



Aspbury Planning

**Land to the South of the A617, Rainworth**

**Ecological Appraisal**

February 2021

**FPCR Environment and Design Ltd**

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## **1.0 INTRODUCTION**

- 1.1 The following report has been prepared by FPCR Environment and Design Ltd. on behalf of Asbury Planning and provides the results of an Ecological Appraisal of an area of land located to the south of the A617 at Rainworth (the Site). This Appraisal has been informed by a desk study, and extended Phase I survey.
- 1.2 The objective of the appraisal was to determine habitats and species present within the Site and to make an initial assessment of their ecological value and any potential ecological constraints to future residential development. In addition, and where appropriate, the need for additional surveys have been identified along with a consideration of opportunities for ecological mitigation and enhancements within any future development design.

### **Site Context**

- 1.3 The Site is approximately 6.6ha in extent. The core and majority of the Site is formed by poor semi-improved grassland with associated scattered and dense scrub. A watercourse, Rainworth Water, flows northwards through the Site's eastern extent, adjacent to which lies a pond with associated areas of semi-natural broad-leaved wet woodland and tall ruderal vegetation. A belt of secondary, semi-natural woodland (forming the Disused Railway Rainworth LWS) lies on a steep embankment along the Site's southern boundary. A relatively recently planted native species-rich hedgerow lies along the northern boundary, with a small area of semi-improved acid grassland (forming part of Rainworth Water Piece LWS) located within the north-eastern corner.
- 1.4 Surrounding land-use, comprises the A617 to the immediate north of the Site with areas of coniferous plantation woodland, heathland, rough grassland and wetland habitat beyond. Rufford Colliery Lane lies to the immediate east of the Site with a number of small business premises, areas of scrub and sport's pitches beyond. Areas of residential housing and mature broad-leaved woodland lie to the remaining south and west of the Site, respectively.

### **Proposals**

- 1.5 Proposals are for residential development. The current Appraisal has been informed by the proposals as shown on Development Framework Plan (9474-L-02).

## 2.0 METHODOLOGY

### Desk Study

- 2.1 The Multi Agency Geographic Information for the Countryside (MAGIC) website has been reviewed for the presence of any statutory designated sites of international (Special Conservation Area (SAC), Special Protection Area (SPA) or Ramsar Sites), national/regional (Site of Special Scientific Interest, (SSSI)) or local nature conservation importance (Local Nature Reserves (LNR)) within 5km, 2km and 1km of the Site, respectively.
- 2.2 Consultation has also been undertaken with Nottinghamshire Biological and Geological Record Centre (NBGRC) for the presence of non-statutory designated sites of nature conservation importance (Local Wildlife Sites (LWS)), and protected / notable species records for within 1km of the Site. Consultation responses were received on the 2<sup>nd</sup> April 2020.
- 2.3 Further inspection, using colour 1:25,000 OS base maps and aerial photographs from Google Maps was also undertaken in order to provide additional context and identify any features of potential importance for nature conservation in the wider landscape.

### Field Survey – Habitats/Flora

#### Extended Phase I Survey

- 2.4 The survey followed the extended Phase I survey technique<sup>1</sup>. This involved a systematic walk over of the Site to classify the broad habitat types and to identify any Habitats of Principal Importance (HPI) for the conservation of biodiversity in England as listed within Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. Target notes were made where necessary to record features or habitats of particular interest. Botanical species lists were compiled during the walkover survey, which although not exhaustive, were considered sufficient enough to determine broad habitat types and their relative ecological value.
- 2.5 The survey was undertaken by a suitably experienced ecologist with a level four Field Identification Skills Certificate (FISC) on the 6<sup>th</sup> and 7<sup>th</sup> of April 2020. Weather conditions during the survey were clear and sunny.

#### Hedgerows

- 2.6 Hedgerows present were assessed against the Wildlife and Landscape criteria contained within Statutory Instrument No: 1160 – The Hedgerow Regulations 1997 to determine whether they qualified as 'Important Hedgerows' under the Regulations. This was achieved using a methodology in accordance with both the Regulations and DEFRA guidance<sup>2</sup>.

<sup>1</sup> JNCC (2010), Handbook for Phase I habitat survey – a technique for environmental audit.

<sup>2</sup> DEFRA (1997) The Hedgerow Regulations 1997, A Guide to the Law and Good Practice. London, HMSO

## Field Survey – Fauna

### General

- 2.7 During the extended Phase I survey, observations, signs of or suitable habitat for any species protected under Part I of the Wildlife and Countryside Act 1981 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended) and the Protection of Badgers Act 1992 were recorded. Consideration was also given to the existence and use of the Site by other notable fauna such as Species of Principal Importance (SPI) for the conservation of biodiversity in England as listed within S41 of the NERC Act (2006), Nottinghamshire Biodiversity Action Plan (NBAP) and/or Red Data Book (RDB) species.

### Great Crested Newts

- 2.8 As part of the extended Phase I survey the on-Site pond was subject to a Habitat Suitability Index (HSI) assessment following the standard methodology<sup>3</sup> to determine its suitability to support great crested newts *Triturus cristatus*.

## 3.0 RESULTS

### Desk Study

- 3.1 The locations of all statutory and non-statutory designated sites referred to in the following section are shown on Figure 1.

### Statutory Designated Sites

- 3.2 Three statutory designated sites of national/regional nature conservation importance were identified within 2km of the Site. These included;
- Rainworth Heath Site of Special Scientific Interest (SSSI) is located 60m north of the Site, beyond the A617. The site is notified on the basis of its dry and wet heath habitats and supports a diverse invertebrate fauna;
  - Rainworth Lakes SSSI is located 380m south of the Site, beyond existing urban areas of Rainworth. The site comprises a series of waterbodies with associated areas of dry and wet woodland and scrub. The site is notified due to its base-poor marshes and open-water plant communities associated with the waterbodies; and
  - Strawberry Hill Heaths SSSI located 1.6km north-west. The site is notified due to its lowland heath habitat.
- 3.3 In addition to these, two statutory designated sites of local nature conservation importance occur within 1km of the Site. These include Rainworth Water Local Nature Reserve, supporting woodland and wetland habitats, located 810m north-east of the Site and Tippings Wood LNR, comprising broad-leaved woodland located 970m south-east.
- 3.4 One possible potential Special Protection Area (ppSPA) has been identified within 5km of the Site. Based on breeding populations of nightjar *Caprimulgus europaeus* and woodlark *Lullula arborea*, Natural England view a future recommendation for SPA classification of Sherwood Forest as being

<sup>3</sup> ARG (2010) ARG UK Advice Note 5: Great Crested Newt Habitat Suitability Index

possible. No formal boundary of any future SPA has been defined; however Natural England have drawn a boundary of the ppSPA based on areas of greatest interest ornithological for breeding nightjar and woodlark. These areas are classified as Indicative Core Breeding Areas (ICA) and Important Bird Areas (IBA).

- 3.5 The closest ICA/IBA lies to the immediate north of the A617, incorporating Rainworth Heath Site of SSSI and a number of Local Wildlife Sites (LWSs) including Rainworth Water Piece LWS and Rainworth Forest LWS. The boundaries of the ICA/IBA are shown in Appendix A.

### Non-statutory Designated Sites

- 3.6 Two non-statutory designated LWSs fall partially within the bounds of the Site. These include;
- Rainworth Water Piece LWS – a small area of the LWS falls within the north-eastern corner of the Site, with the remainder of the LWS extending to the east of the Site and to the north of the A617. The LWS supports a mosaic of scrub, heath and acid grassland in addition to several ponds and a wet land area associated with Rainworth Water (watercourse); and
  - Disused Railway Rainworth LWS – lies along the Site's southern boundary and continues both east and west of the Site. The section within the Site comprises scrub and secondary broad-leaved woodland habitats on a steep-sided embankment. Acid grassland and heath communities also occur within the wider LWS. Nottinghamshire Biological & Geological Records Centre (NBGRC) indicate that the boundary of the LWS is to be revised with the eastern boundary drawn-back to Rainworth Water at approximately SK 59051 58488.
- 3.7 In addition to these, one LWS Rainworth Wood borders the Site's western boundary. The woodland is mature acidic broad-leaved woodland comprising silver birch *Betula pendula* with scattered pedunculate *Quercus robur* and Sessile Oak *Q. petraea*.
- 3.8 A further six LWSs were identified at distances of 60m north to 1km north-east of the Site, two of which, Rainworth Heath and Rainworth Lakes are notified as SSSI's. A summary of these sites is provided in Table 1.

**Table 1. Non-statutory Designated Sites located within 1km of the Site.**

Site Name	Features of Interest	Location / distance from Site
Rainworth Heath SSSI/LWS	Dry and wet heath habitats and supports a diverse invertebrate fauna;	60m north
Rainworth Forest LWS	Large area of conifer plantation and broad-leaved woodland.	60m north
Rainworth Lakes SSSI/LWS	Series of fishing lakes, ponds and wooded swamp communities of botanical interest and of importance for breeding water birds	380m south
Rainworth Water LNR II LWS	Grassland and scrub communities supporting Dingy Skipper <i>Erynnis tages</i> .	800m north
Rainworth Gorse LWS	Relic dry heathland with a notable area of acidic grassland and scrub.	990m north-east
Ransom Road, LWS	Mosaic of habitats including areas of heath and acid grassland with dense stands of Bracken and scrub.	1km west

## Existing Protected / Notable Species Records

### Existing Protected / Notable Species Records

- 3.9 Locations of existing protected / notable species records are shown on Figure 2 and 3.
- 3.10 NBGRC provided two records of protected / notable species for within the Site. These included;
- Common lizard *Zootoca vivipara* – 2013 record of 2 individuals from the south eastern extent of the Site. The species is partially protected under the Wildlife and Countryside Act 1981 (as amended) and a Species of Principal Importance for Conservation under the Natural Environment & Rural Communities (NERC) Act 2006.
  - Common cudweed *Filago vulgaris* – 2012 record from the eastern extent of the Site. afforded the IUCN Near Threatened Status and is listed as a Category 4 (declining and widespread)
- 3.11 A 2017 record of the non-native invasive Japanese knotweed *Reynoutria japonica* listed on Schedule 9 of the W&C Act was also provided for within the south-eastern extent of the Site.
- 3.12 NBGRC also provided a range of species records for within 1km of the Site, many of which have been recorded within the designated sites to the north of the A617. A summary of these records is provided in Table 2.

**Table 2. Existing Protected / Notable Species Records for 1km of the Site.**

Species	Conservation Status	Notes / Relative Location
<b>Terrestrial Mammals</b>		
Badger <i>Meles meles</i>	PBA	2016 record of field evidence from monad SK6058, minimum distance of 900m east.
Harvest mouse <i>Micromys minutus</i>	LBAP	Single 1980's record from 830m west.
Hedgehog <i>Erinaceus europaeus</i>	SPI	Three records from two locations located 700m south-east and 400m south dated 2013/14 and 2019.
<b>Bats</b>		
Brown long-eared <i>Plecotus auritus</i>	HabRegs, W&C, SPI, LBAP	Three records, including two roost records located 230m and 400m west dated 2017.
Common pipistrelle <i>Pipistrellus pipistrellus</i>	HabRegs, W&C, LBAP	Nine records activity records spanning the period 1999 to 2017. Locations of records range from 40m north to 1km north-west and south.
Leisler's <i>Nyctalus leisleri</i>	HabRegs, W&C, LBAP	Single 2015 activity record from 65 north-west.
Noctule <i>Nyctalus noctula</i>	HabRegs, W&C, SPI, LBAP	Two activity records dated 2017 from single location 230m west.
Nyctalus sp.	HabRegs, W&C, LBAP	Single activity record dated 2015 from 980m south-west.
Pipistrelle sp.	HabRegs, W&C, LBAP	Five records, including two roost records dated 2001 and 2012 located 900m west and 850m south-west.
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	HabRegs, W&C, SPI, LBAP	Single activity record dated 2017 from single location 230m west.
Unidentified bat sp.	HabRegs, W&C, LBAP	Four records spanning the period 1988 to 2017, including 1988 roost record 200m south-west.



Species	Conservation Status	Notes / Relative Location
<b>Herptiles</b>		
Common lizard <i>Zootoca vivipara</i>	W&C, SPI	Single record for the Site dated 2013. Multiple records spanning the period 1988 – 2016 from Rainworth Heath SSSI, LWS and Rainworth Forest LWS located between 100m and 930m north.
Common toad <i>Bufo bufo</i>	SPI	Multiple records spanning the period 2002 – 2019. Including large numbers record from Rufford Colliery Lane / adjacent Pond north of the A617.
Grass snake <i>Natrix helvetica</i>	W&C, SPI	Single 2000 record from 500m south-west.
<b>Notable Invertebrates</b>		
Moths	SPI	Number of S41 listed species recorded from single location within Rainworth Heath SSSI, located 500m north. Species recorded include angle-striped sawfly <i>Enargia paleacea</i> and grass wave <i>Perconia strigillaria</i> .
Dingy skipper <i>Erynnis tages</i>	SPI, LBAP	Record from Rainworth Water LNR 860m north during the period 1980 – 2008
<b>Notable Plants</b>		
Bilberry <i>Vaccinium myrtillus</i>	NRPR	Single 1998 record from within Rainworth Heath SSSI/LWS 500m north.
Blunt-leaved pondweed <i>Potamogeton obtusifolius</i>	NRPR	Two records dated 1984 and 1991 from Rainworth Lakes SSSI 700m and 500m south.
Caraway <i>Carum carvi</i>	NRPR	Single 1994 record from Rainworth Water Piece LWS located approximately 800m north-west.
Common cotton-grass <i>Eriophorum angustifolium</i>	NRPR	Single 2012 record from Rainworth Heath SSSI/LWS 400m north.
Common cudweed <i>Filago vulgaris</i>	NRPR	One 2012 record within the Site. Further three records dated 2012 for 687m west and 140m and 416m north of the Site. A further five records were provided for the local area beyond 1km.
Corn spurrey <i>Spergula arvensis</i>	NRPR	Single 2012 record 940m south.
Cross leaved-heath <i>Erica tetralix</i>	NRPR	Two records dated 2012 from Rainworth Heath SSSI/LWS 300m and 400m north.
Heath cudweed <i>Gnaphalium sylvaticum</i>	NRPR	Single 2012 record from within Rainworth Heath SSSI/LWS 600m north.
Heath milkwort <i>Polygala serpyllifolia</i>	NRPR	Two records dated 2012 from within Rainworth Heath SSSI/LWS 250m 843m north.
Ivy-leaved crowfoot <i>Ranunculus hederaceus</i>	NRPR	Three records dated 2000 located 830m and 1km south-west and 2002 record 160m north-west.
Marsh violet <i>Viola palustris</i>	NRPR	Single 1978 record 920m south.

Species	Conservation Status	Notes / Relative Location
Round-leaved crowfoot <i>Ranunculus omiophyllus</i>	NRPR	Single 1991 record located 1km south-west.
Sea stork's-bill <i>Erodium maritimum</i>	NRPR	Single 2005 record located within Rainworth Heath SSSI/LWS 700m north.
Star sedge <i>Carex echinata</i>	NRPR	Single 2009 record located within Rainworth Heath SSSI/LWS 300m north.
Tussock cotton-grass <i>Eriophorum vaginatum</i>	NRPR	Single 2001 record located within Rainworth Heath SSSI/LWS 420m north.
Water blinks <i>Montia fontana</i>	NRPR	Single 1991 record located 1km south-west.
Water purslane <i>Lythrum portula</i>	NRPR	Single 2003 record 130m north-east within Rainworth Water Piece LWS.
White water-lily <i>Nymphaea alba</i>	NRPR	1984 record 490m south. Also recorded from monad SK5858 during 2000-2010.
Wild clary <i>Salvia verbenaca</i>	NRPR	Single 2017 record 40m north-west.
Yellow Bartsia <i>Parentucellia viscosa</i>	NRPR	Two records dated 2009 and 2015 from single location 36m east.

**Conservation Status Key:** HabRegs – The Conservation of Habitat & Species Regulations 2017, W&C – Wildlife and Countryside Act (as amended) 1981, PBA – Protection of Badgers Act 1992, SPI – Species of Principal Importance under S.41 of the Natural Environment & Rural Communities (NERC) Act, LBAP – Nottinghamshire Biodiversity Action Plan Priority Species, NRPR – Nottinghamshire Rare Plant Register.

- 3.13 In addition to the above records, NBGRC provided a small number of protected and notable bird records for the local area, including for the monad SK5958 containing the Site. These are summarised in Table 3 and shown on Figure 3.

**Table 3. Protected / Notable Birds Records from the local area.**

Species	Conservation Status	Notes / Relative Location
Common crossbill <i>Loxia curvirostra</i>	Sch.1	2013 record 460m north-east
Corn bunting <i>Emberiza calandra</i>	Red	2008 record, monad SK5958
Cuckoo <i>Cuculus canorus</i>	SPI, Red	2013 record 460m north-east
Bullfinch <i>Pyrrhula pyrrhula</i>	SPI, Amber	2010 record monad SK5959
House martin <i>Delichon urbicum</i>	Amber	2010/14 records for monads SK5958 and SK5959
Kestrel <i>Falco tinnunculus</i>	Amber	2013 record 460m north-east
Kingfisher <i>Alcedo atthis</i>	Sch.1, Amber	2011 record monad SK5958
Lesser redpoll <i>Acanthis cabaret</i>	SPI, Red	2013 record 460m north-east
Linnet <i>Linaria cannabina</i>	SPI, Red	2017 record monad SK5959
Meadow pipet <i>Anthus pratensis</i>	Amber	2010 record
Mistle thrush <i>Turdus viscivorus</i>	Red	2013 record 460m north-east
Red kite <i>Milvus milvus</i>	Sch.1	2013 record 460m north-east
Redwing <i>Turdus iliacus</i>	Sch. 1, Red	

Species	Conservation Status	Notes / Relative Location
Swift <i>Apus apus</i>	Amber	2013 record 460m north-east
Tree pipet <i>Anthus trivialis</i>	SPI, Red	2013 record 460m north-east
Turtle dove <i>Streptopelia turtur</i>	SPI, Red	Four records dated 2012 monad SK5958
Willow tit <i>Poecile montanus</i>	SPI, Red	Four records dated 2012 monad SK5958
Willow warbler <i>Phylloscopus trochilus</i>	Amber	2013 record 460m north-east
Woodlark <i>Lullula arborea</i>	Sch.1, SPI	2013 record 460m north-east
Yellowhammer <i>Emberiza citrinella</i>	Red	2012 record monad SK5958

**Conservation Status Key:** Sch. 1 – Schedule 1 of the Wildlife & Countryside Act, SPI – Species of Principal Importance under S.41 of the Natural Environment & Rural Communities (NERC) Act, Red – Bird's of Conservation Concern (BoCC) Red List, Amber – BoCC Amber list.

## Field Results – Extended Phase I Survey

### Overview

- 3.14 The extended Phase I survey established that the core and majority of the Site is formed by poor semi-improved grassland with scattered scrub, which increases in coverage to form areas of dense / continuous scrub within the southern extent. A watercourse, Rainworth Water, flows northwards through the Site's eastern extent, adjacent to which lies a pond with associated areas of semi-natural broad-leaved wet woodland and tall ruderal herbs. A belt of secondary, semi-natural woodland (forming the Disused Railway Rainworth LWS) lies on a steep embankment along the site's southern boundary. A relatively recently planted native species-rich hedgerow lies along the northern boundary, with a small area of semi-improved acid grassland in the north-eastern corner (forming part of Rainworth Water Piece LWS).
- 3.15 Habitat descriptions of the Site are provided below; the locations of the habitats described can be found on Figure 4 – Phase I Habitat Plan. Please refer to Appendix B for the botanical species list. Site photographs taken during the survey are presented throughout the text.

### Semi-natural Broad-leaved Woodland

- 3.16 The wet woodland (TN1) along the Site's eastern extent is formed from low-growing willows (grey willow *Salix cinerea* and goat willow *S. caprea*) with occasional alder *Alnus glutinosa* and small numbers of silver birch *Betula pendula*, ash *Fraxinus excelsior* and hawthorn *Crataegus monogyna*. The ground-layer is for the most-part boggy and damp in nature and supports species characteristic of these conditions including common nettle *Urtica dioica* which dominates and male-fern *Dryopteris filix-mas*, creeping buttercup *Ranunculus repens*, creeping bent *Agrostis stolonifera*, hairy bitter-cress *Cardamine hirsuta*, yellow iris *Iris pseudacorus*, soft-rush *Juncus effusus* and great willowherb *Epilobium hirsutum*. Bramble *Rubus fruticosus* agg. dominates locally where drier ground conditions persist.
- 3.17 Woodland along the southern embankment (TN2) is immature in nature and formed by abundant silver birch with small amounts of grey willow, pediculate oak *Quercus robur* and sycamore *Acer pseudoplatanus*. The shrub layer is varied, being dense on the bases of the embankment where gorse *Ulex europaeus* and grey willow occur, becoming less well-developed towards the tops of the banks where additional species include hawthorn and small amounts of elder *Sambucus nigra* and holly *Ilex aquifolium*. Bramble dominates the ground-layer locally. Elsewhere, the ground-flora

is formed by locally abundant common ivy *Hedera helix* and common forbs, tall ruderals and grasses. These include common nettle, cleavers *Galium aparine*, hogweed *Heracleum sphondylium*, red fescue *Festuca rubra*, wood avens *Geum urbanum* and cow parsley *Anthriscus sylvestris*.

### Dense/ Continuous & Scattered Scrub

- 3.18 Scattered scrub forms a frequent component to the grassland habitat forming the core of the Site. Hawthorn, silver birch and grey willow form the predominant species. Towards the southern extent of the Site the cover of scrub becomes denser and more continuous. Here, gorse dominates with locally abundant broom *Cytisus scoparius* and additional scrub and young tree species such as Scots pine *Pinus sylvestris* are scattered throughout. Smaller areas of dense scrub also occur along the eastern boundary and within the north-western corner of the Site.

### Tall Herb – Ruderal

- 3.19 An area of tall ruderal herbs is located to the south of the wet woodland (TN3). The community is dominated by common nettle with frequent hogweed and hairy bitter-cress. Additional species present include great willowherb, cleavers *Galium aparine*, ground-elder *Aegopodium podagraria* and rosebay willowherb *Chamerion angustifolium*. A small stand of Japanese knotweed *Fallopia japonica* (TN4) is located at the southern edge of the area.



**Photo 1. Stand of Japanese Knotweed with Site's south-eastern extent.**

### Semi-improved Acid Grassland

- 3.20 A small area of semi-improved acid grassland is located within the north-eastern extent of the Site (TN5). The grassland is heavily trampled and with bare paths resulting from desire-lines between Rufford Colliery Lane and the pedestrian crossing over the A617, and is subject to extensive rabbit grazing resulting in a very short sward (<20mm). Sheep's fescue *F. ovina*, red fescue and common bent *Agrostis capillaris* appear to form the predominant grasses, with cock's-foot *Dactylis glomerata*, annual meadow-grass *Poa annua*, field wood-rush *Luzula campestris* and perennial rye-grass also present. The latter occurring in association with the edges of the desire-lines. Ribwort plantain *Plantago lanceolata*, black medick *Medicago lupulina*, dove's-foot crane's-bill *Geranium molle*, and yarrow *Achillea millefolium* form the most abundant herbs, with frequent cat's-ear *Hypochaeris radicata*, and occasional common centaury *Centaureum erythraea*. Other species of rare or more localised occurrence included bird's-foot *Ornithopus perpusillus*, blue fleabane

*Erigeron acer*, autumn hawkbit *Leontodon autumnalis*, creeping buttercup and sheep's-sorrel *Rumex acetosella*. Small areas around the edges of the grassland are more neutral in nature and characterised by false oat-grass *Arrhenatherum elatius* with associated herbs such as red clover *Trifolium pratense*, oxeye daisy *Leucanthemum vulgare* and common vetch *Vicia sativa*. A small area within the northern extent of the grassland (just outside the redline) is heavily disturbed by rabbits and comprises abundant common stork's-bill *Erodium cicutarium* agg., biting stone-crop *Sedum acre* and common cudweed.

### Poor Semi-improved Grassland

- 3.21 The majority of the site is formed by poor semi-improved grassland which has formed over sandy soils. The sward is predominated by false oat-grass, Yorkshire-fog *Holcus lanatus* and cock's-foot *Dactylis glomerata* with associated herbs generally confined to common forbs and tall ruderals. Of these, common ragwort *Senecio jacobaea*, field forget-me-not *Myosotis arvensis*, hairy bitter-cress and dandelion *Taraxacum* agg. are frequent with mugwort *Artemisia vulgaris* and common mouse-ear *Cerastium fontanum* occasional.
- 3.22 Small areas of disturbed soil resulting from rabbit grazing occur scattered throughout and towards the south-eastern extent (TN6) where a small, relatively more-diverse area of grassland is present. Here, the sward is formed by finer grass species including common bent *Agrostis capillaris* and red fescue and associated herbs include low growing annuals such as common cudweed, black medick, sheep's-sorrel, bird's-foot, thyme-leaved sandwort *Arenaria serpyllifolia*, wild strawberry *Fragaria vesca* and parsley-piert *Aphanes arvensis*.



**Photo 2. Area of Semi-improved Acid Grassland with gorse scrub.**



**Photo 3. Site viewed southwards with Poor Semi-Improved grassland and scattered scrub.**

### Standing Water

- 3.23 The waterbody within the Site's eastern extent is approximately 1,000m<sup>2</sup> in extent and for the most part is shaded by adjacent woodland and scrub. The pond appears relatively shallow, at the time of survey supporting standing water to a depth of approximately 0.3m centrally. Associated vegetation includes bulrush *Typha latifolia* which dominates the southern extent, occasional yellow iris and soft-rush *Juncus effusus*, and of rare occurrence marsh-marigold *Caltha palustris* and brooklime *Veronica beccabunga*.



## Running Water

- 3.24 The section of Rainworth Water flowing through the Site's eastern extent is approximately 1.5m wide with earthen banks along the majority of length varying in steepness and depth from 45° and 0.5m at its northern and southern extents to vertical and 2m centrally where sections have been undercut and eroded. The channel comprises a series of riffles and runs with pebbly, sandy substrates and at the time of survey was fast flowing. The channel is in part shaded by scrub and woodland, although more open sections are present centrally and at its northern extent and where tall ruderal vegetation, predominated by common nettle, forms the bankside vegetation. Marginal species scattered along the watercourse include yellow iris, pendulous sedge *Carex pendula* and soft-rush. At the time of survey water depth varied along its length between approximately 0.3 to 0.5m



Photo 4. On-site Waterbody



Photo 5. Rainworth Water, viewed southwards

## Hedgerow

- 3.25 A native dominated hedgerow lies along the Site's northern boundary. The hedgerow is species-rich (defined as supporting five native species or greater in a 30m sample section) and appears relatively recently planted and has received no management since its creation. A summary of characteristics of the hedgerow is provided in Table 4.

Table 4. Hedgerow Survey Summary

Ref	Canopy Sp.†	Height / Width (m)	Length (m)	Sp. Av. 30m†	Notes	HEGS Grade	Import. HR*
1	<i>Ac</i> , <i>Ca</i> , <i>Cm</i> , <i>Cs</i> , <i>Ia</i> , <i>Lv</i> , <i>Ps</i> , <i>Rc</i> , <i>Sca</i> , <i>Sci</i>	2-4 / 2-3	139	6	<1 Mature Standards/50m, <10% Gaps, 2 End Connection Score, Dry Ditch >50% of length	-2	Exempt - less than 30 years old

**Species Key:** *Ac* *Acer campestre* – Field maple, *Ca* *Corylus avellana* – Hazel, *Cm* *Crataegus monogyna* – Hawthorn, *Cs* *Cytisus scoparius* – Broom, *Ia* *Ilex aquifolium* – Holly, *Lv* *Ligustrum vulgare* – Wild Privet, *Ps* *Prunus spinosa* – Blackthorn, *Qr* *Quercus robur* – Pedunculate oak, *Rc* *Rosa canina* – Dog-rose, *Sca* *Salix caprea* – Goat Willow, *Sci* *Salix cinerea* – Grey Willow.

## Field Results – Fauna

### Badgers

- 3.26 No evidence of badger was observed on Site or on land immediately adjacent to the Site were accessible/visible, during the Phase I survey. The south-facing side and eastern extent of the broad-leaved woodland along the Site's southern extent where inaccessible to survey due to the impenetrable nature of the scrub, however no well-used mammal paths suggesting the presence of active setts were noted to enter these areas from along their northern edge.

### Bats

- 3.27 No trees supporting suitable features for roosting bats were identified within the Site. Mature trees are absent from the majority of the Site with those present being immature in age and yet to develop features suitable for roosting bats. A number of mature sycamore trees were observed at the base of the south-facing side of the broad-leaved woodland along the southern boundary. These trees could not be accessed for assessment during the survey and the potential presence of features suitable for roosting bats can not be discounted from these trees at this stage.
- 3.28 The on-site habitats were considered to represent good foraging habitat for local bats with a varied structure of scattered scrub and rough grassland forming the core of the Site. Woodland habitats forming or bordering the Site's eastern, western and southern aspects, in addition to offering foraging habitat, may also provide commuting routes to other habitats of value to bats in the wider landscape.

### Breeding Birds

- 3.29 The habitats within the Site have the potential to provide nesting, foraging and loafing habitat to a range of woodland/scrub edge bird species. The open scrub habitat within the core of the Site offers suitable nesting habitat for species such as yellowhammer, linnet *Linaria cannabina*, dunnoek *Prunella modularis* and warbler species such as willow warbler, whitethroat *Sylvia communis* and potentially grasshopper warbler *Locustella naevia*. Habitats within the east of the Site, including the pond and adjacent areas of woodland and more mature scrub, offer suitable habitat for reed bunting *Emberiza schoeniclus*, marsh tit and lesser redpoll *Poecile palustris*.
- 3.30 During the survey the Site was noted to be well used recreationally by the public, including by dog walkers, and was subsequently considered unsuitable for ground nesting bird species such as skylark *Alauda arvensis*, woodlark or nightjar *Caprimulgus europaeus*.

### Amphibians

- 3.31 The HSI assessment found the on-site waterbody to have below average suitability for GCN with an HSI score of 0.58. Results of the HSI assessment are provided in Appendix C.
- 3.32 The on-site habitats, comprising areas of rough grassland, tall ruderal vegetation, scrub and woodland, represented good terrestrial habitat to GCN offering good opportunities for foraging and shelter.
- 3.33 Review of aerial photography and the 1:25,000 OS map identified two further waterbodies within 250m of the Site. These include a pond within Rainworth Water Piece LWS located approximately 70m north and a further pond located approximately 170m north. Due to the presence of the A617,

habitat connectivity between the Site and these ponds is limited to Rainworth Water, which flows northwards through the Site, under the highway and through Rainworth Water Piece LWS.

- 3.34 The pond was suitable to support more common amphibian species, such as common frog, smooth newt and common toad, although based on its shallow and 'cluttered' nature the pond, was considered unfavourable breeding habitat for the latter and is unlikely to support significant numbers.

### Reptiles

- 3.35 The majority of the Site represents suitable habitat for common reptiles. The expanses of rough grassland, areas of open scrub and the interfaces of these habitat with the woodlands, offer suitable foraging, basking and breeding habitat for common lizard. Due to the presence of wetland habitats the Site may also support grass snake *Natrix helvetica*.

### Water Vole

- 3.36 Rainworth Water, comprising soft-earth banks with open, well vegetated sections which provide good cover and feeding sources, is considered to represent suitable habitat for water vole. Generally, the on-site pond was considered to represent less suitable habitat due to its shallower nature and overshadowing by adjacent trees. However, should water vole be present along the watercourse, the potential may also exist for the species to use the more open eastern banks of the pond as habitat.



## 4.0 RECOMMENDATIONS & DISCUSSION

### Designated Sites

#### Statutory Designated Sites

- 4.1 The ecological desk study has identified a number of statutory designated sites of nature conservation importance within the local area. The closest of which Rainworth Heath Site of Special Scientific Interest (SSSI) is located approximately 60m north of the Site, beyond the A610. The SSSI is notified on the basis of its dry and wet heath habitats.
- 4.2 The SSSI and non-statutory designated sites including Rainworth Forest LWS and Rainworth Water Piece LWS to the north of the A610 also fall within the bounds of the Sherwood Forest ppSPA.
- 4.3 Sherwood Forest ppSPA is not formally designated, however in considering land allocations, policies in Development Plans and individual planning applications within the Sherwood Forest area, Natural England<sup>4</sup> advises LPAs should adopt a form of 'risk-based approach'. This should include a robust assessment of the likely impacts arising from the proposals on breeding nightjar and woodlark in the Sherwood Forest area and should ideally cover the potential direct, indirect and cumulative impacts which may include, but may not be limited to, the following;
- disturbance to breeding birds from people, their pets and traffic
  - loss, fragmentation and/or damage to breeding and/or feeding habitat
  - bird mortality arising from domestic pets and/or predatory mammals and birds
  - bird mortality arising from road traffic and/or wind turbines
- 4.4 The Site itself was not considered suitable for supporting populations of nightjar and woodlark due to its recreational use and subsequently proposals would not result in any loss of breeding or feeding habitat to the species.
- 4.5 The Site is physically isolated from the SSSI/ppSPA by the presence of the A617 and as such would not be directly affected by development of the Site. The busy dual carriageway will also act as a barrier to the movement of cats from the development towards the SSSI/ppSPA.
- 4.6 Given the close proximity of the SSSI/ppSPA, it is likely to be subject to some increased recreational use from homeowners within the development and which may include residents walking their dogs. However, the SSSI has a well-established footpath network and considering the additional accessible green space available within the local landscape, both to the west and to the north of the A610, any potential increase in visitation would be unlikely to be of a level as to result in any adverse impacts to the SSSI or ppSPA. The provision of a circular walking route within the green infrastructure proposals would also encourage routine recreational activity to the limits of the Site.
- 4.7 It is therefore considered unlikely that the proposals would result in any significantly adverse impacts to Rainworth Heath SSSI, ppSPA or any other statutory designated sites identified by the desk study.

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<sup>4</sup> Natural England (2014) Advice Note to Local Planning Authorities regarding the consideration of likely effects of the breeding populations of nightjar and woodlark in the Sherwood Forest region.

**Non-statutory Designated Site**

- 4.8 Two non-designated, Local Wildlife Sites (LWS) have been identified falling partially within the bounds of the Site. These include; Rainworth Water Piece LWS, a small area of which falls within the north-eastern corner of the Site, with the remainder of the LWS extending to the east and to the north of the A617, and the Disused Railway Rainworth LWS which runs along the Site's southern boundary and to the east and west of the Site. Information received by the desk study indicates that the boundary of the latter LWS is to be amended shortly, with the eastern boundary drawn back to Rainworth Water. In addition to these a further LWS, Rainworth Wood, lies adjacent to the site's western boundary.
- 4.9 Non-statutory designated sites receive policy protection through Policy 12 of the Amended Newark and Sherwood Core Strategy. This policy *"Expect[s] proposals to take into account the need for continued protection of the District's ecological, biological and geological assets. With particular regard to sites of international, national and local significance, Ancient Woodlands and species and habitats of principal importance identified in Section 41 of the Natural Environment and Rural Communities [NERC] Act 2006 and in the Nottinghamshire Local Biodiversity Action Plan"*.
- 4.10 Development proposals should provide adequate buffering of the LWS's as to avoid any direct or indirect impacts. On the basis of the nature of the habitats present within the LWS's, it is recommended that a minimum 15m buffer from the development edge is maintained along the western and southern boundaries. The woodland habitats within these LWS's may also be of particular value to local bat populations for foraging and commuting. The implementation of these buffer zones would also assist in avoiding lighting impacts and creating dark corridors for these species.
- 4.11 Habitats within the small area of Rainworth Water Piece LWS within the north-eastern extent of the site, comprise gorse scrub and acid grassland. Lowland dry acid grassland is listed as a habitat of principal importance under the NERC Act and priority habitat on the LBAP. The survey noted that the grassland was currently in poor condition, with areas of bare ground resulting from trampling effects and nutrification evident along the desire-lines.
- 4.12 Under the current development framework (9474-L-02), proposals would result in the loss of approximately 0.2ha of the LWS to the access arrangements. This would result in the minor reduction in the extent of the LWS by approximately 2%). Based on this minor loss it is considered unlikely that the development proposals would affect the integrity of the LWS, such that it would no longer merit its designation, however its loss would be contra to local planning policy.

## Habitats / Flora

- 4.13 The degree to which habitats receive consideration within the planning system relies on a number of mechanisms, including:
- Inclusion within specific policy (e.g. aged/veteran trees, ancient woodland and linear habitat in the National Planning Policy Framework (NPPF) or non-statutory site designation, and
  - Identification as a habitat of principal importance for biodiversity under the National Environment & Rural Communities Act (NERC) 2006 or identification as a Priority Habitat within the local Biodiversity Plan (LBAP).
- 4.14 The extended Phase I survey established that the majority of the Site is formed by poor semi-improved grassland with associated scattered scrub and areas of dense/continuous scrub. These habitats are of low botanical interest and are subsequently of limited intrinsic nature conservation value.
- 4.15 Habitats of increased value (outside of those covered by the LWS designations) are restricted to the eastern extent of the site and include a pond, Rainworth water and associated areas of semi-natural broad-leaved wet woodland. Wet woodland is identified as a habitat of principal importance under the NERC Act, and in addition to pond and watercourse is identified as Priority habitat on the Nottinghamshire BAP. Areas of tall ruderal herbs and scattered scrub also occur along the corridor of the watercourse, and whilst of intrinsically low nature conservation value they do contribute to the value of the eastern area as a whole for local wildlife.
- 4.16 These habitats would be retained and buffered by the proposals, green space within the adjacent buffer zone should ideally be informal and support habitats such as flower-rich grassland with scattered shrubs, which would complement and enhance the value of this area.
- 4.17 A relatively recently created native species-rich hedgerow forms the northern boundary of the Site. Due to its young age (likely created as part of the A617), it does not meet the criteria to be included within the Hedgerow Regulations 1997, although native dominated hedgerows are listed as a Habitat of Principal Importance under the NERC Act and are a Nottinghamshire BAP Priority habitat. Where possible the hedgerow should be retained and buffered within the proposals. Where hedgerow loss can not be avoided (i.e. for site access) compensatory hedgerow creation should be undertaken.

## Notable Plants

- 4.18 The survey identified one notable plant, common cudweed, within the Site. Due to agricultural intensification this species has undergone widespread decline and is afforded Near Threatened status nationally<sup>5</sup>. It is listed as Locally Common within the Nottinghamshire Rare Plant Register<sup>6</sup> which states that “*Wherever suitable soils are present the species is locally common and it has been recorded in 211 monads in the VC[Vice County]*”.

<sup>5</sup> Stroh, P.A., Leach, S.J., August, T.A., Walker, K.J., Pearman, D.A., Rumsey, F.J., Harrower, C.A., Fay, M.F., Martin, J.P., Pankhurst, T., Preston, C.D. & Taylor, I. (2014). A Vascular Plant Red List for England. Botanical Society of Britain and Ireland: Bristol. [online] Available at: [http://www.bsbi.org.uk/England\\_Red\\_List\\_1.pdf](http://www.bsbi.org.uk/England_Red_List_1.pdf) [Accessed 25/10/2020]

<sup>6</sup> Wood, D. & Woods, M. (2017) Nottinghamshire Vice County 56 Rare Plant Register, 2<sup>nd</sup> Edition, Botanical Society of Britain and Ireland & Nottingham City Council.

- 4.19 Common cudweed is an annual species which requires continuous bare ground or regular disturbance to create bare ground conditions to enable seed germination and was in localised areas of the site in abundance. Development proposals would most likely result in the loss of the species from the Site, although the species may potentially persist locally where suitable soils are subject to disturbance by rabbits.
- 4.20 Given the apparent abundance of this species in the immediate local area, the loss of the population within the Site is considered unlikely to have a significant impact on the status of this Nottinghamshire Rare Plant List species.
- 4.21 A stand of Japanese knotweed was recorded within the south-eastern extent of the Site and the location of this stand coincided with that of the record identified by the desk study for the Site. Japanese knotweed is listed on Schedule 9 of the Wildlife and Countryside Act 1981 and under the provisions of this Act, it is an offence to cause to grow (spread) the species in the wild. In addition, any waste containing a Schedule 9 listed plant species is classified as controlled waste under the Environmental Protection Act (Duty of Care) Regulations 1990.
- 4.22 It is recommended that as part of any development proposals measures are implemented to eradicate the species from the Site.

#### **Biodiversity Net Gain**

- 4.23 The draft Environment Bill, which pre-COVID 19 had been expected to receive Royal Assent the Summer of 2020, requires that any new development will need to demonstrate 10% Biodiversity Net Gain (BNG). There will be a two-year transitional period following the ascent of the Bill, however LPA and consultees are now routinely asking for Biodiversity Impacts Assessment (BIA) to be completed to demonstrate that development proposals accorded with the current requirements of the NPPF in securing a 'measurable' net gain in Biodiversity. Where net gains cannot be achieved on site, then off-site provision would be required either in terms of habitat provision or payment.
- 4.24 We would recommend that a BIA is completed to determine if the current green infrastructure proposals are sufficient to secure a 'measurable' net gain in-line with national planning policy, and if not, inform the extent of any revision to the proposals or financial contribution required to offset the loss of biodiversity off-site.

#### **Fauna**

- 4.25 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 their own 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.
- 4.26 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.

- 4.27 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, LPA's 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 encouraged.

### **Badgers**

- 4.28 Badgers are protected by statute under the Protection of Badgers Act 1992. This legislation makes it an offence to wilfully kill, injure, take possession or cruelly ill-treat a badger, or intentionally or recklessly interfere with a sett. Work that disturbs badgers whilst occupying a sett is illegal without a licence; badgers may be disturbed by work near the sett even if there is no direct interference or damage to the sett.
- 4.29 No evidence of badgers was observed on Site or on land immediately adjacent to the Site during the extended Phase I survey. However, due to their dense and impenetrable nature, particularly along the south facing aspect of the disused railway embankment within the southern extent, some areas of the Site could not be accessed by the survey. No well-worn paths were observed entering these areas and as no evidence of badger was observed within the wider Site, it is considered reasonably unlikely that any active setts were present within these inaccessible areas.
- 4.30 The desk study has confirmed the presence of badgers within the local area and given the suitability of the on-site habitats for sett creation and for foraging, it is recommended that a badger survey is undertaken prior to commencement of any development.

### **Bats**

- 4.31 All UK species of bat are listed on the Conservation of Habitats and Species Regulations 2017 making it illegal to deliberately disturb any such animal or damage / destroy a breeding site or roosting place of any such animal. Bats are also afforded full legal protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation it is illegal to recklessly or intentionally kill, injure or take a species of bat or recklessly or intentionally damage or obstruct access to or destroy any place of shelter or protection or disturb any animal whilst they are occupying such a place of shelter or protection. Some bat species are Species of Principal Importance under Section 41 of the NERC Act 2006.
- 4.32 No trees supporting suitable features for roosting bats were identified within the Site. Mature trees are absent from the majority of the Site, with those present being immature. A small number of mature trees were noted at the base of the south-facing side of the broad-leaved woodland along the southern boundary. These trees could not be accessed for assessment during the survey and the potential presence of features suitable for roosting bats can not therefore be discounted from

these trees at this stage. However, under the proposals these trees are located well away from the development and any potential bat roosts present within these would remain unaffected.

- 4.33 The on-site habitats were considered to represent good foraging habitat for local bats. It is recommended that bat activity surveys are undertaken in order to determine the current usage of the Site by commuting / foraging bats and determine the magnitude of any impacts.
- 4.34 Bat surveys are seasonally restricted to the periods when bats are active, extending from May to September. It is considered likely that three survey occasions, undertaken seasonally during spring (May/April), summer (June to August) and autumn (September/October), would be sufficient to inform the proposals. However, this survey effort may have to be increased to monthly surveys, if significant numbers of bats or species of high conservation concern are recorded during the spring or summer survey occasion.
- 4.35 The lighting and layout of the proposed development should be designed to minimise light-spill onto retained habitats within the Site and those adjacent to it, which are of value to local bat populations for foraging or commuting. This could be achieved by ensuring that the design of lighting is based upon best practice guidelines as outlined within Guidance Note 08/18 Bats and artificial lighting in the UK<sup>7</sup>, and the adoption of measures such as;
- The strategic use of structural landscaping and planting to avoid light spill on sensitive habitats, including retained woodland and areas of scrub, to help to retain a dark corridors;
  - The avoidance of direct lighting of existing trees or proposed areas of habitat creation/landscape planting;
  - Unnecessary light spill should be controlled through a combination of LED directional lighting, low lighting columns, hooded/shielded luminaires or strategic planting;
  - Light free of UV emissions to prevent potential adverse effects on flying insects and bat populations; and
  - Lighting designed to automatically switch off or be dimmable where possible.

### **Breeding Birds**

- 4.36 All UK nesting birds are protected under the Wildlife and Countryside Act (as amended) 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs.
- 4.37 The Site supports a range of habitats of value to breeding birds, the open scrub and rough grassland habitats forming the core of the Site and habitats within the eastern extent associated with Rainworth Water have the potential to provide breeding habitat to a number of species listed on S41. of the NERC Act 2006.
- 4.38 The loss of the open scrub and rough grassland habitats to the proposals would result in the loss of habitat for those species dependent on such habitats from the Site. Considering the wide availability of similar habitats within the local landscape it is considered unlikely that this loss would result in significantly adverse impacts to any local bird populations.

<sup>7</sup> Bat Conservation Trust & Institution of Lighting Professionals (2018) Guidance Note 08/18 – Bats and artificial lighting in the UK, Bats and the Built Environment series

### Great Crested Newts

- 4.39 Great crested newts and their habitats in water and on land are protected under the Wildlife and Countryside Act 1981 (as amended), and by the Conservation of Habitats and Species Regulations 2017. These make it an offence to damage, destroy or obstruct any place used by great crested newts for breeding or shelter, disturb a great crested newt, or kill, injure or take any great crested newt. In addition, great crested newt is listed as a species of principal importance to the conservation of biological diversity under the provisions of the NERC Act 2006.
- 4.40 HSI assessment of the single on-site pond identified that it was of below average suitability to support GCN. The waterbody was also found to be isolated from other waterbodies identified within 250m of the Site by the presence of the A617. Some connectivity is shared from the Site to one of the off-site ponds through the presence of Rainworth Water. However, as the watercourse flows northwards, this would not serve as a potential dispersal route for GCN.
- 4.41 Based on the low suitability of the pond for GCN, the Site's isolation from other waterbodies located within 250m and that no existing GCN records were identified for the local area by the desk study, it is considered reasonably unlikely that the on-Site pond would support populations of GCN and that any constraints would exist to development of the Site in relation to the species.

### Reptiles

- 4.42 All common reptile species, including grass snake, slow worm, common lizard and adder are partially protected under the Wildlife and Countryside Act 1981. In summary, this legislation protects the species from intentional killing, injury or sale, offering for sale, or possessing, transporting or publishing advertisements for the purposes of sale. All common reptile species are also listed as a SPI under S.41 of the NERC Act.
- 4.43 The desk study highlighted previous records of common lizard for the Site dating from 2013, and the extended Phase I survey identified that the majority of the Site, comprising rough grassland, open scrub and edge habitats ('ecotones'), represented suitable habitat to common reptiles.
- 4.44 Development of the Site would result in the direct loss of suitable reptile habitat in the form of the rough grassland and open scrub habitats. It will therefore be necessary to undertake further targeted surveys as to determine the presence / absence of these species, and if present determine the impacts arising from proposals and extent of mitigation which would be required to avoid contravention of the legislation and ensure that sufficient habitat is provided to maintain the existing population. Such mitigation may include passive displacement of reptiles where small numbers of reptile or small areas of more extensive reptile habitat is affected. Where more extensive areas or larger populations are affected, trapping / translocation of the population to a receptor site, supporting suitable habitats off-setting that lost would be required.
- 4.45 In accordance with best practice survey guidelines<sup>8</sup> surveys are restricted to the reptile activity period extending from late March through to mid-October, with April, May and September the optimal months. A total of seven survey occasions during suitable weather conditions (sunny with temperatures between 9 - 18°C) are required to confirm absence or provide sufficient information to estimate the population size.

<sup>8</sup> Froglife (1999). Froglife Advice Sheet 10: reptile survey. Froglife, London.

**Water Vole**

- 4.46 Water voles receive full protection under the Wildlife and Countryside Act 1981. In summary, this makes it an offence to kill or injure water voles, and to damage, destroy or obstruct access to places of shelter or protection or disturb while they are using such places. Water voles are also listed as a SPI under S.41 of the NERC Act and Priority Species on the LBAP.
- 4.47 Rainworth Water and the adjacent pond were identified as representing suitable habitat to water vole. Water vole surveys are therefore recommended to ascertain the status of the species, and if present extent that they may be affected either directly (i.e. loss of habitats) or indirectly by the proposals (i.e. changes to hydrology, predation).
- 4.48 Surveys for water vole are seasonally restricted to the period April and October, were in accordance with best practice survey protocols<sup>9</sup> up to two survey occasions, one completed during the first of the season (mid-April to the end of June) and one in the second half of the season (July to September inclusive), may be required to confirm the status of the species.

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<sup>9</sup> Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016) The Water Vole Mitigation Handbook (The Mammal Society Mitigation Guidance Series). Eds Fiona Mathews and Paul Chanin. The Mammal Society, London.

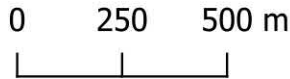



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Key

- ★ Site Location
  - 1km buffer
  - 2km buffer
  - Local Wildlife Site (LWS)
  - Local Nature Reserve (LNR)
  - Site of Special Scientific Interest (SSSI)
- 1 - Rainworth Forest LWS  
2 - Rainworth Heath LWS, SSSI  
3 - Rainworth Water LNR II LWS  
4 - Rainworth Water Piece LWS  
5 - Rainworth Wood LWS  
6 - Rainworth Dismantled Railway LWS  
7 - Ransom Road, Rainworth LWS  
8 - Rainworth Lakes LWS, SSSI  
9 - Rainworth Gorse LWS  
10 - Rainworth Water LNR  
11 - Tippings Wood LNR  
12 - Strawberry Hill Heaths SSSI





client  
Aspbury Planning

project  
Land to the south of the A617,  
Rainworth, Nottinghamshire

drawing title  
SITE LOCATION AND CONSULTATION  
RESULTS PLAN - DESIGNATED SITES

scale @ A3  
1:18000

drawn  
LG / AL

date  
16/3/2021

drawing / figure number  
**Figure 1**

rev  
**9474-E-01**





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Key

- ★ Site Location

1km buffer
- Bats

Brown Long-eared

Common Pipistrelle

Leisler's

Noctule

Common Lizard

Common Toad

Nyctalus sp.

Pipistrelle sp.

Soprano Pipistrelle

Unidentified bat sp.

Grass Snake

Herpetofauna

Common Lizard

Common Toad

Invasive and Non-Native Species (INNS)

Himalayan balsam

Japanese knotweed

Mammals

Harvest Mouse

Hedgehog

Roe Deer

Notable Invertebrates

Angle-striped Sallow

Beautiful Brocade

Beautiful Yellow Underwing

Bird's Wing

Clouded Buff

Dingy Skipper

Grass Wave

Map-winged Swift

Pine Hawk-moth

Plain Wave

Scorched Wing

Small Elephant Hawk-moth

Nottinghamshire Rare Plants Register (NRPR)

Bilberry

Bloody cranesbill

Blunt-leaved pondweed

Caraway

Common columbine

Common cotton grass

Common cudweed

Corn spurry

Cross-leaved heath

Heath cudweed

Heath milkwort

Ivy-leaved crow-foot

Marsh violet

Red-sheep laurel

Round-leaved crowfoot

Sea stork's-bill

Star sedge

Tussock cotton grass

Water blinks

Water purslane

White water-lily

Wild clary

Yellow barista

Species Records of 1km Accuracy

Species within SK5859: Common lizard

Species within SK5959: Common lizard; Common toad; 6 NRPR species

Species within SK6059: Annual knawel; Common cudweed; Corn spurry

Species within SK5858: Common toad; White water-lily; Marsh pennywort

Species within SK5958: Bloody crane'sbill; Corn spurry; Wild pansy

Species within SK6058: Annual knawel; Badger; Hedgehog; Prickly poppy

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masterplanning environmental assessment landscape design urban design ecology architecture arboriculture

K:\9400\9474\ECO\QGIS 2.14\Plans\consultation plans\9474-E-02 Site Location and Consultation Results Plan - Species Records.qgs

client

Aspbury Planning

project

Land to the south of the A617,  
Rainworth, Nottinghamshire

drawing title

SITE LOCATION AND CONSULTATION  
RESULTS PLAN - SPECIES RECORDS

scale @ A3

1:10000

drawn

LG / AL

sheet

16/3/2021

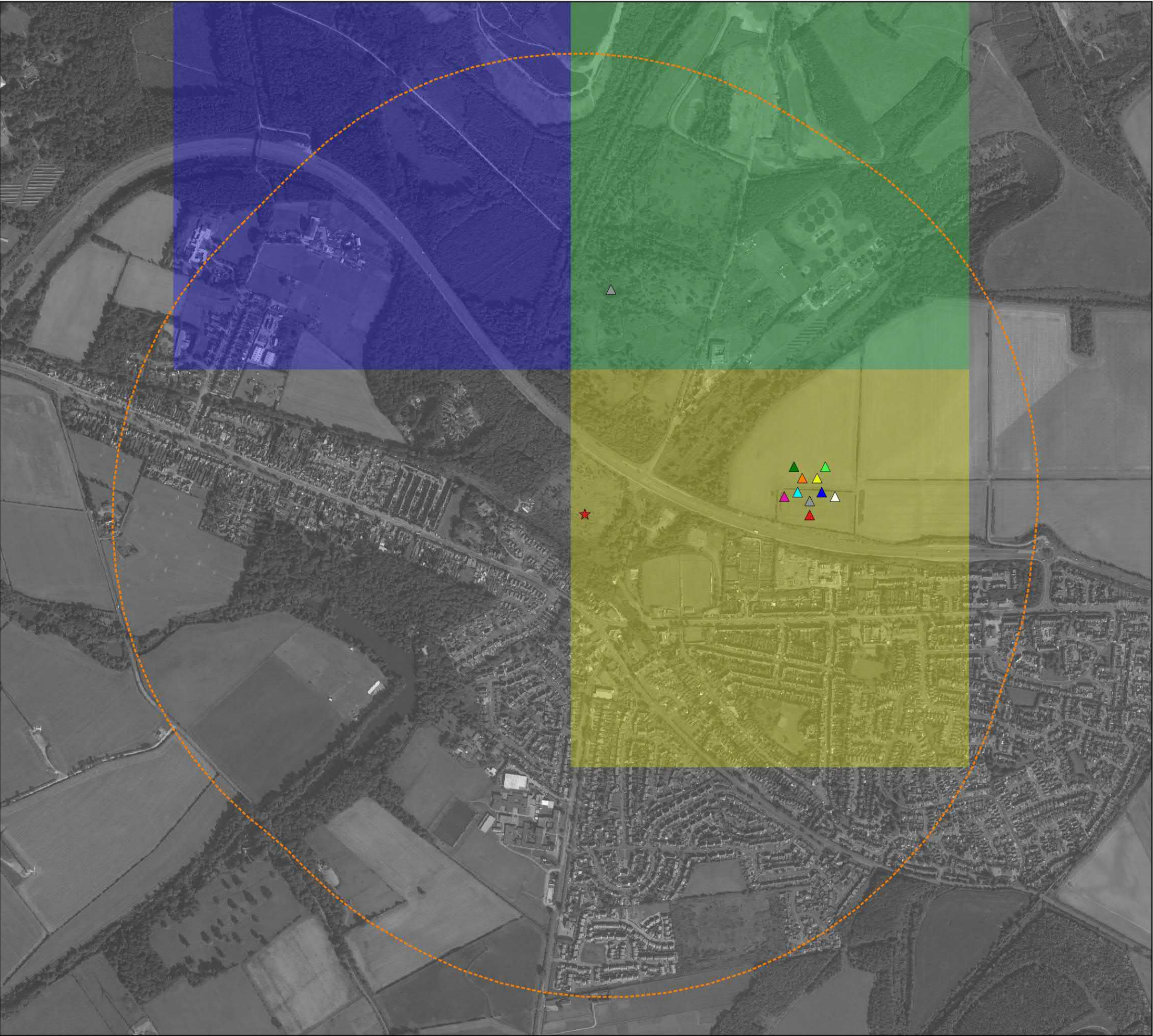
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Figure 2

rev

9474-E-02





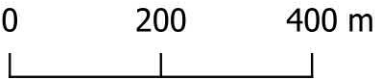
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Key

- ★ Site Location
- 1km buffer
- Notable Bird Records**
- Common Crossbill
- Red Kite
- Cuckoo
- Swift
- Kestrel
- Tree Pipit
- Lesser Redpoll
- Willow Warbler
- Mistle Thrush
- Wood Lark
- Northern Wheatear

- Notable Bird Records of 1km Accuracy**
- Species within SK5859: Kestrel; Lesser redpoll
- Species within SK5959: Bullfinch; House martin; Linnet; Meadow pipit; Redwing; Swift; Tree pipit; Willow tit; Yellowhammer
- Species within SK5958: Corn bunting; Cuckoo; House-martin; Kestrel; Kingfisher; Lesser redpoll; Red kite; Turtle dove; Willow warbler





client  
Aspbury Planning

project  
Land to the south of the A617,  
Rainworth, Nottinghamshire

drawing title  
SITE LOCATION AND CONSULTATION  
RESULTS PLAN - NOTABLE BIRD RECORDS

scale @ A3  
1:10000

drawn  
LG / AL

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16/3/2021

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**Figure 3**

rev  
**9474-E-03**





- |                                    |                   |
|------------------------------------|-------------------|
| SURVEY BOUNDARY                    | STANDING WATER    |
| SEMI-NATURAL BROAD-LEAVED WOODLAND | RUNNING WATER     |
| DENSE/CONTINUOUS SCRUB             | DRY DITCH         |
| SCATTERED SCRUB                    | MATURE TREE       |
| BRACKEN                            | HARD STANDING     |
| TALL HERB - RUDERAL                | TARGET NOTE       |
| SEMI-IMPROVED ACID GRASSLAND       | INFORMAL FOOTPATH |
| POOR SEMI-IMPROVED GRASSLAND       | BARE GROUND       |



Aspbury Planning

Land South of the A617  
Rainworth

PHASE I HABITAT PLAN

NTS

AL

11.11.2020



**Figure 4.0** 9474-E-04

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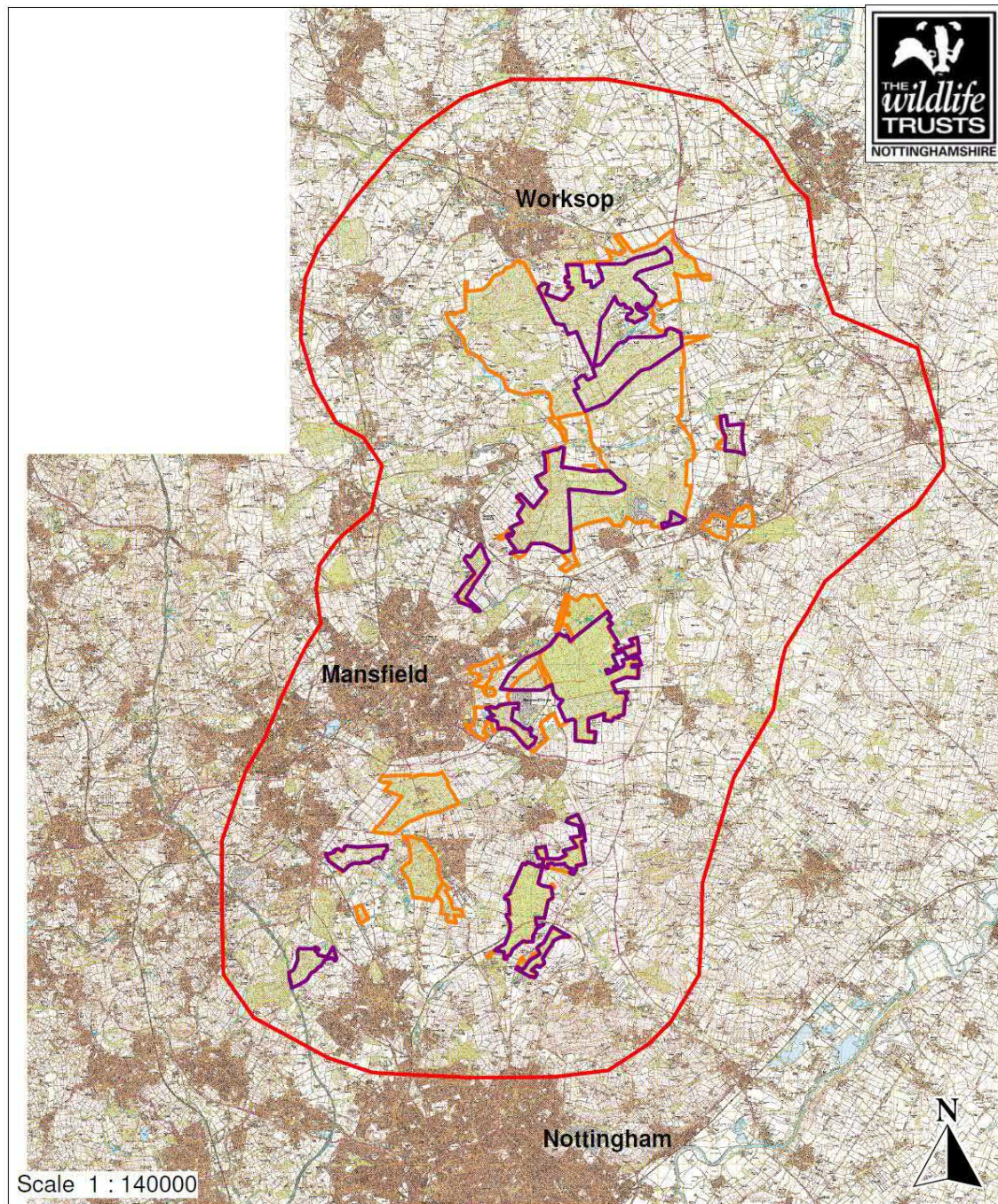
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**APPENDIX A – MAP HIGHLIGHTING THE AREAS OF GREATEST  
ORNITHOLOGICAL INTEREST FOR BREEDING NIGHTJAR AND  
WOODLARK**



**Map highlighting the areas of greatest ornithological interest for breeding nightjar and woodlark, submitted as evidence to the Rufford ERF Public Inquiry 2010**



**Key**

- RSPB IBA Boundary with 5Km buffer
- NE Indicative Core Area
- RSPB IBA Boundary

Plan 1

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## **APPENDIX B – BOTANICAL SPECIES LIST**

**APPENDIX B – Botanical Species List**

The DAFOR values used in the report correspond to the following ranges of percentage cover:

Dominate (D)	75-100% cover
Abundant (A)	51-75% cover
Frequent (F)	25-50% cover
Occasional (O)	11-25% cover
Rare (R)	<10% cover or <5 individuals / clumps within the survey unit

**Semi-natural Broad-leaved Woodland (TN1)**

Scientific Name	Common Name	Cover
<i>Agrostis stolonifera</i>	Creeping bent	LA
<i>Alnus glutinosa</i>	Alder	LA
<i>Betula pendula</i>	Silver birch	R
<i>Cardamine flexuosa</i>	Wavy bitter-cress	R
<i>Crataegus monogyna</i>	Hawthorn	R
<i>Dryopteris filix-mas</i>	Male-fern	R
<i>Epilobium hirsutum</i>	Great willowherb	R
<i>Fraxinus excelsior</i>	Ash	R
<i>Galium aparine</i>	Cleavers	R
<i>Heracleum sphondylium</i>	Hogweed	R
<i>Holcus lanatus</i>	Yorkshire-fog	LF
<i>Iris pseudacorus</i>	Yellow-iris	R
<i>Juncus effusus</i>	Soft-rush	LA
<i>Myosotis arvensis</i>	Field forget-me-not	R
<i>Poa trivialis</i>	Rough meadow-grass	LA
<i>Primula vulgaris</i>	Primrose	R
<i>Ranunculus repens</i>	Creeping buttercup	O
<i>Rumex sanguineus</i>	Wood dock	O
<i>Salix caprea</i>	Goat willow	O
<i>Salix cinerea</i>	Grey willow	F
<i>Urtica dioica</i>	Common nettle	LD

**Semi-natural Broad-leaved Woodland (TN2)**

Scientific Name	Common Name	Cover
<i>Acer pseudoplatanus</i>	Sycamore	LA
<i>Agrostis stolonifera</i>	Creeping bent	R
<i>Anthriscus sylvestris</i>	Cow parsley	R
<i>Betula pendula</i>	Silver birch	A
<i>Cardamine hirsuta</i>	Hairy bitter-cress	R
<i>Crataegus monogyna</i>	Hawthorn	O
<i>Dryopteris filix-mas</i>	Male-fern	R
<i>Galium aparine</i>	Cleavers	R
<i>Geum urbanum</i>	Wood avens	R
<i>Hedera helix</i>	Common ivy	LD
<i>Heracleum sphondylium</i>	Hogweed	R
<i>Holcus lanatus</i>	Yorkshire-fog	R
<i>Ilex aquifolium</i>	Holly	R
<i>Myosotis arvensis</i>	Field forget-me-not	R
<i>Quercus robur</i>	Pedunculate oak	R



## Appendix B – Land to the South of A617, Rainworth

Scientific Name	Common Name	Cover
<i>Rubus fruticosus</i> agg.	Bramble	F/LD
<i>Salix cinerea</i>	Grey willow	O/LA
<i>Sambucus nigra</i>	Elder	R
<i>Ulex europaeus</i>	Gorse	LD
<i>Urtica dioica</i>	Common nettle	LA/R
<i>Veronica hederifolia</i>	Ivy-leaved speedwell	R

## Dense Scrub

Scientific Name	Common Name	Cover
<i>Acer pseudoplatanus</i>	Sycamore	R
<i>Betula pendula</i>	Silver birch	R
<i>Corylus avellana</i>	Hazel	R
<i>Crataegus monogyna</i>	Hawthorn	R
<i>Cytisus scoparius</i>	Broom	O
<i>Prunus spinosa</i>	Blackthorn	LA
<i>Rosa canina</i>	Dog-rose	R
<i>Rubus fruticosus</i> agg.	Bramble	LA/R
<i>Salix cinerea</i>	Grey willow	R
<i>Ulex europaeus</i>	Gorse	D

## Scattered Scrub

Scientific Name	Common Name	Cover
<i>Acer pseudoplatanus</i>	Sycamore	R
<i>Betula pendula</i>	Silver birch	F
<i>Buddleja davidii</i>	Butterfly-bush	R
<i>Crataegus monogyna</i>	Hawthorn	F
<i>Cytisus scoparius</i>	Broom	O
<i>Pinus sylvestris</i>	Scots pine	O
<i>Prunus spinosa</i>	Blackthorn	R
<i>Rosa canina</i>	Dog-rose	R
<i>Salix cinerea</i>	Grey willow	O
<i>Ulex europaeus</i>	Gorse	R

## Tall Herb – Ruderal (TN3)

Scientific Name	Common Name	Cover
<i>Aegopodium podagraria</i>	Ground-elder	O
<i>Anthriscus sylvestris</i>	Cow parsley	R
<i>Cardamine flexuosa</i>	Wavy bitter-cress	F
<i>Chamerion angustifolium</i>	Rosebay willowherb	R
<i>Cirsium arvense</i>	Creeping thistle	R
<i>Conium maculatum</i>	Hemlock	R
<i>Epilobium hirsutum</i>	Great willowherb	O
<i>Fallopia japonica</i>	Japanese knotweed	R
<i>Fraxinus excelsior</i>	Ash (saplings)	R
<i>Galium aparine</i>	Cleavers	O
<i>Heracleum sphondylium</i>	Hogweed	F
<i>Juncus effusus</i>	Soft-rush	R
<i>Myosotis arvensis</i>	Field forget-me-not	O

## Appendix B – Land to the South of A617, Rainworth

Scientific Name	Common Name	Cover
<i>Phalaris arundinacea</i>	Reed canary-grass	R
<i>Rosa canina</i>	Dog-rose	R
<i>Rubus fruticosus</i> agg.	Bramble	LA
<i>Rubus idaeus</i>	Raspberry	R
<i>Rumex obtusifolius</i>	Broad-leaved dock	R
<i>Ulex europaeus</i>	Gorse	R
<i>Urtica dioica</i>	Common nettle	D

## Poor Semi-improved Grassland

Scientific Name	Common Name	Cover
<i>Achillea millefolium</i>	Yarrow	R
<i>Agrostis capillaris</i>	Common bent	O
<i>Anisantha sterilis</i>	Barren brome	R
<i>Anthoxanthum odoratum</i>	Sweet vernal-grass	O-LF
<i>Anthriscus sylvestris</i>	Cow parsley	R
<i>Aphanes arvensis</i>	Parsley-piert	R
<i>Arabidopsis thaliana</i>	Thale-cress	R
<i>Arenaria serpyllifolia</i>	Thyme-leaved sandwort	R
<i>Arrhenatherum elatius</i>	False oat-grass	A
<i>Artemisia vulgaris</i>	Mugwort	O
<i>Calamagrostis epigejos</i>	Wood small-reed	R
<i>Cardamine hirsuta</i>	Hairy bitter-cress	F
<i>Centaurea nigra</i>	Common knapweed	R
<i>Centaureum erythraea</i>	Common centaury	R
<i>Cerastium fontanum</i>	Common mouse-ear	O
<i>Chamerion angustifolium</i>	Rosebay willowherb	R
<i>Cirsium arvense</i>	Creeping thistle	R
<i>Cirsium vulgare</i>	Spear thistle	R
<i>Cladonia</i> sp.	a Reindeer moss	R
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Deschampsia cespitosa</i>	Tufted hair-grass	R
<i>Epilobium</i>	a willowherb	R
<i>Epilobium hirsutum</i>	Great willowherb	R
<i>Festuca rubra</i>	Red fescue	LA
<i>Filago vulgaris</i>	Common cudweed	R
<i>Fragaria vesca</i>	Wild strawberry	R
<i>Galium aparine</i>	Cleavers	R
<i>Geranium molle</i>	Dove's-foot crane's-bill	R
<i>Hedera helix</i>	Common ivy	R
<i>Heracleum sphondylium</i>	Hogweed	R
<i>Holcus lanatus</i>	Yorkshire-fog	F
<i>Hypericum perforatum</i>	Perforate St. John's-wort	R
<i>Hypochaeris radicata</i>	Cat's-ear	R
<i>Juncus effusus</i>	Soft-rush	R
<i>Lamium album</i>	White dead-nettle	R
<i>Lamium purpureum</i>	Red dead-nettle	R
<i>Leontodon autumnalis</i>	Autumn hawkbit	R
<i>Leucanthemum vulgare</i>	Oxeye daisy	R
<i>Lolium perenne</i>	Perennial rye-grass	LA/R
<i>Luzula campestris</i>	Field wood-rush	R
<i>Medicago lupulina</i>	Black medick	R
<i>Myosotis</i>	a forget-me-not	F

## Appendix B – Land to the South of A617, Rainworth

Scientific Name	Common Name	Cover
<i>Oenothera</i> agg.	Evening-primrose	R
<i>Origanum vulgare</i>	Wild marjoram	R
<i>Ornithopus perpusillus</i>	Bird's-foot	R
<i>Peltigera</i> sp.	a Dog-lichen	R
<i>Pilosella officinarum</i>	Mouse-ear hawkweed	R
<i>Plantago lanceolata</i>	Ribwort plantain	R/LA
<i>Plantago major</i>	Greater plantain	R
<i>Ranunculus bulbosus</i>	Bulbous buttercup	R
<i>Ranunculus repens</i>	Creeping buttercup	R
<i>Reseda luteola</i>	Weld	R
<i>Rubus fruticosus</i> agg.	Bramble	O
<i>Rumex acetosa</i>	Common sorrel	R
<i>Rumex crispus</i>	Curled dock	R
<i>Rumex obtusifolius</i>	Broad-leaved dock	R
<i>Sagina procumbens</i>	Procumbent pearlwort	R
<i>Senecio jacobaea</i>	Common ragwort	F
<i>Silene dioica</i>	Red campion	R
<i>Solidago canadensis</i>	Canadian goldenrod	O
<i>Sonchus asper</i>	Prickly sow-thistle	R
<i>Taraxacum</i> agg.	Dandelion	F
<i>Trifolium dubium</i>	Lesser trefoil	R
<i>Trifolium repens</i>	White clover	R
<i>Urtica dioica</i>	Common nettle	R
<i>Veronica chamaedrys</i>	Germander speedwell	R
<i>Vicia sativa</i>	Common vetch	R
<i>Viola arvensis</i>	Field pansy	R

## Semi-improved Acid Grassland (TN5)

Scientific Name	Common Name	Cover
<i>Achillea millefolium</i>	Yarrow	A
<i>Agrostis capillaris</i>	Common bent	A
<i>Agrostis vinealis</i>	Brown bent	O
<i>Anthriscus sylvestris</i>	Cow parsley	R
<i>Arrhenatherum elatius</i>	False oat-grass	LA
<i>Artemisia vulgaris</i>	Mugwort	R
<i>Bellis perennis</i>	Daisy	R
<i>Bromus hordeaceus</i>	Soft-brome	R
<i>Centaurea nigra</i>	Black knapweed	LA/R
<i>Centaurea erythraea</i>	Common centaury	O
<i>Cerastium fontanum</i>	Common mouse-ear	R
<i>Cladonia</i> sp.	a Reindeer moss	R
<i>Conyza canadensis</i>	Canadian fleabane	R
<i>Dactylis glomerata</i>	Cock's-foot	O
<i>Erigeron acer</i>	Blue fleabane	R
<i>Erodium cicutarium</i> agg.	Common stork's-bill	LA
<i>Festuca ovina</i>	Sheep's-fescue	F
<i>Festuca rubra</i>	Red fescue	A
<i>Filago vulgaris</i>	Common cudweed	LA/R
<i>Geranium molle</i>	Dove's-foot crane's-bill	A
<i>Heracleum sphondylium</i>	Hogweed	R
<i>Holcus lanatus</i>	Yorkshire-fog	O
<i>Hypericum perforatum</i>	Perforate St. John's-wort	R

## Appendix B – Land to the South of A617, Rainworth

Scientific Name	Common Name	Cover
<i>Hypochaeris radicata</i>	Cat's-ear	F
<i>Leontodon autumnalis</i>	Autumn hawkbit	R
<i>Leucanthemum vulgare</i>	Oxeye daisy	R
<i>Lolium perenne</i>	Perennial rye-grass	LA/O
<i>Luzula campestris</i>	Field wood-rush	F
<i>Medicago lupulina</i>	Black medick	A
<i>Ornithopus perpusillus</i>	Bird's-foot	R
<i>Plantago coronopus</i>	Buck's-horn plantain	R
<i>Plantago lanceolata</i>	Ribwort plantain	A
<i>Plantago major</i>	Greater plantain	R
<i>Poa annua</i>	Annual meadow-grass	O
<i>Potentilla reptans</i>	Creeping cinquefoil	R
<i>Ranunculus repens</i>	Creeping buttercup	LA
<i>Rumex acetosa</i>	Common sorrel	R
<i>Rumex acetosella</i>	Sheep's sorrel	R
<i>Sedum acre</i>	Biting stone-crop	LA
<i>Senecio jacobaea</i>	Common ragwort	R
<i>Senecio vulgaris</i>	Groundsel	R
<i>Sonchus asper</i>	Prickly sow-thistle	R
<i>Tanacetum vulgare</i>	Tansy	R
<i>Taraxacum agg.</i>	Dandelion	R
<i>Trifolium pratense</i>	Red clover	R
<i>Trifolium repens</i>	White clover	R
<i>Veronica persica</i>	Common field-speedwell	R
<i>Vicia hirsuta</i>	Hairy tare	R
<i>Vicia sativa</i>	Common vetch	R
<i>Viola arvensis</i>	Field pansy	R

## Standing Water

Scientific Name	Common Name	Cover
<i>Caltha palustris</i>	Marsh marigold	R
<i>Epilobium hirsutum</i>	Great willowherb	LA/R
<i>Iris pseudacorus</i>	Yellow-iris	LA
<i>Juncus effusus</i>	Soft-rush	LA
<i>Ranunculus repens</i>	Creeping buttercup	R
<i>Solanum dulcamara</i>	Bittersweet	R
<i>Typha latifolia</i>	Bulrush	D
<i>Veronica beccabunga</i>	Brooklime	R

## Running Water

Scientific Name	Common Name	Cover
<i>Carex pendula</i>	Pendulous sedge	O
<i>Digitalis purpurea</i>	Fox-glove	R
<i>Epilobium hirsutum</i>	Great willowherb	O/LA
<i>Glechoma hederacea</i>	Ground-ivy	O
<i>Iris pseudacorus</i>	Yellow-iris	R
<i>Pteridium aquilinum</i>	Bracken	LD
<i>Ranunculus ficaria</i>	Lesser celandine	O/LA
<i>Rubus fruticosus agg.</i>	Bramble	O
<i>Urtica dioica</i>	Common Nettle	A

## **APPENDIX C – HSI ASSESSMENT RESULTS**

## APPENDIX C – HSI ASSESSMENT RESULTS

	<i>HSI factor</i>	<i>Site Assessment</i>	<i>HSI value</i>	<i>Explanatory note/rationale</i>
<b>S1</b>	Location	Zone A	1	
<b>S2</b>	Pond area (m <sup>2</sup> )	1500m <sup>2</sup>	0.875	
<b>S3</b>	Years out of ten that pond dries out	Sometimes dries (three out of ten)	0.5	Based generally shallow profile of pond basin.
<b>S4</b>	Water quality	Poor?	0.33	Estimated, based on location / setting within landscape.
<b>S5</b>	Shade - % of 1m belt of pond within perimeter	75%	0.7	Fringed by woodland and trees along northern, western and part of eastern edges.
<b>S6</b>	Waterfowl	Minor	0.67	Pair of mallard present, but no visible impact
<b>S7</b>	Presence of fish	Possible	0.67	Based on position adjacent to Rainworth Water.
<b>S8</b>	No. ponds/km within 1km radius	0	0.1	Two waterbodies located to the north and one to the south. All isolated by major barriers (A617 & built environment of Rainworth).
<b>S9</b>	Quality of terrestrial habitat	Good	1	Good – expansive areas to the west and south. Further smaller extent of suitable habitat to the east (off-site).
<b>S10</b>	% macrophyte cover	75%	1	Dominated by bulrush.