grassland and woodland. There is potential also to introduce native species marginal planting along this section.

6.56 Two sections of Ashgrove Brook are to be realigned to accommodate warehouse proposals that will impact c. 490m of the northern tributary and 415m of the southern tributary. The remainder of the on-site brook section is to be retained, with an overall reduction in bank top encroachment anticipated as the adjacent land is taken out of agricultural use. Some sections will be culverted to accommodate newly created transport links.

Fauna

6.516.57 Principal pieces of legislation protecting wild species are Part 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA) and the Conservation of Habitats and Species Regulations 2017 (as amended). Some species, for example badgers, also have specific protective legislation (Protection of Badger Act 1992). The impact that this legislation has on the Planning system is outlined in ODPM 06/2005 Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System.

6.526.58 This guidance states that as the presence of protected species is a material consideration in any planning decision, it is essential that the presence or otherwise of protected species, and the extent to which they are affected by proposals is established prior to planning permission being granted. Furthermore, where protected species are present and proposals may result in harm to the species or its habitat, steps should be taken to ensure the long-term protection of the species, such as through attaching appropriate planning conditions for example.

6.536.59 In addition to protected species, there are those that are otherwise of conservation merit, such as species of principal importance for the purpose of conserving biodiversity under the NERC Act (2006). These are

recognised in the NPPF, which advises that when determining planning applications LPAs should aim to conserve and enhance biodiversity by applying a set of principles including:

- If significant harm resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- Development proposals where the primary objective is to conserve or enhance biodiversity should be supported, whilst the opportunities to incorporate biodiversity improvements in and around developments should be encouraged.

~~6.54~~6.60 The implications of the survey findings on the potential developmental design are outlined below, along with opportunities to enhance the site for a range of species.

Bats

~~6.55~~6.61 Bats and their habitats are protected under the Wildlife and Countryside Act 1981 (*as amended*) and by the Conservation of Habitats and Species Regulations 2017 (*as amended*). In summary this makes it an offence to damage destroy or obstruct any place used by bats for breeding and shelter, disturb a bat, or kill, injure or take a bat. Seven bat species are listed as Species of Principal Importance under the provisions of the NERC Act 2006.

~~6.56~~6.62 A summary of the impacts and subsequent recommendations in relation to bats is set out below. See the Bat Survey Report (Appendix ES6.3, FPCR, 2026) for further details.

Bat Roost Assessment - Trees

~~6.57~~6.63 No removal of any confirmed tree roost is proposed. Given the likely extended intervening period however before tree removal works commence on site it is anticipated the current (2025) tree survey data will require to be updated in advance of works in order to ensure these are informed by an up-to-date baseline and that no offence is committed under the terms of the above legislation. In the event that future updating surveys confirm the presence of a tree roost then an appropriate Natural England derogation licence will be obtained prior to the removal of the relevant tree/s. This licence would detail the appropriate timing and safe working practices necessary to ensure that the risk to bats is minimised and that suitable alternative roosting sites are provided to ensure that the Favourable Conservation Status (FCS) of local bat populations are not impacted.

~~6.58~~6.64 Where trees are to be removed that have potential roost features (PRFs), but where no evidence of roosting bats is recorded by the final updating surveys the tree/s will be section felled by experienced arborists under the supervision of an appropriately licensed bat worker.

~~6.59~~6.65 A 10m+ green infrastructure buffer will where possible be implemented surrounding retained trees with PRFs to minimise the likely effects of lighting, with such trees included within dark corridors for bats where possible.

~~6.60~~6.66 The provision of a variety of bat boxes on suitable retained trees as detailed within the separate Bat Survey Report will provide new potential roosting sites for bats throughout the Application Site and will therefore deliver an enhanced roosting resource for a range of local bat species.

Bat Roost Assessment – Buildings

~~6.61~~6.67 Buildings B1 and B5 (both confirmed common pipistrelle and brown long-eared non-maternity roosts) are to be retained within the scheme, however B1 is to be renovated to form part of the Farm Campus Hub.

Building B10 (Ashgrove Cottages) also supports a confirmed common pipistrelle non-maternity roost and is to be renovated and converted to a site office.

~~6.62~~6.68 The renovation of building B1 and renovation of building B10 will proceed under the strict terms of a Natural England Licence to allow derogation from the above legislation. The licencing process will entail the submission of a method statement and mitigation details to Natural England for agreement and would include the following:

- Pre-works check of suitable roosting features using endoscopes, torches and inspection mirrors, as appropriate;
- Toolbox talk, setting out legislation, the potential presence of roosting bats, the agreed method statement and what to do if a roosting bat is found;
- Works supervised by a licenced or accredited bat worker;
- Suitable features to be removed by hand / using hand tools; and
- Provision of appropriate long-term roost replacements such as bat boxes.

~~6.63~~6.69 These measures are considered sufficient to ensure that the FCS of local bat populations is maintained.

Foraging and Commuting Bats

~~6.64~~6.70 From the completed survey work the following bat species were identified using the habitats across the survey area: common pipistrelle, soprano pipistrelle bat, Nathusius' pipistrelle bat, *Myotis* sp., noctule, *Nyctalus* sp., barbastelle, brown long-eared bat, and serotine. The most frequently recorded species during both the transect and static detector surveys was common pipistrelle. From the completed surveys the habitats within the site are likely to form part of the natural foraging range for such as species, though are not considered to provide a significant resource to the local bat population, which will forage over a wider area.

~~6.65~~6.71 Barbastelle is an Annex II species, generally rare across the UK and mainly present in southern and central counties of the England. Whilst considered to be a woodland specialist barbastelle will forage across a range of habitats including wood-pasture, parkland, riparian/wetland habitats and meadow grassland, showing a preference for unlit, structurally diverse habitats, treelines and large hedgerows. Barbastelle calls represented c.2.88% of the total static data recorded by surveys in 2025 (and c.1.25% of the total static data recorded during the 2020-2022 recording periods). Furthermore, the trapping surveys undertaken across four nights and three simultaneous trap stations covering the pre- and post-peak maternity season that targeted suitable habitat for this species recorded only two barbastelles, both adult males.

~~6.66~~6.72 Barbastelle bats have been recorded commuting to foraging habitats over 20km from roost sites however a distance of c.7km is more typical (for example see Greenaway, 2008 and Ancillotto et al., 2014[37]). As such the habitat features utilised by this species within the Application Site likely form a small proportion of individual barbastelle foraging ranges and does not encompass a significant foraging resource or commuting route for this species. Moreover, the absence of female barbastelle from the trapping data provides evidence that the Application Site does not encompass key habitat for any maternity roost present in the wider area.

~~6.67~~6.73 The proposed green infrastructure will provide enhancements for local bat populations via the provision of new ponds and creation extensive areas of new species-rich grassland, wetland habitats, and native

[37] Greenaway, F. 2001. The barbastelle in Britain. *British Wildlife* 12: 327-334.
Ancillotto, L., Cistrone, L., Mosconi, F., Jones, G., Boitani, L., and Russo, D. 2014. The importance of non-forest landscapes for the conservation of forest bats: lessons from barbastelles (*Barbastella barbastellus*). *Biological Conservation* 24: 171-185.

hedgerow, woodland, tree and shrub planting, together with retained habitat features that have been incorporated into a green corridors throughout the proposals and linking to a larger areas of open space in the wider landscape.

~~6.68~~6.74 A c.30m section of broadleaf woodland will be removed from along each bank of the Gagle Brook to enable the construction of the Middleton Stoney Relief Road and associated earthworks, resulting in the fragmentation a mature habitat corridor that represents an important feature for local bat populations. The loss of existing tree cover within this area will be minimised as far as possible, and post construction new mixed native tree species planting will be established up each road embankment to partially close the gap made in this feature. The proposed green infrastructure at this point links to a continuous corridor of native broadleaved woodland to the west of and extending along the length of the relief road from the B430 to Middleton Stoney, providing alternative commuting and foraging opportunities for bats through the local landscape.

~~6.69~~6.75 Where road construction will create gaps in existing hedgerows unlit 'hop-overs' will be created to encourage bats to increase their flight altitude over the gaps and hence reduce the potential for road traffic mortalities.

~~6.70~~6.76 All retained habitats will be buffered from the development with an appropriate lighting scheme implemented (see details within ES Chapter 8: Lighting), along with connectivity to offsite habitats retained / enhanced through native planting.

~~6.71~~6.77 Connectivity around the site perimeter and linking to off-site habitats will thus be maintained to provide suitable corridors of movement for bats and other local wildlife.

Great Crested Newt

~~6.72~~6.78 UK and European legislation fully protect GCN and their terrestrial habitat. GCN are also Priority Species under Section 41 of the NERC Act.

~~6.73~~6.79 Survey work including presence/absence surveys identified the presence of four GCN metapopulations largely surrounding the Application Site.

~~6.74~~6.80 The majority of Metapopulation 1 is supported by the waterbodies and water tanks of the Upper Heyford former airfield and hence will not be directly impacted by the Proposed Development, neither will site operations result in any fragmentation of intervening habitats or increased isolation of individual waterbodies within the former airfield. P1 and P4 within the Main Site are also encompassed by this metapopulation, however whilst P4 has a hedgerow connection to the airfield via hedgerow H6, P1 has no suitable habitat connectivity.

~~6.75~~6.81 The proposed removal of H6 and most of the other suitable terrestrial habitat that currently provides connectivity to the remainder of Metapopulation 1 will result in a negligible impact to Metapopulation 1 given only a single GCN was recorded within P4, and none were recorded within P1. The green infrastructure proposals including the creation of three wildlife ponds along the western boundary of the Main Site will fully mitigate these habitat losses.

~~6.76~~6.82 The on-site waterbodies SP1, P2 and P3 are feasibly within commuting distance for GCN from the Metapopulation 2 ponds to the east of the Main Site, however as no evidence of GCN was recorded within these ponds and surrounding arable and grassland habitats are not considered to have a role in supporting this metapopulation. The proposals will not result in any fragmentation of habitats surrounding the breeding ponds used by Metapopulation 2 therefore the proposals will have a negligible impact on Metapopulation 2.

~~6.77~~6.83 The proposals would not result in the loss of any GCN ponds from within the Metapopulation 3 range but will remove a non-breeding pond (P20) and most of the suitable terrestrial habitat from the Application Site where this coincides with the Metapopulations 3 area, reducing overall habitat connectivity.

~~6.78~~6.84 Within the Metapopulation 4 area GCN were recorded present within both P50 and P51 during completed in 2022, however the species was not recorded present within P50 in 2025. The only other waterbody confirmed to support GCN within the Metapopulation 4 area, P48, is located over 300m from the proposed junction works at the closest point, and c.115m from proposed minor road improvement works along Somerton Road within Ardley village.

~~6.79~~6.85 The proposed J10 improvement works will directly impact P50 due to the new road infrastructure required to support a new filter road being sited partially within the basin, and the associated removal of habitat from the basin perimeter, reducing the availability of suitable terrestrial and aquatic habitats for GCN within this area. P51 would not be directly impacted though as above there would be a loss of habitat from the close vicinity.

~~6.80~~6.86 A small GCN population recorded within ponds P59 and P60 will not be directly impacted by the proposals given their relative isolation from the Proposed Development.

~~6.81~~6.87 Given the risk of potential disturbance, killing and injury of individual GCN during site clearance within 500m of breeding ponds as outlined above, a derogation licence will be obtained from Natural England prior to site clearance works commencing within these areas to legitimise impacts to on-site habitats considered likely to be used by GCN. This licence would detail the appropriate timing and precautionary working practices necessary to ensure that the risk to GCN is minimised.

~~6.82~~6.88 The full details of the strategy are subject to reaching agreement with Natural England licensing which is currently underway through the DAS. This is likely to comprise the translocation of GCN to four receptor areas within areas of retained/enhanced green infrastructure. The proposed receptor site locations are: to the immediate east of P51; to the north of the eastern rail connection cutting; to the east of B430, and towards the west of the Main Site adjacent to the former airfield. Temporary exclusion fencing will prevent any movement of GCN back into the developable area during the construction period. Additional habitat enhancements will be provided suitable for use by GCN and other amphibians in the form of 20 hibernacula and 30 log piles as outlined within the GCN Survey Report (ES6.4, FPCR 2026) and long-term habitat management for biodiversity.

~~6.83~~6.89 Whilst the full details have yet to be formally agreed it is considered that there is sufficient opportunity within the site green infrastructures to accommodate appropriate habitat creation/ enhancement to mitigate for the loss of GCN terrestrial habitats, and to provide an overall increase in the quantity and connectivity of optimal/high quality habitats over current levels. Consequently, it is considered that the proposed strategy is sufficient to compensate for the impacts of the development and will ensure the long-term maintenance of the FCS of this species.

Birds

~~6.84~~6.90 A summary of the impacts and subsequent recommendations in relation to breeding and wintering birds is set out below, see the Breeding Bird Survey Report (Bird Survey Report (Appendix ES6.5, FPCR 2026) for further details.

~~6.85~~6.91 The proposed development will result in substantial habitat loss from across the Main Site, particularly via the removal of all arable land and the majority of grassland of value to the farmland bird assemblage, in addition to the partial loss of hedgerows, scrub, and small woodland blocks. The highways construction

works will further impact areas of arable land, woodland and hedgerow habitat and fragment a number of large fields compartments that will exacerbate impacts for species such as barn owl. Many structural habitat features of value to the more generalist bird assemblages will be retained however, including narrow woodlands extending from Ashgrove Farm, scrub corridors along the railway, and perimeter hedgerows.

6.866.92 Construction disturbance has potential to impact affect bird populations through noise and associated displacement, though retained peripheral habitats will buffer sensitive species such as golden plover, lapwing, barn owl, and short-eared owl from significant impacts.

6.876.93 The development will result in the loss of a barn owl nest site. This loss will be mitigated via the installation of three strategically located nest boxes, coupled with the creation of suitable foraging habitats around the site suitable to support the resident pair.

6.886.94 The on-site green infrastructure will incorporate extensive areas of woodland planting, species-rich grassland, scrub and wetland habitats that will enhance connectivity and provide additional nesting and foraging opportunities for generalist and specialist bird species. Hedgerows will be enhanced with native and fruit-bearing species and some arable fields converted to species-rich grasslands to provide further foraging habitats and habitat connectivity.

6.896.95 An area of c.6.445.4ha seed-bearing cover crop will be established to the far northwest of the Main Site, to be managed annually in accordance with the prescriptions set out under *Sustainable Farming Incentive (SFI) CAB12: Supplementary winter bird food and SFI CAHL2: Winter bird food on arable and horticultural land*~~Countryside Stewardship Grant AB9: Winter bird food~~. The scheme will additionally deliver three open grassland field in close proximity (see Figure 12 of ES6.9: Biodiversity Net Gain Assessment) ~~comprising two field compartments~~ sown and managed to support ~~a~~ species-rich calcareous grassland ~~sward~~and lowland meadow~~, and an adjacent field compartment supporting lowland meadow~~. These areas will be managed under prescriptions sensitive to farmland and ground-nesting birds including the maintenance of varied sward heights, including some areas of sparsely vegetated and/or bare ground, and restrictions on the timings of habitat management to avoid the main nesting season and to ensure seed availability throughout the winter.

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6.906.96 A further field compartment northeast of the Middleton Stoney Relief Road will provide a matrix of neutral grassland native shrub, woodland and tree planting created as part of the green infrastructure. Together these complementary habitats will provide ~~a~~ high-quality foraging opportunities suitable to support many farmland bird species including skylark, yellowhammer, grey partridge and corn bunting and ~~also~~ nesting opportunities for ground-nesting species.

~~6.91 The arable and grassland fields that currently comprise the majority of the Application Site support several notable farmland bird species however such habitats will be largely removed to enable the Proposed Development.~~

6.926.97 The establishment and careful management of high-quality grasslands throughout the on-site green infrastructure and specifically to the northwest of the Main Site will ~~however~~ support ground-nesting species such as skylark and meadow pipit, with features such as varied vegetation height and appropriate cutting schedules will provide nesting opportunities and also winter forage for these and other priority farmland species including corn bunting, and reed bunting. It is further recommended that beetle banks are established within the field margins of the cover crop field and adjacent open grassland (lowland meadow) compartment ~~significant areas of open grassland~~ to provide further foraging and nesting

opportunities for a range of bird species including skylark[38] and that a range of nest boxes are provided suitable to support woodland, farmland, and urban birds to further mitigate for habitat loss from within the Application Site.

6.98 Soil testing has shown that nutrient levels within the enahncement areas above are suitable for target habitat creation without the need for a period of nutrient stripping beforehand (see Appendices 1-3 within ES6.11: Habitat Management and Monitoring Plan). Species-rich grasslands will therefore be available as high-quality foraging habitat and nesting habitat for ground-nesting birds within the initial growing season. Additional provision such as the establishment of skylark plots to mitigate the temporary loss of grassland from the northern section of the capped landfill is therefore not considered to provide any additional benefit over and above high quality open grassland, and is consequently not proposed.

~~6.93 Temporary impacts to skylark and, to a lesser extent, reed bunting resulting from the temporary loss and disturbance of grassland over the capped landfill will be mitigated via the creation of 50 skylark plots within the northwestern field whilst these are subject to a period of nutrient stripping prior to native grassland establishment.~~

~~6.94~~6.99 Overall, whilst there will be extensive habitat loss from the Application Site the green infrastructure measures and additional mitigation outlined above will maintain most bird species assemblages including notable farmland species, and deliver net gains in habitat quality across the site and surrounding areas for generalist bird species and for woodland specialists and birds associated with wetland habitats including species that are currently absent (such as sedge warbler) to expand their range locally.

Badger

~~6.95~~6.100 [redacted]

~~6.96~~6.101 Full details are within the separate Badger Survey Report (Appendix ES6.6, FPCR 2026), however in summary the proposals will necessitate the permanent closure of two main setts and a number of annex, subsidiary and outlier setts under licence from Natural England.

~~6.97~~6.102 Habitat removal and earthworks will result in the loss of some badger foraging opportunities and potentially fragment territories where new the road infrastructure intersects existing badger ranges. The development also introduces potential indirect impacts, including lighting disturbance, which may cause badgers to avoid illuminated areas, and an elevated mortality risk due to increased traffic.

~~6.98~~6.103 Artificial setts will be provided to replace main setts affected by development, with these new setts established at least six months prior to closure of existing setts and supported by feeding regimes to encourage occupation. Exclusion procedures, including one-way gating and careful excavation under ecologist supervision will ensure no badgers are harmed during sett closure. Outlier, annex, and subsidiary setts will also be replaced with small artificial setts, the locations of which will be finalized once construction phasing is confirmed.

~~6.99~~6.104 Retained setts will be buffered from the development footprint (minimum 30m), and to minimise the risk of harm to badgers any trenches or other deep excavations created during construction will be left with a sloping end or a ramp to prevent animals from becoming trapped, or will be suitably covered before

[38] Murray K.A., Wilcox A. and Stoate C. 2002. A simultaneous assessment of farmland habitat use by breeding skylarks and yellowhammers. *Aspects of Applied Biology* 67: 121-127.
Stoate C. and Moorcroft D. 2007. Research-based conservation at the farm scale: development and assessment of agri-environment scheme options. *Aspects of Applied Biology* 81:161-168.

dusk to prevent any passing animals falling in. Careful consideration will also be given to the location of topsoil storage mounds that can readily become used by badgers for the creation of new setts.

~~6.100~~6.105 The proposed green infrastructure, including new woodland belts, native tree and shrub planting, and the inclusion of fruit-bearing species within the landscaping will help maintain connectivity and provide alternative foraging and commuting opportunities. Furthermore the implementation of speed limits within the Main Site, and the inclusion of culverts at appropriate locations to provide safe passage underneath the new road infrastructure will reduce the risk of badger fatalities due to traffic.

~~6.101~~6.106 Overall, while the development will initially reduce available habitat and require sett closures, the combination of artificial setts, enhanced green infrastructure, and careful management is expected to minimize adverse impacts. Over time, as green infrastructure matures, the site is likely to provide improved foraging, commuting, and sett creation opportunities for local badger populations, resulting in long-term minor beneficial effects at the site level.

~~6.102~~6.107 An updated badger survey of all affected habitats should be completed no more than three months prior any development phase to ensure that the status of badgers within the site has not altered. Should any new setts be discovered, appropriate mitigation would be determined, and where necessary licensed by Natural England.

Butterflies

~~6.103~~6.108 Transect surveys undertaken within and adjacent to the Ardley Cutting SSSI indicate that the majority of butterflies present are common and widespread, but several notable species including brown argus, green hairstreak, dark green fritillary, grizzled skipper, small heath, and small blue are also present and utilise the grassland, woodland, and scrub-edge habitats of the SSSI and adjacent land. Duke of Burgundy was not recorded during the 2022 or 2025 surveys, suggesting that it is either absent or present only very rarely within the SSSI. Host plants including kidney vetch, cowslip, primrose and various violets are generally rarely occurring within the Application Site.

~~6.104~~6.109 Whilst some minor loss of suitable habitats is required to accommodate the Ardley Bypass and eastern rail connections, these areas are generally in poor condition due to scrub encroachment. On-site mitigation will include the creation of extensive calcareous and herb-rich grasslands, established via the translocation of seed or plants and associated topsoil material where appropriate, and sowing of seed and plug plants to establish larval foodplants for target butterfly species. Vegetation management will maintain varied structure, providing shelter, egg-laying sites, and forage opportunities, ensuring both habitat quality and connectivity are enhanced.

~~6.105~~6.110 Overall, through a combination of habitat enhancement, creation and sensitive long-term management the Proposed Development is expected to provide enhanced opportunities for grassland specialist species and to provide opportunities for population expansion, resulting in a minor beneficial effect for butterfly assemblages in and around the SSSI.

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Reptiles

~~6.106~~6.111 All common reptile species, including slow-worm, common lizard and grass snake are partially protected under Section 9(1) and 9(5) of Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This legislation protects these animals from:

- Intentional killing and injury;

- Selling, offering for sale, possessing or transporting for the purpose of sale or publishing advertisements to buy or sell a protected species.

~~6.107~~6.112 All common reptile species, including common lizard, are species of principal importance under S41 of the NERC Act.

~~6.108~~6.113 From the completed survey work a good population of grass snake (maximum count 6 adults) and common lizard (maximum count 5 adults) and a low population of slow worm (single individual in 2021) have been identified within the site. As such the site meets Criterion 4 for identification as a Key Reptile Site[39].

~~6.109~~6.114 Common lizard, grass snake and slow worm are relatively widespread regionally, particularly where suitable habitat exists. Where these animals are confirmed as present on land that is to be affected by development guidance recommends that:

- The animals will be protected from injury or killing during construction operations;
- Mitigation will be provided to maintain the conservation status of the species locally.

~~6.110~~6.115 Suitable on-site habitats for common reptile species include semi-improved grassland fields and field margins, tall ruderal vegetation, scrub and hedgerows. The site also has linkages to suitable offsite habitat including the railway line which is likely to be utilised as a corridor. The watercourses additionally provide a potential commuting route for grass snake.

~~6.111~~6.116 The development will result in the removal of semi-improved grassland, hedgerows and small areas of existing scrub. The provision of a mosaic of new habitats including linear scrub and tree planting, grassland creation, provision of ponds and associated wetland habitats and new native hedgerows will provide new areas of suitable habitat for the small numbers of common lizard, grass snake and slow worm present, and will link to similar habitats in the wider area.

~~6.112~~6.117 In the absence mitigation there is a low risk that site clearance operations will result in an increased incidence of reptile mortality through accidental killing or injury. Mitigation measures are therefore required to ensure legal compliance. The following section provides best practice to ensure that these species are not harmed during the proposals.

Mitigation

~~6.113~~6.118 In order to ensure that these species come to no harm during development it is recommended displacement and sensitive removal of potential refuges from areas of affected suitable habitat. This would involve removing all potential refuges by hand and directional strimming under the supervision of a suitably qualified ecologist.

~~6.114~~6.119 The following outlines the method for removal of reptile hibernation features within the application site boundary:

- The removal of the potential hibernation features described above will only take place during suitable weather conditions (daytime temperatures exceeding 9°C) within the reptile active season, which runs mid-March to mid-October, inclusive;
- The removal of potential hibernation features, including dismantling of rubble piles and requires the supervision of a suitably qualified ecologist; and

[39] Froglife 1999. *Froglife Advice Sheet 10: Reptile Survey.* Froglife, Halesworth

- A fingertip search of the working area will be made immediately prior to any further groundworks to ensure that reptiles are absent from the area of work. Further operations will only continue once reptiles are confirmed to be absent from the working area.

~~6.115~~6.120 Directional displacement will be applied to the clearance of suitable habitat located the site. This approach will involve the following key steps:

- Displacement shall only be undertaken during suitable weather conditions (daytime temperature 9˚C or higher) within the reptile active season, i.e. mid-March - mid-October, inclusive;
- Grassland will first be strimmed directionally to a height of 100mm and 1-2 hours later it will be reduced to 50mm. All strimming will be carried out from the centre of the working areas towards the retained / off-site areas of suitable reptile habitat;
- All arisings will be completely removed from the working area to prevent potential areas of refugia from being used by reptiles moving across the area;
- A fingertip search of the working area will be made immediately prior to any ground works to ensure that all common reptiles are absent from the area of work. Further operations will only continue once common reptile species have been confirmed to be absent from the working area; and
- A sward height of 100mm will be maintained until clearance (top soil stripping) is complete.

Riparian Mammals

~~6.116~~6.121 No otters or evidence of otter activity were noted during the surveys. In particular, no otter spraints were found on or near to the footbridge, or on any other prominent features associated with watercourses or waterbodies within 250m of the site.

~~6.117~~6.122 A single otter record was returned via the desk study, from Trow Pool LWS closely adjacent to the Application Site (Trow Pool is stocked with fish and used by anglers).

~~6.118~~6.123 No evidence of water vole was recorded in association with any watercourse section surveyed.

~~6.119~~6.124 The Padbury Brook Tributary and Ashgrove Brook sections were considered to offer very limited potential for otter and water vole due their low water level, their tendency to dry out completely, low levels of emergent/bankside plants and high levels of overshading.

~~6.120~~6.125 Given its larger size and the presence of potential prey species (signal crayfish) Gagle Brook offered some suitability for otter as part of a more extensive home range (the home ranges of adult males may extend up to up to 35km along watercourses and females up to 25km), however the regular drying of this watercourse limits its suitability.

~~6.121~~6.126 The majority of the Gagle Brook corridor adjacent to and coinciding with the Application Site is heavily shaded by woody vegetation and has a bank profile that does not provide suitable slopes for burrow creation by water vole. Unshaded sections are relatively short and discontinuous, and the watercourse supports only sparsely growing aquatic vegetation, providing very limited forage and cover for water vole. This section of the watercourse furthermore typically supports only shallow water and frequently dries out entirely. Therefore, whilst water vole can utilise watercourses that are seasonally wet, given the above factors and absence of field sign the species is considered to be absent from this section of the Gagle Brook and associated ditch and pool habitats.

~~6.122~~6.127 In summary it is considered likely that water voles are absent from the Application Site, however there is potential for otter to pass through the site on occasion.

6.128 An over-large box culvert design that maintains the watercourse channel is proposed for the road crossing of the Gagle Brook in order to minimise direct impacts to the brook. No street lighting is proposed at this point therefore no lighting disturbance impacts of riverine species are anticipated. Correspondence with Natural England has confirmed they agree with the use of an underpass to maintain the existing commuting routes at this location rather than, for example the use of hop-over trees to facilitate bats crossing the road, given the recorded use of the brook corridor by barbastelle (see Appendix G of ES6.3: Bat Survey Report).

~~6.123~~6.129 Pollution events could potentially impact water quality and sensitive bankside flora and therefore indirectly impact otter if present locally. All standard site precautionary and best practice measures will be adopted (as detailed within the CEMP/P-CEMP) to ensure that any potential pollution risk is minimised, and that robust procedures are in place and followed in the event of a pollution incident to minimise the significance and detrimental effect on riverine habitats and associated fauna. A pre-commencement checking survey is recommended to be carried out by a suitably experienced ecologist prior to any works affecting watercourses or associated habitats.

~~6.124~~6.130 Appropriate good working practices will also be adopted during construction to further reduce the risk of harm to individual otter. Prior to the commencement of works the location of site compounds and contractors access routes will be agreed with the ecologist and positioned to minimise disturbance to otters. Areas to avoid include an 8m width buffer alongside each of the above watercourses. The following key precautions will also be followed:

- Site operatives will be made aware of the potential presence of otters and the need for a duty of care when working in close proximity to Gagle Brook, Ashgrove Brook, Padbury Brook, and Padbury Brook Tributary;
- Pipes over 250mm in diameter will be capped overnight to prevent otters entering;
- Where deep excavations are left open over-night, shallow, sloping batters and/or covers will be used to prevent animals becoming trapped in the working area; and
- Working operations within the 20m of the above watercourses will be limited to daylight hours.

~~6.125~~6.131 If evidence is recorded indicating the site is in active use by otter during the pre-commencement follow-up survey, additional recommendations/mitigation measures may be required.

Other Notable Species

~~6.126~~6.132 A small number brown hare, a species of Principal Importance under S41 of the Natural Environment and Rural Communities (NERC) Act (2006), were noted as incidental records within the Application Site during site surveys. Given the low numbers encountered it is considered that the site is part of the wider range of the local brown hare population. As suitable habitat will remain available within the wider agricultural landscape brown hare is not considered to pose a constraint to the proposed development. As best practice pre-works checks for brown hare will be specified within the CEMP/P-CEMP and will be carried out ahead of site clearance to flush any brown hares that may be present away from the works and into areas of safety.

~~6.127~~6.133 The Application Site also provides some suitable habitat for hedgehog, though no incidental evidence of this species was recorded during surveys. The partial loss of hedgerow, scrub and field margin habitats temporarily reduce the availability of suitable foraging and shelter resources for hedgehogs, however as the green infrastructure matures this will deliver alternative suitable habitats and restore habitat connectivity across and around the development. The potential presence of hedgehog is therefore not considered a constraint to the proposals. A precautionary approach will nevertheless be implemented

whereby pre-works checks for hedgehog will be carried out ahead of site clearance to find and move any hedgehogs that may be present away from the works into areas of safety.

Habitat Creation and Enhancement Recommendations

~~6.128~~6.134 In line with the NPPF, it is recommended that the development results in a net gain in value for wildlife by incorporating biodiversity in and around the development via the use of ecological enhancement measures.

~~6.129~~6.135 The Planning Layout includes the following opportunities within the scheme:

- Extensive semi-natural buffers along the western and northern boundaries to protect the retained areas of the adjacent designated sites. These areas are to comprise a mix of native species-rich grassland, scrub and woodland planting along with hedgerow creation to create continuous green corridors linking around the perimeter of the Application Site. The on-site green infrastructure~~;~~ will therefore support the LNRS potential measures *PM30: Create new areas of habitat that contain a matrix of habitat types including small woodland patches, scattered trees, scrub, and grassland;* and *PM38: Create new woodland by planting trees (or enabling their natural regeneration) using species that are suited to the soil type and site conditions;*
- Species-rich lowland meadow will be established within field compartments to the northwest of the Main Site suitable to contribute to local biodiversity including the farmland bird assemblage, and to the LNRS objective: *PM09: Create new areas of lowland meadow*.
- Areas of calcareous grassland will be provided ~~within the Conservation Target Area~~ on newly created areas of cutting banks and with a more extensive area created in the north-west corner of the Main Site. Together with adjacent lowland meadow (established over less calcareous soils either side of Padbury Brook) these grasslands will~~to~~ provide mitigation for unavoidable impacts on the Ardley Cutting and Quarry SSSI. Calcareous grassland creation will contribute towards the LNRS potential measure *PM05: Create areas of calcareous species-rich grasslands in suitable locations, particularly slopes;*~~;~~
- Provision of ~~extensive open grasslands that will be managed in conjunction with~~ c.6.44~~5.5~~ha seed-bearing cover crop to deliver suitable nesting opportunities for ground-nesting species and high-quality foraging opportunities for farmland bird species including skylark, yellowhammer, grey partridge and corn bunting, and t~~.~~
- ~~T~~he creation of 'beetle banks' in association with the field margins of the cover crop and adjacent ~~larger areas of~~ open grassland to provide further foraging and nesting opportunities for a range of farmland bird species including LNRS priority species ~~and the annual creation of skylark plots within the seed-bearing cover crop field compartment to provide further nesting and foraging opportunities for skylark and other bird species~~.
- Enhancement of the retained and re-routed watercourse sections through complimentary planting and sympathetic management to provide a variety of bank top features and introduce additional microhabitats and thereby contribute to LNRS~~;~~ *PM42: Restore river diversity and manage rivers and their riparian (riverside) habitats to achieve good ecological condition that supports species;*
-
- Conserved and enhanced planting and habitat creation around the retained buildings to be managed for biodiversity benefits; and

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- Opportunities to collect seed of meadow clary (Schedule 8 plant, and LNRS priority species) and increase the local population size within areas of newly created neutral and calcareous grassland.

~~6.130~~6.136 In addition to the above, the following general opportunities are relevant for this specific site:

- The inclusion of fruit/berry and seed/nut bearing tree and hedgerow species to provide resources for a wide range of fauna including birds, badgers and pollinating insects;
- Provision of a range of bat and bird boxes on suitable retained trees (see separate Bat and Bird Survey Reports (ES6.3 and ES6.5) for further details);
- Measures for protection of habitats (e.g. hedgerows, trees and ponds) during construction, and for the enhancement of these priority habitats as part of the development proposals (provided as part of the CEMP/P-CEMP and the HMMP).

7.0 CONCLUSION

7.1 The proposals have from been landscape and ecology led from an early stage in the process to ensure that the scheme can be designed to mitigate for negative effects associated with the construction proposals and anticipated habitat losses. Biodiversity net gain calculations have been considered early in the design process to ensure that losses of higher distinctiveness habitats could be minimised and that sufficient opportunities for habitat creation and enhancement could be incorporated into the proposals. This has led to the proposals including significant green infrastructure areas being enhanced with ecology as a focus, to include new species-rich grasslands, woodland habitats, wetlands and scrub in addition to the enhancement of retained habitats where possible.

7.2 The overall aim of the on-site green infrastructure delivery is to create a robust and well-connected ecological network across the Application Site and connecting to habitats of ecological value within the wider landscape suitable to promote ecological connectivity and thereby creating corridors of movement for local fauna including bats, birds, invertebrates and other mobile species. This aim directly supports the ambition within Cherwell District to create 'bigger, better, more joined up' spaces for nature .

7.3 The proposals will mitigate unavoidable habitat losses through a combination of habitat enhancement and habitat creation and by securing the long-term protection of extensive areas of biodiverse green infrastructure that will exceed the current baseline areas of each habitat. Important ecological features will be enhanced, including retained areas of lowland meadow, lowland calcareous grassland, and lowland mixed deciduous woodland.

7.4 The green infrastructure strategy has furthermore been designed to contribute to the delivery of the landscape-scale conservation objectives the Oxfordshire LNRS and Ardley and Heyford CTA, including the creation of new lowland calcareous grassland, lowland meadow that will provide high quality habitats for ground-nesting birds, substantial new hedgerow habitat and the creation of wildlife ponds. The sensitive design and targeted management of a proportion of the attenuation basins will provide additional permanent waterbodies and valuable wetland habitats maximising the biodiversity benefit of these features and providing further opportunities for the neighbouring GCN metapopulations to expand into the site and encouraging gene flow between these populations.

7.5 The proposals will furthermore contribute to the biodiversity objectives of the Ardley Cutting and Quarry SSSI by creating new exposures of limestone rich substrate within and adjacent to the SSSI and extensive calcareous grassland. New and enhanced habitats bounding the SSSI will be established and managed in the long-term to provide appropriate food plants for each of the priority butterfly species cited within the SSSI

designation (small blue, brown argus, dark green fritillary, green hairstreak and Duke of Burgundy) and will link to enhanced terrestrial habitats and new wildlife ponds suitable to support breeding GCN.

7.6 Site works will take full account of the potential presence of protected species on site, and Natural England licences will be obtained prior to the commencement of any works that could adversely impact GCN, roosting bats or badgers. Appropriate mitigation for each is outlined within this document, including precautionary working practices to be adhered to throughout construction and the provision of high-quality habitats and shelter suitable to deliver long-term mitigation, compensation and enhancement.

7.7 Through the strategic creation of new high-quality habitats including linkages to the wider landscape and the enhancement of retained priority features the green infrastructure will provide a substantial contribution to local biodiversity targets for priority habitats and deliver benefits to a wide range of fauna including priority species.

APPENDIX A: BOTANICAL SPECIES LIST

Common name	Scientific name	Abundance (DAFOR)
Arable and Neutral Grassland Field Margins		
Annual meadow grass	*Poa annua*	LO/LF
Barley	*Hordeum vulgare*	LD
Barren brome	*Bromus sterilis*	LO/LF
Bird's-foot trefoil	*Lotus corniculatus*	R
Black medic	*Medicago lupulina*	R
Black-grass	*Alopecurus myosuroides*	R/LO
Bramble	*Rubus fruticosus*	R
Bristly ox-tongue	*Picris echioides*	R
Broad-leaved dock	*Rumex obtusifolius* agg.	R/O
Bulbous buttercup	*Ranunculus bulbosus*	R
Charlock	*Sinapis arvensis*	R
Cleavers	*Galium aparine*	R/O
Cock's-foot	*Dactylis glomerata*	R/O
Coltsfoot	*Tussilago farfara*	R
Common bent	*Agrostis capillaris*	LF
Common fumitory	*Fumaria officinalis*	R
Common knapweed	*Centaurea nigra*	R
Common mallow	*Malva sylvestris*	R
Common mouse-ear	*Cerastium fontanum*	R
Common nettle	*Urtica dioica*	R/LF
Common ragwort	*Jacobae vulgaris*	R
Cow parsley	*Anthriscus sylvestris*	R/LF
Cowslip	*Primula veris*	R
Creeping bent	*Agrostis stolonifera*	LF
Creeping buttercup	*Ranunculus repens*	R
Creeping soft-grass	*Holcus mollis*	R
Creeping thistle	*Cirsium arvense*	R
Common toadflax	*Linaria vulgaris*	R
Curled dock	*Rumex crispus*	R
cut leaved crane's-bill	*Geranium dissectum*	R
Daisy	*Bellis perennis*	R
Dandelion	*Taraxacum* sp. agg.	R
Dove's-foot cranesbill	*Geranium molle*	R
False oat-grass	*Arrhenatherum elatius*	R/LA
Field bindweed	*convolvus arvensis*	LO
Field forget-me-not	*Myosotis arvensis*	R
Field madder	*Sherdaria arvensis*	R
Field pansy	*Viola arvensis*	R
Field scabious	*Knautia arvensis*	R
Field speedwell	*Veronica persica*	R
Flax	*Linum usitatissimum*	LA
Garlic mustard	*Alliaria petiolata*	R
Germander speedwell	*Veronica chamaedrys*	R
Goat's-Beard	*Aruncus diocius*	R

Common name	Scientific name	Abundance (DAFOR)
Greater plantain	*Plantago major*	R
Ground-ivy	*Glechoma hederacea*	R
Groundsel	*Senecio vulgaris*	R
Hawksbeard	*Crepis* sp.	R
Hedge woundwort	*Stachys sylvatica*	R
Hedgerow crane's-bill	*Geranium pyrenaicum*	R
Hemlock	*Conium maculatum*	R
Herb robert	*Geranium robertianum*	R
Hogweed	*Heracleum sphondylium*	R
Hop trefoil	*Trifolium campestre*	R
Lesser burdock	*Arctium minus*	R
Lesser stitchwort	*Stellaria graminea*	R
Lesser trefoil	*Trifolium dubium*	R
Meadow vetchling	*Lathyrus pratensis*	R
Mugwort	*Artemisia vulgaris*	R
Oat	*Avena sativa*	LD
Oxeye daisy	*Leucanthemum vulgare*	LO
Parsley piert	*Aphanes arvensis*	R
Perennial rye-grass	*Lolium perenne*	R
Rapeseed	*Brassica napus*	LD
Red fescue	*Festuca rubra* agg.	LO
Ribwort plantain	*Plantago lanceolata*	R
Rough meadow-grass	*Poa trivialis*	LO
Scarlet pimpernel	*Anagallis arvensis*	R
Scentless mayweed	*Tripleurospermum inodorum*	R
Shepherd's purse	*Capsella bursa-pastoris*	R
Smooth sow-thistle	*Sonchus olearaceus*	R/LF
Soft-brome	*Bromus hordeaceus*	O/LA
Spear thistle	*Cirsium vulgare*	R
Spotted medic	*Medicago arabica*	R
Sticky mouse-ear	*Cerastium glomeratum*	R
Thyme-leaved speedwell	*Veronica serpyllifolia*	R
Upright hedge parsley	*Torilis japonica*	R
Weld	*Reseda luteola*	R
Wheat	*Triticum sp.*	D
White campion	*Silene latifolia*	R
White clover	*Trifolium repens*	R
Wood avens	*Geum urbanum*	R
Woolly thistle	*Cirsium eriophorum*	R
Yarrow	*Achilllea millefolium*	R
Yorkshire-fog	*Holcus lanatus*	R
Sticky mouse-ear	*Cerastium glomeratum*	R
Thyme-leaved speedwell	*Veronica serpyllifolia*	R
Upright hedge parsley	*Torilis japonica*	R
Weld	*Reseda luteola*	R
Wheat	*Triticum* sp.	D
White campion	*Silene latifolia*	R

Common name	Scientific name	Abundance (DAFOR)
White clover	*Trifolium repens*	R
Wood avens	*Geum urbanum*	R
Woolly thistle	*Cirsium eriophorum*	R
Yarrow	*Achilllea millefolium*	R
Yorkshire-fog	*Holcus lanatus*	R
Modified Grassland		
Annual meadow grass	*Poa annua*	F
Barren brome	*Bromus sterilis*	R/LO
Broad-leaved dock	*Rumex obtusifolius*	R
Bulbous buttercup	*Ranunculus bulbosus*	R
Cock's-foot	*Dactylis glomerata*	O/LF
Common chickweed	*Stellaria media*	LO
Common couch	*Elytrigia repens*	R
Common mouse-ear	*Cerastium fontanum*	R
Common nettle	*Urtica dioica*	LF
Common poppy	*Papaver rhoeas*	R
Cow parsley	*Anthriscus sylvestris*	LO
Creeping bent	*Agrostis stolonifera*	O
Creeping buttercup	*Ranunculus repens*	R
Creeping thistle	*Cirsium arvense*	R
Cuckoo flower	*Cardamine pratensis*	R
Curled dock	*Rumex crispus*	R
Cut-leaved crane's-bill	*Geranium dissectum*	R
Daisy	*Bellis perennis*	R
Dandelion	*Taraxacum* sp. agg.	R
Dove's-foot cranesbill	*Geranium molle*	R
False oat-grass	*Arrhenatherum elatius*	LO
Germander speedwell	*Veronica chamaedrys*	R
Ground-ivy	*Glechoma hederacea*	R
Hard rush	*Juncus inflexus*	R
Hedgerow crane's-bill	*Geranium pyrenaicum*	R
Hogweed	*Heracleum sphondylium*	R
Meadow foxtail	*Alopecurus pratensis*	R
Perennial rye-grass	*Lolium perenne*	A
Red fescue	*Festuca rubra* agg.	R
Ribwort plantain	*Plantago lanceolata*	R
Soft-brome	*Bromus hordeaceus*	LF
Spear thistle	*Cirsium vulgare*	R
White clover	*Trifolium repens*	LF
Wild teasel	*Dipsacus follunum*	R
Yorkshire-fog	*Holcus lanatus*	R
Neutral Grassland		
Annual meadow grass	*Poa annua*	LO
Autumn hawkbit	*Scorzoneroides autumnalis*	R
Barren brome	*Bromus sterilis*	LO
Bee orchid	*Ophrys apifera*	R
Bird's-foot trefoil	*Lotus corniculatus*	R

Common name	Scientific name	Abundance (DAFOR)
Black medic	*Medicago lupulina*	R/LF
Blackthorn	*Prunus spinosa*	R
Bramble	*Rubus fruticosus agg.*	R/LF
Bristly ox-tongue	*Picris echioides*	LO/LF
Broad-leaved dock	*Rumex obtusifolius*	R/LO
Bulbous buttercup	*Ranunculus bulbosus*	R
Canadian fleabane	*Erigeron canadensis*	R
Cat's-ear	*Hypochaeris radicata*	R
Cleavers	*Galium aparine*	R/LF
Clustered dock	*Rumex conglomeratus*	R
Cock's-foot	*Dactylis glomerata*	R/LF
Coltsfoot	*Tussilago farfara*	R
Common bent	*Agrostis capillaris*	LO/F
Common centaury	*Centaurium erythraea*	R
Common couch	*Elytrigia repens*	R
Common figwort	*Scrophularia nodosa*	R
Common knapweed	*Centaurea nigra*	R/LO
Common mallow	*Malva sylvestris*	R
Common mouse-ear	*Cerastium fontanum*	R/LO
Common nettle	*Urtica dioica*	R/LF
Common poppy	*Papaver rhoeas*	R
Common ragwort	*Jacobae vulgaris*	R/LO
Common scurvy grass	*Cochlearia officinalis*	LF
Common sorrel	*Rumex acetosa*	R
Common vetch	*Vicia sativa*	R
Corn mint	*Mentha arvensis*	R
Cow parsley	*Anthriscus sylvestris*	R
Cow parsley	*Anthriscus sylvestris*	R
Cowslip	*Primula veris*	R
Creeping bent	*Agrostis stolonifera*	LO/LF
Creeping buttercup	*Ranunculus repens*	R/LO
Creeping cinquefoil	*Potentilla reptans*	R/LO
Creeping thistle	*Cirsium arvense*	R/LO
Crested dog's-tail	*Cynosurus cristatus*	R
Curled dock	*Rumex crispus*	R
Cut-leaved crane's-bill	*Geranium dissectum*	R
Daisy	*Bellis perennis*	R/LO
Dandelion	*Taraxacum sp. agg.*	R/LO
Dog rose	*Rosa canina agg.*	R
Dog's mercury	*Mercurialis perennis*	R
Dogwood	*Cornus sanguinea*	R
Dove's-foot cranesbill	*Geranium molle*	R
Elder	*Sambucus nigra*	R
False oat-grass	*Arrhenatherum elatius*	LF/LD
Field bindweed	*Convolvus arvensis*	R
Field forget-me-not	*Myosotis arvensis*	R/LO
Field horsetail	*Equisetum arvense*	R

Common name	Scientific name	Abundance (DAFOR)
Field maple	*Acer campestre*	R
Field scabious	*Knautia arvensis*	R
Field speedwell	*Veronica persica*	R
Garlic mustard	*Alliaria petiolata*	R
Giant horsetail	*Equisetum telmateia*	LF
Glaucous sedge	*Carex flacca*	R
Great burnet	*Sanguisorba officianalis*	R
Greater plantain	*Plantago major*	R
Green alkanet	*Pentaglottis sempervirens*	R
Ground-ivy	*Glechoma hederacea*	R/LO
Groundsel	*Senecio vulgaris*	R
Hairy tare	*Vicia hirsuta*	R
Hard rush	*Juncus inflexus*	R
Hawthorn	*Crataegus monogyna*	R
Hawk's-beard	*Crepis sp.*	R/LO
Hedge bedstraw	*Galium mollugo*	LO
Hedgerow crane's-bill	*Geranium pyrenaicum*	R
Hemlock	*Conium maculatum*	R
Herb-robert	*Geranium robertianum*	R
Hogweed	*Heracleum sphondylium*	R
Hop trefoil	*Trifolium campestre*	R
Ivy	*Hedera helix*	O
Kidney vetch	*Anthyllis vulneraria*	R
Lady's bedstraw	*Galium verum*	R
Lesser burdock	*Arctium minus*	R
Lesser trefoil	*Trifolium dubium*	R/LO
Lords-and-ladies	*Arum maculatum*	O
Marsh bedstraw	*Galium palustre*	R
Meadow barley	*Hordeum brachyantherum*	R/LO
Meadow fescue	*Festuca pratensis*	R
Meadow vetchling	*Lathyrus pratensis*	R
Mouse-ear hawkweed	*Hieracium pilosella*	LO
Mugwort	*Artemisia vulgaris*	R
Oxeye daisy	*Leucanthemum vulgare*	R/LF
Perennial rye-grass	*Lolium perenne*	R/LA
Perforate St John's-wort	*Hypericum perforatum*	R
Pineapple weed	*Matricaria discoidea*	R
Prickly sow-thistle	*Sonchus asper*	R
Purging buckthorn	*Rhamnus cathartica*	R
Pyramidal orchid	*Anacamptis pyramidalis*	R
Quaking grass	*Briza media*	R
Red campion	*Silene dioica*	R
Red clover	*Trifolium pratense*	R/LF
Red fescue	*Festuca rubra agg.*	R/LF
Red valerian	*Centranthus ruber*	R
Ribbed melilot	*Melilotus officinalis*	R
Ribwort plantain	*Plantago lanceolata*	R/LO

Common name	Scientific name	Abundance (DAFOR)
Rose	*Rosa sp.*	R
Rough chervil	*Chaerophyllum temulum*	LO
Rough meadow-grass	*Poa trivialis*	R
Scarlet pimpernel	*Anagallis arvensis*	R
Self-heal	*Prunella vulgaris*	R
Sheep sorrel	*Rumex acetosella*	R
Sheeps fescue	*Festuca ovina*	R
Shepherd's purse	*Capsella bursa-pastoris*	R
Silverweed	*Potentilla anserina*	LF
Smaller cat's-tail	*Phleum bertolonii*	LO
Smooth meadow-grass	*Poa pratensis*	R/LO
Smooth tare	*Vicia tetrasperma*	R
Soft-brome	*Bromus hordeaceus*	O/LF
Spear thistle	*Cirsium vulgare*	R
Spotted medic	*Medicago arabica*	LO
Sticky mouse-ear	*Cerastium glomeratum*	R
Sweet vernal grass	*Anthoxanthum odoratum*	LO
Tormentil	*Potentilla erecta*	R
Tufted hair-grass	*Deschampsia caespitosa*	R/LO
Tufted vetch	*Vicia cracca*	LO
Upright brome	*Bromus erectus*	R
Upright hedge parsley	*Torilis japonica*	R
Wall barley	*Hordeum murinum*	R
Wall speedwell	*Veronica arvensis*	R
Weld	*Reseda luteola*	R
White clover	*Trifolium repens*	R/LO
Wild carrot	*Daucus carota*	R/LO
Wild parsnip	*Pastinaca sativa*	R/LO
Wild teasel	*Dipsacus follunum*	R
Willowherb	*Epibolium sp.*	O/LD
Wood bitter vetch	*Vicia orobus*	R
Woolly thistle	*Cirsium eriophorum*	R
Yarrow	*Achilllea millefolium*	R
Yellow oat-grass	*Trisetum flavescens*	R/LO
Yellow rattle	*Rhinanthus minor*	R
Yorkshire-fog	*Holcus lanatus*	R/LO
Neutral Grassland Road Verges		
Agrimony	*Agrimonia eupatoria*	R
Autumn hawkbit	*Scorzoneroides autumnalis*	R/LO
Bird's-foot trefoil	*Lotus corniculatus*	R
Bittersweet	*Solanum dulcamara*	R
Black medic	*Medicago lupulina*	R
Bramble	*Rubus fruticosus* agg.	R
Bristly ox-tongue	*Picris echioides*	R.LO
Bush vetch	*Vicia sepium*	R
Canadian fleabane	*Erigeron canadensis*	R
Cat's-ear	*Hypochaeris radicata*	LF

Common name	Scientific name	Abundance (DAFOR)
Cock's-foot	*Dactylis glomerata*	R/LA
Common couch	*Elytrigia repens*	O
Common knapweed	*Centaurea nigra*	R/LO
Common knotgrass	*Polygonum arviculare*	R
Common nettle	*Urtica dioica*	R
Common poppy	*Papaver rhoeas*	R
Common ragwort	*Jacobae vulgaris*	R/LO
Common sorrel	*Rumex acetosa*	R
Common toadflax	*Polygonum arviculare*	R
Cow parsley	*Anthriscus sylvestris*	LF
Creeping bent	*Agrostis stolonifera*	LO/LF
Creeping buttercup	*Ranunculus repens*	R
Creeping cinquefoil	*Potentilla reptans*	R/LF
Creeping thistle	*Cirsium arvense*	R
Crested dog's-tail	*Cynosurus cristatus*	LO
Curled dock	*Rumex crispus*	R
Dandelion	*Taraxacum* sp. agg.	O/F
Dove's-foot cranesbill	*Geranium molle*	R
False oat-grass	*Arrhenatherum elatius*	O/LF/LA
Fat hen	*Chenopodium album*	R
Field bindweed	*Convolvus arvensis*	R/LF
Field forget-me-not	*Myosotis sylvatica*	R
Greater burnet	*Sanguisorba officinalis*	R
Greater knapweed	*Centaurea scabiosa*	R
Harebell	*Campanula rotundifolia*	R
Hare's-foot clover	*Trifolium arvense*	R
Hedge bedstraw	*Galium mollugo*	LF
Hemlock	*Conium maculatum*	R
Hogweed	*Heracleum sphondylium*	R
Large bindweed	*Calystegia sylvaticum*	LO
Meadow buttercup	*Ranunculus acris*	R
Meadow vetchling	*Lathyrus pratensis*	LO
Mugwort	*Artemisia vulgaris*	R
Oxeye daisy	*Leucanthemum vulgare*	R/LF
Perennial rye-grass	*Lolium perenne*	LO/LA
Perforate St John's-wort	*Hypericum perforatum*	R
Pyramidal orchid	*Anacamptis pyramidalis*	R
Quaking grass	*Briza media*	R
Red clover	*Trifolium pratense*	R
Red fescue	*Festuca rubra* agg.	R/LF
Ribwort plantain	*Plantago lanceolata*	LO/F
Rough meadow-grass	*Poa trivialis*	LO
Smaller cat's-tail	*Phleum bertolonii*	R
Smooth sow-thistle	*Sonchus olearaceus*	R
Soft-brome	*Bromus hordeaceus*	R
Spear thistle	*Cirsium vulgare*	R
St John's Wort	*Hypericum perforatum*	R

Common name	Scientific name	Abundance (DAFOR)
Timothy	*Phleum pratense*	LF
White clover	*Trifolium repens*	O
Wild carrot	*Daucus carota*	R
Wild parsnip	*Pastinaca sativa*	R
Wild teasel	*Dipsacus follunum*	R
Woolly thistle	*Cersium eriophorum*	R
Yarrow	*Achilllea millefolium*	R/LO
Yellow oat-grass	*Trisetum flavescens*	R
Yorkshire-fog	*Holcus lanatus*	R
Ardley Road Verge Nature Reserve DWS		
Agrimony	*Agrimonia eupatoria*	R
Ash	*Fraxinus excelsior*	R
Bittersweet	*Solanum dulcamara*	R
Black horehound	*Ballota nigra*	LO
Black medic	*Medicago lupulina*	LO
Blackthorn	*Prunus spinosa*	LF
Bloody crane's-bill	*Geranium sanguineum*	R
Bramble	*Rubus fruticosus* agg.	LF
Cock's-foot	*Dactylis glomerata*	R
Common comfrey	*Symphytum officinale*	R
Common knapweed	*Centaurea nigra*	R
Common mouse-ear	*Cerastium fontanum*	R
Common nettle	*Urtica dioica*	LO
Common ragwort	*Jacobae vulgaris*	R
Creeping buttercup	*Ranunculus repens*	R
Creeping cinquefoil	*Potentilla reptans*	LO
Creeping thistle	*Cirsium arvense*	R
Dandelion	*Taraxacum* sp. agg.	R
Dog rose	*Rosa canina* agg.	R
Dove's-foot cranesbill	*Geranium molle*	R
Elder	*Sambucus nigra*	LO
False oat-grass	*Arrhenatherum elatius*	LF
Fat hen	*Chenopodium album*	R
Field bindweed	*Convolvus arvensis*	LO
Field forget-me-not	*Myosotis arvensis*	R
Field maple	*Acer campestre*	R
Field scabious	*Knautia arvensis*	R
Germander speedwell	*Veronica chamaedrys*	LO
Greater knapweed	*Centaurea scabiosa*	LO
Ground-ivy	*Glechoma hederacea*	LF
Hawthorn	*Crataegus monogyna*	O
Hedge bindweed	*Calystegia sepium*	R
Hedgerow crane's-bill	*Geranium pyrenaicum*	LO
Herb-robert	*Geranium robertianum*	R
Hogweed	*Heracleum sphondylium*	R
Honeysuckle	*Lonicera periclymenum*	R
Mugwort	*Artemisia vulgaris*	LO

Common name	Scientific name	Abundance (DAFOR)
Meadow clary	*Salvia pratensis*	R
Mullein	*Verbascums* sp.	R
Night-flowering catchfly	*Silene noctiflora*	R
Perforate St John's-wort	*Hypericum perforatum*	LO
Primrose	*Primula vulgaris*	R
Privet	*Ligustrum vulgare*	LO
Purging buckthorn	*Rhamnus cathartica*	R
Red clover	*Trifolium pratense*	LO
Ribwort plantain	*Plantago lanceolata*	R
Rosebay willowherb	*Chamaenerion angustifolium*	LF
Smooth sow-thistle	*Sonchus olearaceus*	R
Spear thistle	*Cirsium vulgare*	R
Tor grass	*Brachypodium pinnatum*	R
Treacle mustard	*Erysimum cheiranthoide*	R
Violet	*Viola* sp.	R
Woolly thistle	*Cirsium eriophorum*	R
Yarrow	*Achilllea millefolium*	LF
Yellow toadflax	*Linaria vulgaris*	R
Main Site Scrub and Trees		
Ash	*Fraxinus excelsior*	O
Apple	*Malus* sp.	R
Beech	*Fagus sylvatica*	R
Blackthorn	*Prunus spinosa*	O
Bramble	*Rubus fruticosus* agg.	LA/D
Butterfly-bush	*Buddelia davidii*	R
Cherry	*Prunus sp.*	R
Cleavers	*Galium aparine*	LO
Common lime	*Tilia × europaea*	R
Common nettle	*Urtica dioica*	LF
Creeping thistle	*Cirsium arvense*	R
Dog rose	*Rosa canina* agg.	R/O
Dog's mercury	*Mercurialis perennis*	LO
Dogwood	*Cornus sanguinea*	R
Elder	*Sambucus nigra*	O
English elm	*Ulmus procera*	R
English oak	*Quercus robur*	O/F
European larch	*Larix decidua*	R
False oat-grass	*Arrhenatherum elatius*	LO/O
False-brome	*Brachypodium sylvaticum*	LF
Field maple	*Acer campestre*	O
Garlic mustard	*Alliaria petiolata*	LO
Goat willow	*Salix caprea*	R
Great willowherb	*Epilobium hirsutum*	R
Ground-ivy	*Glechoma hederacea*	LF
Hawthorn	*Crataegus monogyna*	O
Hazel	*Corylus avellana*	O
Hedge bindweed	*Calystegia sepium*	R

Common name	Scientific name	Abundance (DAFOR)
Hemlock	*Conium maculatum*	R
Hogweed	*Heracleum sphondylium*	LO
Horse-chestnut	*Aesculus hippocastanum*	F
Hybrid crack willow	*Salix x fragilis*	R
Ivy	*Hedera helix*	LF
Lesser burdock	*Arctium minus*	R
Leyland cypress	*Cupressocyparis leylandii*	R
Lords-and-ladies	*Arum maculatum*	R
Mint	*Mentha* sp.	R
Red dead-nettle	*Lamium purpureaum*	R
Rough meadow-grass	*Poa trivialis*	R
Scots pine	*Pinus sylvestris*	R
Spear thistle	*Cirsium vulgare*	R
Welted thistle	*Carduus crispus*	R
Wood dock	*Rumex sanguineus*	R
Yorkshire-fog	*Holcus lanatus*	LO
Highway Works Scrub		
Ash	*Fraxinus excelsior*	R/O
Barren brome	*Bromus sterilis*	R
Blackthorn	*Prunus spinosa*	R/F
Bramble	*Rubus fruticosus* agg.	LF
Canadian fleabane	*Erigeron canadensis*	R
Cleavers	*Galium aparine*	LO
Cock's-foot	*Dactylis glomerata*	R
Common centaury	*Centaurium erythraea*	R
Common lime	*Tilia × europaea*	R
Common nettle	*Urtica dioica*	R/O
Common ragwort	*Jacobae vulgaris*	R
Cotoneaster	*Cotoneaster* sp.	LF
Crab apple	*Malus sylvestris*	R
Creeping thistle	*Cirsium arvense*	R
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	R
Dogwood	*Cornus sanguinea*	O/LF
Elder	*Sambucus nigra*	O/F
English elm	*Ulmus procera*	F
English oak	*Quercus robur*	R
False oat-grass	*Arrhenatherum elatius*	O/LF
False-brome	*Brachypodium sylvaticum*	R
Field maple	*Acer campestre*	O/F
Garlic mustard	*Alliaria petiolata*	LO/LA
Goat willow	*Salix caprea*	R
Ground-ivy	*Glechoma hederacea*	LO/F
Guelder rose	*Viburnum opulus*	R
Hawthorn	*Crataegus monogyna*	O/LF
Hazel	*Corylus avellana*	R/O
Hedge woundwort	*Stachys sylvatica*	R

Common name	Scientific name	Abundance (DAFOR)
Hemlock	*Conium maculatum*	LO
Hogweed	*Heracleum sphondylium*	R
Hornbeam	*Carpinus betulus*	O
Ivy	*Hedera helix*	LO
Lesser burdock	*Arctium minus*	R
Mouse-ear hawkweed	*Hieracium pilosella*	R
Mugwort	*Artemisia vulgaris*	R/LO
Oxeye daisy	*Leucanthemum vulgare*	LF
Perforate St John's-wort	*Hypericum perforatum*	R
Privet	*Ligustrum vulgare*	O
Purging buckthorn	*Rhamnus cathartica*	R
Red fescue	*Festuca rubra* agg.	F
Ribwort plantain	*Plantago lanceolata*	R
Rosebay willowherb	*Chamaenerion angustifolium*	LO
Rough chervil	*Chaerophyllum temulum*	R
Rough meadow-grass	*Poa trivialis*	LF
Silver birch	*Betula pendula*	R
Spindle	*Euonymus europaeus*	R
Sycamore	*Acer pseudoplatanus*	R
Wayfaring tree	*Viburnum lantana*	R
White bryony	*Bryonia alba*	R
White campion	*Silene latifolia*	R
Wild carrot	*Daucus carota*	F
Wild cherry	*Prunus avium*	A
Wild parsnip	*Pastinaca sativa*	R
Wild teasel	*Dipsacus follunum*	R
Willowherb	*Epilobium* sp.	R
Yorkshire-fog	*Holcus lanatus*	R
Hedgerows		
Ash	*Fraxinus excelsior*	LO
Barren brome	*Bromus sterilis*	R
Bittersweet	*Solanum dulcamara*	R
Black bryony	*Dioscorea communis*	R
Blackthorn	*Prunus spinosa*	LF
Bramble	*Rubus fruticosus* agg.	LO
Cleavers	*Galium aparine*	LO
Common nettle	*Urtica dioica*	LF
Common poppy	*Papaver rhoeas*	R
Cow parsley	*Anthriscus sylvestris*	LF
Creeping thistle	*Cirsium arvense*	LO
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	R
Dogwood	*Cornus sanguinea*	R
Elder	*Sambucus nigra*	O
English elm	*Ulmus procera*	LO
English oak	*Quercus robur*	R
False oat-grass	*Arrhenatherum elatius*	LF

Common name	Scientific name	Abundance (DAFOR)
Field maple	*Acer campestre*	O
Fool's water-cress	*Helosciadium nodiflorum*	R
Garden privet	*Ligustrum ovifolium*	R
Garlic mustard	*Alliaria petiolata*	LO
Germander speedwell	*Veronica chamaedrys*	R
Goat's-beard	*Aruncus diocius*	R
Great willowherb	*Epilobium hirsutum*	R
Ground-ivy	*Glechoma hederacea*	LO
Hawthorn	*Crataegus monogyna*	A
Hazel	*Corylus avellana*	R
Hedge bindweed	*Calystegia sepium*	R
Hemlock	*Conium maculatum*	R
Herb-robert	*Geranium robertianum*	R
Hogweed	*Heracleum sphondylium*	R
Honeysuckle	*Lonicera periclymenum*	R
Hornbeam	*Carpinus betulus*	R
Horse-chestnut	*Aesculus hippocastanum*	R
Ivy	*Hedera helix*	LO
Meadow crane's-bill	*Geranium pratense*	R
Purging buckthorn	*Rhamnus cathartica*	R
Rose	*Rosa* sp.	R
Rough chervil	*Chaerophyllum temulum*	R
Spear thistle	*Cirsium vulgare*	LO
Spindle	*Euonymus europaeus*	R
Sycamore	*Acer pseudoplatanus*	O
Travellor's-joy	*Clematis vitalba*	R
Violet	Viola sp.	R
White bryony	*Bryonia alba*	R
Willow	*Salix* sp.	R
Main Site Plantation Woodland		
Alder	*Alnus glutinosa*	R
Ash	*Fraxinus excelsior*	O/F
Barren brome	*Bromus sterilis*	LF
Bearded couch	*Elymus caninus*	R
Beech	*Fagus sylvatica*	R
Blackthorn	*Prunus spinosa*	R
Box	*Buxus sempervirens*	R
Bramble	*Rubus fruticosus* agg.	O/LA
Cleavers	*Galium aparine*	LO
Clustered dock	*Rumex conglomeratus*	R
Common feather-moss	*Kindbergia praelonga*	R
Common lime	*Tilia × europaea*	R
Common nettle	*Urtica dioica*	LF
Cow parsley	*Anthriscus sylvestris*	R
Crab apple	*Malus sylvestris*	R
Creeping bent	*Agrostis stolonifera*	R
Creeping buttercup	*Ranunculus repens*	R

Common name	Scientific name	Abundance (DAFOR)
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	R/LO
Dogwood	*Cornus sanguinea*	R/LO
Elder	*Sambucus nigra*	R/O
Enchanter's-nightshade	*Circaea lutetiana*	R
English elm	*Ulmus procera*	R
English oak	*Quercus robur*	R
European	*Larix decidua*	R
False oat-grass	*Arrhenatherum elatius*	R
False-brome	*Brachypodium sylvaticum*	LO
Field maple	*Acer campestre*	O
Field maple	*Acer campestre*	R
Garlic mustard	*Alliaria petiolata*	LF
Great willowherb	*Epilobium hirsutum*	R
Grey willow	*Salix cinerea* subsp. *oleifolia*	R
Ground-ivy	*Glechoma hederacea*	LO
Hard rush	*Juncus inflexus*	R
Hawthorn	*Crataegus monogyna*	R/LF
Hazel	*Corylus avellana*	O
Hedge bindweed	*Calystegia sepium*	R
Hedge woundwort	*Stachys sylvatica*	R
Hemlock	*Conium maculatum*	R
Herb-robert	*Geranium robertianum*	LO
Hogweed	*Heracleum sphondylium*	R
Hybrid black poplar	*Populus* x *canadensis*	LD
Ivy	*Hedera helix*	LO
Hybrid crack willow	*Salix x fragilis*	R
Jointed rush	*Juncus articulatus*	R
Lesser burdock	*Arctium minus*	R
Lesser celandine	*Ficaria verna*	LO
Lime	*Tilia cordata x platyphyllos (T. x vulgaris)*	R
Lords-and-ladies	*Arum maculatum*	R/LO
Rough meadow-grass	*Poa trivialis*	R
Silver birch	*Betula pendula*	F
Sorbus species	*Sorbus* sp.	R
Spear thistle	*Cirsium vulgare*	R
Sycamore	*Acer pseudoplatanus*	R
Tufted hair-grass	*Deschampsia caespitosa*	R
Water figwort	*Scrophularia umbrosa*	R
Wayfaring tree	*Viburnum lantana*	R
Welted thistle	*Carduus crispus*	R
White popular	*Populus alba*	R
Wood avens	*Geum urbanum*	LO
Wood dock	*Rumex sanguineus*	R
Yorkshire-fog	*Holcus lanatus*	R
Highway Works Plantation Woodland		
Alder	*Alnus glutinosa*	R

Common name	Scientific name	Abundance (DAFOR)
Ash	*Fraxinus excelsior*	F/A
Bee orchid	*Ophrys apifera*	R
Beech	*Fagus sylvatica*	R
Blackthorn	*Prunus spinosa*	R/LF
Bramble	*Rubus fruticosus* agg.	R/LO
Cleavers	*Galium aparine*	R/LF
Cock's-foot	*Dactylis glomerata*	R
Common feather moss	*Kindbergia praelonga*	LF
Common lime	*Tilia × europaea*	R/O
Common nettle	*Urtica dioica*	LO
Common ragwort	*Jacobae vulgaris*	R
Cotoneaster	*Cotoneastser sp.*	R
Cow parsley	*Anthriscus sylvestris*	LO/LA
Crab apple	*Malus sylvestris*	R/O
Creeping buttercup	*Ranunculus repens*	LO
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	LO/LF
Dogwood	*Cornus sanguinea*	R/LO
Dogwood	*Cornus sanguinea*	R/O
Elder	*Sambucus nigra*	R/LO
English elm	*Ulmus procera*	R
English oak	*Quercus robur*	R/O
European larch	*Larix decidua*	R/O
False oat-grass	*Arrhenatherum elatius*	LO/LF
Field maple	*Acer campestre*	R/LF
Garlic mustard	*Alliaria petiolata*	LO/LA
Gorse	*Ulex europaeus*	R
Grey alder	*Alnus incana*	R
Ground-ivy	*Glechoma hederacea*	LO/LA
Hairy brome	*Bromus ramosus*	R/LO
Hawthorn	*Crataegus monogyna*	O/LA
Hazel	*Corylus avellana*	R/LF
Hedge woundwort	*Stachys sylvatica*	R
Hedgerow crane's-bill	*Geranium pyrenaicum*	R
Hemlock	*Conium maculatum*	R
Herb-robert	*Geranium robertianum*	O/LF
Hogweed	*Heracleum sphondylium*	R
Holly	*Ilex aquifolium*	R
Hornbeam	*Carpinus betulus*	R
Horse-chestnut	*Aesculus hippocastanum*	R
Hybrid black-poplar	*Populus x canadensis*	O
Ivy	*Hedera helix*	R/LF
Leyland cypress	*Cuprussus x leylandii*	R
Lombardy poplar	*Populus nigra 'Italica'*	R
Nipplewort	*Lapsana communis*	R
Norway maple	*Acer platanoides*	R
Norway spruce	*Picea abies*	R/O

Common name	Scientific name	Abundance (DAFOR)
Privet	*Ligustrum vulgare*	R
Purging buckthorn	*Rhamnus cathartica*	R/O
Pyramidal orchid	*Anacamptis pyramidalis*	R
Red fescue	*Festuca rubra* agg.	LO
Red Norway maple	*Acer platanoides 'Crimson King'*	R
Rose	*Rosa sp.*	R
Rough chervil	*Chaerophyllum temulum*	R/LO
Rough meadow-grass	*Poa trivialis*	R/LF
Rowan	*Sorbus acuparia*	R
Scots pine	*Pinus sylvestris*	R
Self-heal	*Prunella vulgaris*	R
Silver birch	*Betula pendula*	R/O
Stinking iris	*Iris foetidissima*	LO
Sycamore	*Acer pseudoplatanus*	R/LF
Wayfaring tree	*Viburnum lantana*	R/LF
White bryony	*Bryonia alba*	R
White popular	*Populus alba*	R
Wild cherry	*Prunus avium*	R/LF
Wood avens	*Geum urbanum*	R/O
Wood dock	*Rumex sanguineus*	R
Wood forget-me-not	*Myosotis sylvatica*	R
Wood horsetail	Equisetum sylvaticum	R
Wood meadow-grass	*Poa nemoralis*	LO
Wood vetch	*Vicia sylvatica*	R
Wych elm	*Ulmus glabra*	R
Semi-Natural Woodland		
Ash	*Fraxinus excelsior*	O/F
Beech	*Fagus sylvatica*	R
Blackthorn	*Prunus spinosa*	LO
bramble	*Rubus fruticosus*	LO
cleavers	*Galium aparine*	LO
Cotoneaster	*Cotoneaster* sp.	R
cow parsley	*Anthriscus sylvestris*	LF
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	LF
English oak	*Quercus robur*	R
Field maple	*Acer campestre*	F
Hawthorn	*Crataegus monogyna*	R/LO
Hazel	*Corylus avellana*	O
Hedge woundwort	*Stachys sylvatica*	R
herb robert	*Geranium ropertanum*	R
Holly	*Ilex aquifolium*	R
horse chestnut	*Aesculus hippocastanum*	R
Hybrid black poplar	*Populus* x *canadensis*	O
Ivy	*Hedera helis*	LF
Lords-and-ladies	*Arum maculatum*	R
nipplewort	*Lapsana communis*	R

Common name	Scientific name	Abundance (DAFOR)
Norway spruce	*Picea abies*	R
Privet	*Ligustrum vulgare*	R
Rowan	*Sorbus acuparia*	R
Silver birch	*Betula pendula*	F/O
Sycamore	*Acer pseudoplatanus*	R/O
Wayfaring tree	*Viburnum lantana*	LO
Wild cherry	*Prunus avium*	F/A
wood avens	*Geum arbanum*	R
Wood dock	*Rumex sanguineus*	R
Trees and Treelines		
Ash	*Fraxinus excelsior*	O/LF
Barren brome	*Bromus sterilis*	R
Black bryony	*Disoscorea communis*	R
Blackthorn	*Prunus spinosa*	O/F
Box honeysuckle	*Lonicera nitida*	R
Bramble	*Rubus fruticosus* agg.	LO/LF
Cleavers	*Galium aparine*	LO/LF
Cock's-foot	*Dactylis glomerata*	R
Common lime	*Tilia × europaea*	R/LF
Common mallow	*Malva sylvestris*	R
Common nettle	*Urtica dioica*	LO/LF
Common sorrel	*Rumex acetosa*	R
Crab apple	*Malus sylvestris*	R
Dog rose	*Rosa canina* agg.	R
Dog's mercury	*Mercurialis perennis*	R
Dogwood	*Cornus sanguinea*	O
Dogwood	*Cornus sanguinea*	R/O
Elder	*Sambucus nigra*	O/F
English elm	*Ulmus procera*	R/LF
English oak	*Quercus robur*	R
False oat-grass	*Arrhenatherum elatius*	R/O
False-brome	*Brachypodium sylvaticum*	LO
Field maple	*Acer campestre*	R/F
Garlic mustard	*Alliaria petiolata*	LO/LA
Goat willow	*Salix caprea*	R
Great willowherb	*Epilobium hirsutum*	R
Ground-ivy	*Glechoma hederacea*	LO/LF
Hawthorn	*Crataegus monogyna*	O/F
Hazel	*Corylus avellana*	R/LO
Hedge bindweed	*Calystegia sepium*	R
Hedge woundwort	*Stachys sylvatica*	R
Hemlock	*Conium maculatum*	LF
Hogweed	*Heracleum sphondylium*	R
Holly	*Ilex aquifolium*	R
Hybrid crack willow	*Salix x fragilis*	R
Ivy	*Hedera helix*	LO
Lesser burdock	*Arctium minus*	R

Common name	Scientific name	Abundance (DAFOR)
Lilac	*Syringa vulgaris*	R
Lords-and-ladies	*Arum maculatum*	R
Mint	*Mentha* sp.	LO
Mugwort	*Artemisia vulgaris*	R/LO
Purging buckthorn	*Rhamnus cathartica*	R
Red dead-nettle	*Lamium purpureaum*	R
Rosebay willowherb	*Chamaenerion angustifolium*	LO
Rough meadow-grass	*Poa trivialis*	O
Rowan	*Sorbus acuparia*	R
Silver birch	*Betula pendula*	O
Smooth sow-thistle	*Sonchus olearaceus*	R
Sorbus	*Sorbus* sp.	LF
Sycamore	*Acer pseudoplatanus*	R/LO
Wayfaring tree	*Viburnum lantana*	R
Welted thistle	*Carduus crispus*	R
Wild cherry	*Prunus avium*	R
Willow	*Salix* sp.	R
Wood dock	*Rumex sanguineus*	R
Yew	*Taxus baccata*	R
Yorkshire-fog	*Holcus lanatus*	R
Wall		
Bramble	*Rubus fruticosus* agg.	R
Canadian fleabane	*Erigeron canadensis*	R
Fern grass	*Catapodium rigidum*	R
Male fern	*Dryopteris filix-mas*	O
Rosebay willowherb	*Chamaenerion angustifolium*	R
Rough hawk's-beard	*Crepis biennis*	R
Soft rush	*Juncus effusus*	R
Yarrow	*Achilllea millefolium*	R
Garden Grassland and Planting		
Black medic	*Medicago lupulina*	R
Broad-leaved dock	*Rumex obtusifolius*	R
Cock's-foot	*Dactylis glomerata*	R
Cow parsley	*Anthriscus sylvestris*	R
Creeping buttercup	*Ranunculus repens*	LO
Daisy	*Bellis perennis*	R
Dandelion	*Taraxacum* sp. agg.	LO
Field bindweed	*Convolvus arvensis*	LO
Germander speedwell	*Veronica chamaedrys*	R
Perennial rye-grass	*Lolium perenne*	F
Red fescue	*Festuca rubra* agg.	LO
Ribwort plantain	*Plantago lanceolata*	R
Rowan	*Sorbus acuparia*	R
Small leaved lime	*Tilia cordata*	R
Smooth hawk's-beard	*Crepis capillaris*	R
Wild cherry	*Prunus avium*	R
Yarrow	*Achilllea millefolium*	O

Common name	Scientific name	Abundance (DAFOR)
Waterbodies		
Bittersweet	*Solanum dulcamara*	R
Bulrush	*Typhus latifolia*	R
Club rush	*Schoenoplectus lacustris*	LA
Clubrush	*Schoenoplectus lacustris*	LF
Clustered dock	*Rumex conglomeratus*	R
Common nettle	*Urtica dioica*	O/R
Common reed	*Phragmites australis*	A
Creeping bent	*Agrostis stolonifera*	O
False oat-grass	*Arrhenatherum elatius*	R
Fool's water-cress	*Helosciadium nodiflorum*	LD/F
Goat willow	*Salix caprea*	R
Great willowherb	*Epilobium hirsutum*	LF
Hybrid crack willow	*Salix x fragilis*	R
Lords-and-ladies	*Arum maculatum*	O
Meadowsweet	*Filipendula ulmaria*	LO
Mint	*Mentha* sp.	R
Red fescue	*Festuca rubra* agg.	LF
Reed canary grass	*Phalaris arundinacea*	R
Water figwort	*Scrophularia umbrosa*	R/O
Water star-wort	*Callitriche* sp.	LO
Willowherb	*Epibolium* sp.	R
Yellow flag iris	*Iris pseudacorus*	R/LF
Yorkshire-fog	*Holcus lanatus*	O
Watercourses		
Bramble	*Rubus fruticosus* agg.	R
Bulrush	*Typhus latifolia*	R/O
Clustered dock	*Rumex conglomeratus*	R
Common nettle	*Urtica dioica*	O/R
False oat-grass	*Arrhenatherum elatius*	R
Fool's water-cress	*Helosciadium nodiflorum*	LF/LD
Great willowherb	*Epilobium hirsutum*	LF
Goat willow	*Salix caprea*	R
Great willowherb	*Epilobium hirsutum*	F
Hard rush	*Juncus inflexus*	O
Hybrid crack willow	*Salix x fragilis*	R
Jointed rush	*Juncus articulatus*	O
Lords-and-ladies	*Arum maculatum*	O
Mint	*Mentha* sp.	O/R
Water figwort	*Scrophularia umbrosa*	R/O

APPENDIX B: HEDGEROW SURVEY SUMMARY

Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	Import. HR[1]
H1	*Ac, Ah, Ca, Cm, Ps, Sn*	2-4 / 2-3	362	2	<10% gaps, at least 1 standard tree/50m, dry ditch	No
H2	*Ac, Ca, Cm, Fe, Ps, Ro, Sn, Vl, U* sp.	2-4 / 1-2	320	4	<10% gaps	No
H3	*Ac, Ca, Cm, Fe, Ps, Sn, Rc, Rh, Vl*	2-4 / 1-2	280	5	<10% gaps, dry ditch, species rich	No
H4	*Ac, Ca, Cm, Fe, Ps, Rh, Ro, Sn, Vi*	1-2 / 0-1	430	4	-	No
H5	*Ac, Ap, Ca, Cm, Fe, Ps, Qr, Rc, Sn, Vl*	2-4 / 2-3	497	4	at least 1 standard tree/50m, wet ditch	No
H6	*Ac, Ca, Cm, Fe, Ee, Ps, Qr, Rc, Sn, Vl, U* sp.,	1-2 / 1-2	650	5	Species rich	No
H7	*Ca, Cm, Ro, Sn, U* sp.	2-4 / 1-2	84	3	No gaps	No
H8	*Cm, Fe, Ps, Ro*	2-4 / 1-2	76	3	No gaps, watercourse	No
H9	*Cm, Sn*	2-4 / 1-2	62	1	No gaps	No
H10	*Cb*	2-4 / 1-2	92	1	No gaps, watercourse	No
H11	*Ac, Ca, Cm, Fe, Ps, Qr, Ro, Sn, Um*	1-2 / 1-2	428	4	at least 1 standard tree/50m	No
H12	No longer encompassed by the Application Site					
H13	*Cm, Ps, Rh, Rs, Sn, Vl, Um*	1-2 / 1-2	339	3	Connections scoring 4 points	No
H14	*Cm, Sn, Ro, Sa*	1-2 / 1-2	128	2	-	No
H15	*Ac, Cm, Sn, Ps, Ro, Vl, Fe, Ca*	1-2 / 1-2	165	4	at least 1 standard tree/50m	No
H16	*Ac, Ca, Cm, Fe, Qr, Sa, Sn, U* sp.	2-4 / 1-2	516	3	<10% gaps, wet ditch	No
H17	*Ac, Cm, Ps, Ro, Sn*	2-4 / 1-2	302	3	<10% gaps	No
H18	*Ca, Cm, Ps, Sn*	1-2 / 1-2	180	2	Connections scoring 4 points	No
H19	*Cm, Fe, Ps, Qr, Sn*	2-4 / 1-2	133	1	No gaps, connections scoring 4 points	No
H20	*Ah, Ap, Cm, Ia, Sn*	2-4 / 1-2	201	2	<10% gaps	No
H21a	*Ac, Ap, Cm, Ee, Ps, Qr, Rc, Sn*	2-4 / 2-3	1054	3	<10% gaps	No
H21b	*Ac, Ap, Cm, Ee, Ps, Qr, Rc, Sn*	2-4 / 2-3	1054	3	<10% gaps, ditch	No
H22	*Ah, Cm, Ro, Sn*	2-4 / 1-2	142	3	<10% gaps, hedge bank	No
H23	*Ac, Cm, Lo, Sn, Vo*	1-2 / 1-2	343	3	-	No
H24	No longer encompassed by the Application Site					
H25a	*Ac, Ap, Cm, Cs, Fe, Lo, Ps, Qr, Rc, Sn, Vl*	2-4 / 1-2	661	4	At least 1 standard tree/50m	No
H25b	*Ac, Ap, Cm, Cs, Fe, Lo, Ps, Qr, Rc, Sn, Vl*	2-4 / 1-2	661	4	-	No
H26	*Ac, Ap, Cm, Cs, Ps, Rc, Rc, Sn, Um, Vl*	1-2 / 1-2	260	4	<10% gaps, ditch	No
H27	*Ap, Cm, Cs, Fe, Ee, Ms, Ps, Rc, Sn*	1-2 / 1-2	530	4.5	<10% gaps	No
H28	*Ac, Ap, Ca, Cm, Lo, R sp., Rc, Sn*	1-2 / 1-2	231	4	Hedgebank to 0.5m	No
H29	*Ac, Ca, Cm, Cs, Fe, Ps, Qr, Rc, Sn, Um*	2-4 / 2-3	236	3.7	<10% gaps, at least 1 standard tree/50m	No

Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	Import. HR[1]
H30	*Ac, Ca, Cm, Cs, Lo, Ps, Qr, Sn, Vl*	2-4 / 2-3	203	4	<10% gaps	No
H31	*Ap, Cm, Ms, Ps, Sn, Vl, U* sp.	2-4 / 1-2	95	3.5	<10% gaps, wet ditch	No
H32	*Ac, Cb, Cm, Fe, Ms, Ps, Rc, Sn*	0-1 / 1-2	221	3.5	At least 1 standard tree/50m	No
H33	*Ac, Cm, Fe, Ps, Rc, Sn*	2-4 / 1-2	150	3	Defunct hedgerow	No
H34	*Ac, Ap, Cm, Fe, Lo, Ps, Rc, Sa, Sc, Sf*	2-4 / 2-3	354	4.3	<10% gaps, at least 1 standard tree/50m, ditch	No
H35	*Ac, Ca, Cm, Ps, Rc, Sn*	0-1 / 1-2	396	3	Defunct hedgerow	No
H36	*Ac, Ap, Ca, Cm, Fe, Lo, Ps, Sn*	2-4 / 2-3	482	4	<10% gaps, at least 1 standard tree/50m	No
H37	*Ac, Cm, Lo, Ps, Sn*	1-2 / 1-2	163	4	No gaps	No
H38	*Ac, Ca, Cm, Fe, Lo, Ps, Sn, U* sp., *Vl*	1-2 / 1-2	316	4.3	No gaps, species-rich, ditch	No
H39	*Ac, Ca, Cm, Fe, Lo, Ps, Qr, Sn, U* sp., *Vl*	1-2 / 1-2	143	3.5	No gaps	No
H40	*Ac, Cm, Fe, Ee, Ps, Rc, Sn, U* sp.	2-4 / 2-3	205	5	Watercourse, at least 1 standard tree/50m, species-rich	No
H41	*Ac, Ap, Ca, Cm, Cs, Fe, Lo, Po Ps, Rc, Sn, Vl*	2-4 / 1-2	267	4.7	<10% gaps	No
H42	No longer encompassed by the Application Site					
H43	*Cm, Sn*	>4 / 1-2	109	2	-	No
H44	*Ac, Ca, Cm, Ps, Sn, U* sp.	2-4 / 1-2	59	5	Species-rich	No
H45	*Ac, Ap, Cm, Cs, Fe, Ms, Ps, Sn, U* sp.	>4 / 2-3	230	4	No gaps, at least 1 standard tree/50m	No
H46	*Ca, Cm, Ps, Sn, Vl*	0-1 / 0-1	89	3	No gaps	No
H47	*Ac, Ap, Ps, Sn, U* sp.	2-4 / 1-2	150	4	No gaps, PRoW	No
H48	*Ac, Ca, Cm, Fe, Lo, Ps, Rc, Sn, Um, Vl*	>4 / 1-2	489	5	No gaps, at least 1 standard tree/50m, PRoW, species-rich	**Yes**
H49	*Ac, Ca, Cs, Ps, Rc, Sn, Um*	2-4 / 1-2	137	2.5	No gaps, connections scoring 4 points	No
H50	*Ac, Ap, Cm, Fe, Ps, Rc, Rca, Qr, Sn, Um*	>4 / 1-2	98	5.6	<10% gaps, at least 1 standard tree/50m, PRoW, species-rich	**Yes**
H51	No longer encompassed by the Application Site					
H52	No longer encompassed by the Application Site					
~~H53~~	~~No longer encompassed by the Application Site~~					
H53	*Ac, Cm, Rc, Sn*	>4 / 1-2	14	4	No gaps	No
H54	*Ac, Ca, Cm, Fe, Lo, Ps Rc, Rh, Sn*	>4 / 2-3	186	5	No gaps, at least 1 standard tree/50m, species-rich	No
H55	No longer encompassed by the Application Site					
H56	*Ac, Ca, Cm, Cs, Fe, Ps, Rc, R sp, Sn*	2-4 / 1-2	560	5	No gaps, at least 1 standard tree/50m, species rich	No
H57	*Ac, Ca, Cm, Cs, Ps*	>4 / 2-3	354	4	No gaps	No
H58	*Ap, Cm, Ps, Rc, Sn*	1-2 / 0-1	295	3	-	No
H59	*Ac, Cm, Lo, Ps, Rc, Sn*	2-4 / 1-2	420	3	No gaps	No
H60	*Ac, Ap, Cm, Ps, Rc, Sn*	1-2 / 0-1	86	4	Defunct hedgerow	No
H61	*Ac, Ah, B sp., Ca, Cm, Cs, Fe, Lo, Ps, Rc, Um, Vl*	1-2 / 1-2	409	4.6	No gaps, at least 1 standard tree/50m	No

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Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	Import. HR[1]
H62	*Ac, Ah, Ap, Ca, Cm, Fe, Ps, Rc, Um*	2-4 / 1-2	366	4	No gaps, at least 1 standard tree/50m	No
H63	No longer encompassed by the Application Site					
H64	No longer encompassed by the Application Site					
H65	*Ac, Ap, Ah Ca, Cm, Fe, Lo, Ps, Rc, Sn*	2-4 / 2-3	292	5.5	No gaps, at least 1 standard tree/50m, PRoW, species-rich	**Yes**
H66	No longer encompassed by the Application Site					
H67	*Cm, Ps, Rc, Sn*	2-4 / 2-3	120	4	No gaps, PRoW	No
H68	*Ac, Ca, Cm, Fe, Sn*	2-4 / 2-3	155	3	No gaps	No
H69	*Ac, Ap, Cs, Fe, Ps, Rc, Sn, Vl,*	2-4 / 2-3	262	3	No gaps, dry ditch	No
H70	*Ac, Ap, Cm, Cs, Ps, Sn*	2-4 / 2-3	159	5	No gaps, dry ditch, species-rich	No
H71	*Ac, Ca, Cm, Fe, Ps*	2-4 / 2-3	251	3	No gaps, dry ditch	No
H72	*Ac, Ca, Fe, Ps, Sn*	2-4 / 2-3	242	4	No gaps, dry ditch	No
H73	*Ac, Cm, Fe, Ps, Rc, Sn*	2-4 / 2-3	184	2	Dry ditch	No
H74	*Ac, Cm, Ps, Sn*	2-4 / 2-3	162	3	No gaps, dry ditch	No
H75	*Cm, Ps, Sn*	1-2 / 1-2	36	4	No gaps	No
H76	*Ca, Cm, Fe, Ps, Sn*	2-4 / 1-2	196	4	No gaps, watercourse	No
H77	*Ac, Ca, Cm, Fe, Ps, Um*	2-4 / 1-2	291	4	<10% gaps, at least 1 standard tree/50m, species-rich	No
H78	*Cm, Fe, Ps, Qr, Rh, Sc, Sn*	2-4 / >3	294	4	<10% gaps, at least 1 standard tree/50m	No
H79	*Cm, Fe, Ps, Rc, Um*	2-4 / 1-2	139	3	No gaps	No
H80	*Ap, Cm, Fe, Ps, Rh*	2-4 / 2-3	161	4	No gaps	No
H81	*Cm, Fe, Ms, Ps, Rc, Rh, Sn, U* sp.	>4 / >3	306	4.5	No gaps, at least 1 standard tree/50m, ditch (dry)	No
H82	*Ac, Ap, Cm, Fe, Ms, Ps, Sn, U* sp.	>4 / >3	156	5	No gaps, at least 1 standard tree/50m, species-rich	No
H83	*Ap, Cm, Fe, Ee, Ms, Pa, Ps, U* sp.	2-4 / 1-2	194	4	10-30% gaps, at least 1 standard tree/50m	No
H84	*Ap, Cm, Ee, Fe, Lo, Ps, Rc*	>4 / 1-2	324	4	10-30% gaps, 4 end connections	No
H85	No longer encompassed by the Application Site					
H86	*Ac, Cm, Fe, Ee, Ps, Rh, Rc, Sn,*	2-4 / 1-2	99	5	No gaps, at least 1 standard tree/50m, species-rich	No
H87	*Ac, Ca, Cs, Fe, Qr, Pa, Ps, Rc, Rh, Sn, Vl*	2-4 /1-2	258	5	30-10% gaps, at least 1 standard tree/50m, dry ditch, species-rich	No
H88	*Ca, Cm, Fe, Lo, Ps, Rc, Sn*	2-4 / 1-2	144	4	<10% gaps, at least 1 standard tree/50m, watercourse	No
H89	*Ac, Ca, Cm, Cs, Fe, Ps, Rc, Sn*	2-4 /1-2	197	5	No gaps, at least 1 standard tree/50m, 4 end connections, species-rich	No
H90	*Cm, Cs, Ps, Sn*	1-2 / 1-2	97	4	<10% gaps, dry ditch, PRoW	**Yes**
H91	*Cm, Fe, Ms, Ps, Sn*	2-4 / 1-2	270	3	<10% gaps	No
H92	*Ae, Ca, Cm, Cs, Fe, Ps, Rc, Sn*	2-4 / 2-3	122	5	<10% gaps	No
H93	*Ac, Ap, Cm, Fe, Ps, Rc, Sn, Wych elm*	1-2 / 1-2	141	6	PROW, <10% gaps, parallel hedge within 15m	No
H94	*Ac, Ps, Sn, Sn*	1-2 / 1-2	139	4	<10% gaps	No
H95	*Ca, Cm, Up, Sn, Ug*	1-2 / 0-1	76	4	Parallel hedge within 15m	No

Ref	Canopy Sp.	Height / Width (m)	Length (m)	Sp. per Av. 30m	Notes	Import. HR[1]
H96	*Ac, Cm, Cs, Fe, Pc, Privet, Ps, Sn*	2-4 / 1-2	285	5.33	At least 1 standard tree/50m, <10% gaps, connections scoring >4, parallel hedge within 15m, PROW	**Yes**
H97	*Cs, Up, Fe, Ms, Ps, Rc, Sn*	2-4 / 0-1	343	5	-	No
H98	*Cn, Ms, Pa, Ps,Rc, Sn*	2-4 / 0-1	283	5	-	No
H99	*Cm*	0-1 / 0-1	184	1	-	No
H100	*Cm, Fe*	1-2 / 1-2	112	2	<10% gaps, ditch for over 50%, PROW	No
H101	*Ac, Ca, Cm, Fe, Fe, Pa, Ps, Rc, Sn*	2-4 / 2-3	306	4.33	<10% gaps, connections scoring >4	No
H102	*Cm, Fe, Hcn, Ps, Rc, Sn*	2-4 / 2-3	163	4.5	<10% gaps	No
H103	*Ac, Cm, Cs, Fe, Ps, Rc, Sn*	1-2 / 1-2	53	6	<10% gaps	No
H104	*Ac, Ca, Cs, Fe, Ps, Rc, Sn*	2-3 / 1-2	276	4.33	<10% gaps	No
H105	*Ac, Cm, Cs, Fe, Ps, Rc, Sn*	2-4 / 2-3	400	5.67	<10% gaps	No
H106	*Ac, Ca, Cm, Fe, Ms, Ps, Sn, Ug*	1-2 / 1-2	145	5.5	<10% gaps, PROW	**Yes**
H107	*Ac, Fs, Ca, Cm, Cs, Ps*	1-2 / 0-1	54	6	<10% gaps	No
H108	*Ac, Cm, Cs, Vo, La, Pa, Pa, Sn*	2-4 / 1-2	88	8	<10% gaps, PROW	**Yes**
~~H109~~	~~*Ac, Beech, Ca, Cs, Rm*~~	~~1-2 / 0-1~~	~~24~~	~~5~~	~~<10% gaps, PROW~~	~~**Yes**~~
H109	No longer encompassed by the Application Site					
H110	*Cm, Fe, Ps, Rc, Ug*	1-2 / 1-2	188	3.67	<10% gaps, parallel hedge within 15m, PROW	No
H111	*Cm, Ps, Up. Fe, Sn, Qr, Ap*	2-4 / 1-2	273	4.67	<10% gaps , ditch for over 50%, PROW	No
H112	*Tb, CxL*	2-4/1-2	58	2	<10% gaps. PROW,	No
H113	*Up, Rc, Ug*	2-4 / 2-3	44	3	<10% gaps, ditch for over 50%	No
H114	*Up, Cm, Ap, Ug, Fe, Qr*	2-4 / 2-3	199	4	At least 1 standard tree/50m. parallel hedgerow, PROW	No
H115	*Sn, Ps, Cm, Cornus, Lv, Ac, Pa, Qr, Ms*	1-2 / 1-2	126	7	At least 1 standard tree/50m. <10% gaps, PROW. Newly planted.	**Yes**

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