
Ecological Impact Assessment

Land at Stakehill,
Slattocks, M24 2SH
Ref: P.1172.19

April 2024
(see revision dates below)

Rev	Date	Details
A	18 th March 2022	Revision following updated ecological appraisal of the site
B	5 th December 2022	Updates following nocturnal bat surveys
C	15 th March 2024	Updates following surveys for badger, water vole, ground level tree assessment for bats and assessment of building B1.
D	12 th April 2024	Updates following planning consultant comments

This document contains sensitive information regarding the location of a badger sett. The report is issued in confidence and on the basis that the material will not enter the public domain.

P.1172.19

Ecological Impact Assessment

Of

Land at Stakehill, Slattocks, M24 2SH

For

Redrow Homes Ltd, Valerie Drake, Robert Allen & John Thomas Allen, June Greenwood, Willie Green & Mark Greenwood, David Andrew Tetlow and Amanda Jane Tetlow

15 April 2024

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EXECUTIVE SUMMARY

A Preliminary Ecological Appraisal has been carried out at Land at Stakehill, Slattocks, M24 2SH on 22nd, 29th and 30th May 2019 by Neil Everett and Tosha Allen. The assessment comprised a desk study and biological records search, as well as a site walkover survey in order to map habitat types. The survey was extended to assess the potential for protected species to use the site. The assessment provides baseline data as to current site conditions and where appropriate allows recommendations to be made in respect of further potential work in order to satisfy current wildlife legislation.

Brown hare surveys were carried out in November 2021, December 2021, January 2022 and February 2022 and a small population of brown hare were found to be present onsite. Results are detailed in Ascerta report *P.1172.19 Brown Hare Survey Report Manchester Road*.

An updated Preliminary Ecological Appraisal was carried out on 17th March 2022 by Liz Kenyon and Lizzie Atkinson.

A site walkover to inspect the habitats and buildings within the garden centre towards the west of the site was carried out by Lizzie Atkinson on 22nd March 2022.

Two nocturnal activity surveys for bats have been carried out monthly between April 2022 and October 2022. Three static bat detectors have also been deployed throughout the site for five consecutive nights per month between April 2022 and October 2022. Low levels of bat activity were recorded throughout the bat activity surveys and static deployment with common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and serotine bat species found using the site for commuting and foraging. A bat emergence survey was carried out on building B2 within the site on 27th July 2022 by Lizzie Atkinson, Liz Kenyon and Fran Stallman. During the survey, no bats were recorded emerging building B2 with only common pipistrelle and noctule bat identified within the site during the survey. The full results of the nocturnal bat surveys are detailed within the report *P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill* which should be read in conjunction with this report.

A survey for water vole has been carried out at the onsite ditch (D1) by Lizzie Atkinson and Evie Berry on 14th October 2022. An updated survey for water vole was carried out at all ditches in the site by Lizzie Atkinson and Liz Kenyon on 13th March 2024. The results and further recommendations for the species are detailed in the Ascerta letter *P.1172.19A Water Vole Survey Letter Report, Land at Stakehill*.

A badger activity survey was carried out by Lizzie Atkinson and Liz Kenyon on 10th May 2022. Camera traps were also deployed at two outlier setts (TN1) within the site. An updated badger activity survey and the deployment of camera traps was carried out by Lizzie Atkinson, Liz Kenyon and Jack Kay on 17th November 2022. An updated site walkover to assess badger activity was carried out on 13th March 2024 by Lizzie Atkinson and Liz Kenyon. The full results and recommendations are detailed within the separate *P.1172.19A Badger Mitigation Strategy and Works Schedule, Land at Stakehill*.

The survey area comprises an area of agricultural land and associated buildings (the majority of buildings lie outside the red line boundary). The habitats on site comprise semi improved, improved and wet grassland, hardstanding, semi-natural broadleaved woodland, scattered trees, introduced shrubs, waterbodies, watercourses, hedgerows of varying

species richness, scrub and tall ruderal vegetation of mixed species diversity. A garden centre with two buildings lies within the western section of the site and the buildings are surrounded by hardstanding with introduced shrubs and scattered trees.

Assessed against the '*Guidelines for Ecological Impact Assessment in the UK and Ireland*' 2nd edition (2018), the habitats range in ecological value from **to be confirmed to within the Zone of Influence**. Some of the habitats are likely to be lost to the proposals. Recommendations have been made to contribute towards no net loss of biodiversity as a result of any proposals for future redevelopment of the site.

The site provides habitat for nesting birds, badger, reptiles, hedgehog, amphibians, water vole and bat species. Provided the recommendations below are followed these species will not be adversely affected by the proposals.

The recommendations, if fully implemented, will enable the proposals to meet the requirements of national and local guidance and legislation including the NPPF and policies NE3, NE4, NE5, NE8, NE9 and G7 of the Rochdale Metropolitan Borough Council Unitary Development Plan (Adopted June 2006) and the Rochdale Core Strategy (Adopted October 2016 and updated February 2017). The Places For Everyone Joint Development Plan Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity, adopted March 2024 has also been considered within the report.

Recommendations

1. If works have not commenced by September 2025, an updated site visit and preliminary bat roost assessment of trees that will be lost to the proposals for the detailed element of the application to determine the suitability of any features that may be present to support a bat roost and to inform further recommendation if required;
2. An application to Natural England for the closure for badger sett TN1c within the detailed element of the application (report P.117219 Ascerta Badger Mitigation Strategy);
3. Further surveys for badger prior to the future phases of the development, to establish the level of badger activity within the site (see section 5.3);
4. Implementation of a hedgehog RAMS to avoid any harm to this species during the proposed works;
5. Implementation of a badger RAMS to avoid any harm to this species during the proposed works and a Badger Mitigation Strategy;
6. Implementation of an amphibian RAMS to avoid any harm to this species during the proposed works;
7. An updated survey for water vole immediately prior to the commencement of development and site supervision for all works within 5m of the onsite ditch (D1);
8. Implementation of a rabbit RAMS to avoid any harm to this species during the proposed works (see section 6.0 and Ascerta letter P.1172.19A Ascerta Water Vole Survey Letter Report, Land at Stakehill);
9. As part of any subsequent Reserved Matters Application, a brown hare welfare and mitigation strategy will be produced and implemented;
10. An updated invasive species survey (between March and September) for Himalayan balsam (TN16) to confirm the location of the invasive species across the site. Further surveys for invasive species will be required prior to the start of works at each future phase;

11. Avoiding vegetation removal or any demolition or roof works of the buildings during the bird breeding season (1 March to 31 August inclusive) or undertaking a survey for breeding birds and ensuring any active nests found are protected within a suitable buffer zone until they are no longer in use;
12. Mitigation for the loss of nesting bird habitat with the provision of bird boxes such as open fronted nest boxes, 26mm hole nest boxes and 32mm hole nest boxes;
13. Provision of a hedgehog hibernaculum on site to mitigate for loss of the bramble scrub, or enhance the site for hedgehog;
14. Provision of gaps of 13cm by 13cm under fences to enable hedgehog continued access across the site following development;
15. Lighting sensitive to the needs of bats, designed to avoid overspill onto key habitats including the and any key habitats identified during the bat activity surveys;
16. Habitat enhancement with the provision of bird and boxes, hedgehog, amphibian, and reptile hibernacula and bug boxes. The provision of new ponds, woodland or shelter belts and hedgerow planting to improve connectivity between existing and new habitats could also enhance the site for wildlife. Suitable landscaping within the residential development incorporating species that provide a food or shelter resource to wildlife would also be beneficial to biodiversity;
17. Any future SUDS or attenuation basin to include native planting to enhance the ecology and biodiversity of the proposed site; and
18. Production of a Management Plan to ensure the long-term commitments to manage the planting, protection and enhancement of biodiversity in and around a new development site.

1.0 Introduction

Ascerta has been instructed by Redrow Homes Ltd, Valerie Drake, Robert Allen & John Thomas Allen, June Greenwood, Willie Green & Mark Greenwood, David Andrew Tetlow and Amanda Jane Tetlow to carry out a preliminary ecological assessment of land at Manchester Road, Slattocks, M24 2SH (hereafter referred to as the site). The site central OS grid reference is SD 89167 09404.

Our client wishes to identify the constraints and opportunities within the site with a view to secure continued allocation of the land for housing within the Local Plan. The ultimate aim of the client is for redevelopment of the site for residential purposes.

The site was visited on 22nd, 29th and 30th May 2019 by Neil Everett and Tosha Allen when a Preliminary Ecological Appraisal, which included an assessment of the potential for protected species to be using the site or surroundings, was carried out in accordance with the *Handbook for Phase 1 Habitat Survey: a Technique for Environmental Audit* (JNCC, 2010). The report was prepared following methods detailed in the CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (2018) and 'Guidelines for Ecological Report Writing' (2017). This report presents the results of the survey including evaluation of habitats on site and potential for protected species to be using the site. The report includes recommendations for further actions where applicable in order to satisfy current wildlife legislation and to achieve our client's objectives.

Further site visits have been undertaken in November 2021, December 2021, January 2022 and February 2022 to undertake brown hare surveys.

An updated Preliminary Ecological Appraisal was carried out on 17th March 2022 by Liz Kenyon and Lizzie Atkinson.

A site walkover to inspect the habitats and buildings (B2, B3 and Garages (TN15)) within the garden centre towards the west of the site was carried out by Lizzie Atkinson on 22nd March 2022.

Two nocturnal activity surveys for bats have been carried out monthly between April 2022 and October 2022. Three static bat detectors have also been deployed throughout the site for five consecutive nights per month between April 2022 and October 2022. Low levels of bat activity were recorded throughout the bat activity surveys and static deployment with common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and serotine bat species found using the site for commuting and foraging. A bat emergence survey was carried out on building B2 within the site on 27th July 2022 by Lizzie Atkinson, Liz Kenyon and Fran Stallman. During the survey, no bats were recorded emerging from building B2 with only common pipistrelle and noctule bat identified within the site during the survey. The full results of the nocturnal bat surveys are detailed within the report *P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill* which should be read in conjunction with this report.

A survey for water vole has been carried out at the onsite ditch (D1) and has been carried out by Lizzie Atkinson and Evie Berry on 14th October 2022. An updated survey for water vole was carried out at all ditches in the site by Lizzie Atkinson and Liz Kenyon on 13th March 2024. The results and further recommendations for the species are detailed in the Ascerta letter *P.1172.19A Water Vole Survey Letter Report, Land at Stakehill*.

A badger activity survey was carried out by Lizzie Atkinson and Liz Kenyon on 10th May 2022. Camera traps were also deployed at two outlier setts (TN1) within the site. An updated badger activity survey and the deployment of camera traps was carried out by Lizzie Atkinson, Liz Kenyon and Jack Kay on 17th November 2022. An updated site walkover to assess badger activity was carried out on 13th March 2024 by Lizzie Atkinson and Liz Kenyon. The full results and recommendations are detailed within the separate *P.1172.19A Badger Mitigation Strategy and Works Schedule, Land at Stakehill*.

2.0 Objectives

Our client's objectives are to ascertain the potential ecological constraints and opportunities of the site to inform potential future redevelopment of the site for residential purposes.

Our objectives are as follows:

- Identify and evaluate any features of ecological value and the potential of the site to support protected species based on the walkover survey and biological records search;
- Identify designated sites within 2km of the site;
- Review protected species records within 1km of the site boundary;
- Map the habitats within the site using JNCC (2010) methods;
- Provide recommendations for further species-specific surveys and mitigation measures where current legislation requires;
- Provide recommendations that seek to enhance the ecological value of the site;
- Provide recommendations to assist our clients in achieving their objectives whilst satisfying current wildlife legislation.

3.0 Relevant Legislation

3.1 European Legislation

The following Directives have been adopted by the European Union and provide protection for fauna and flora species of European importance and the habitats which support them:

- Directive 2009/147/EC on the Conservation of Wild Birds (Birds Directive);
- Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive).

3.2 UK Legislation

The Habitats Directive has been transposed into national legislation through the Conservation of Habitats and Species Regulations 2017 (The Habitats Regulations). This provides for the designation and protection of 'European Sites' (SPAs, SACs and Ramsar Sites, including proposed or potential European Sites) and the protection of 'European Protected Species'.

The key UK legislation relating to nature conservation is the Wildlife and Countryside Act 1981 (as amended) (W&C Act). This Act is supplemented, *inter alia*, by provision in the Countryside and Rights of Way (CROW) Act 2000, and the Natural Environment and Rural Communities Act 2006 (NERC Act). Additional species and habitat specific UK legislation includes the Protection of Badgers Act 1992 and the Hedgerow Regulations 1997.

The UK legislation is due to be updated, with the publication of The Environment (Principles and Governance) Bill, which is due to be passed through parliament in the summer of 2019. The draft Environment Bill sets out how the UK will maintain environmental standards following leaving of the EU. The Bill builds on the vision of the 25 Year Environment Plan, with the ambition from the government to leave the environment in a better state than it was when inherited.

The recommendations detailed within this report aim to meet requirements of the Environment Act and Statutory Biodiversity Metric as far as possible at this stage.

The National Planning Policy Framework (NPPF) 2023 has been published to provide further planning guidance. Wildlife, biodiversity and ecological networks are referred to in Section 15 '*Conserving and enhancing the natural environment*'. The NPPF states that the planning system should contribute to and enhance the natural and local environment by: recognising the wider benefits of ecosystem services, minimising impacts on biodiversity and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures. Further guidance is provided within Government Circular 06/05: *Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within The Planning System*.

Species and Habitats of Principal Importance

Species and Habitats of Principal Importance are listed under section 41 of the NERC Act and are a material consideration in planning decisions. Planners require relevant, up to date information from ecological surveys in order to assess the effects of a proposed development on biodiversity as Councils have a statutory obligation under section 40 of the NERC Act to consider biodiversity conservation in the determination of planning applications.

Background information about the lists of priority habitats and species (Species and Habitats of Principal Importance) can be found within the UK Biodiversity Action Plan (UK BAP). Although this has been succeeded by The 'UK Post-2010 Biodiversity Framework', many of UK BAP tools are still relevant. BAPs identify habitats and species of nature conservation priority on a UK (UK BAP) and Local (LBAP) scale. Most BAP priority habitats and species have Habitat Action Plans (HAP) and Species Action Plans (SAP) and there are also "grouped action plans" for groups of related species with similar conservation requirements. The LBAP relating to this Site is the Greater Manchester Biodiversity Action Plan.

Badgers

The legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992.

Under the Protection of Badgers Act 1992 it is an offence *inter alia* to:

- Wilfully kill, injure or take a badger, or to attempt to do so;
- Cruelly ill-treat a badger; or
- Intentionally or recklessly interfere with a badger sett by (a) damaging a sett or any part of one; (b) destroying a sett; (c) obstructing access to or any entrance of a sett; (d) causing a dog to enter a sett; or (e) disturbing a badger when it is occupying a sett.

The Badger Act 1992 defines a badger's sett as "*any structure or place which displays signs indicating current use by a badger*"

Natural England can issue licences to enable works to continue that may affect a protected species. In relation to disturbance of badgers, Natural England (2009) gives guidelines on disturbance which will require a licence. These includes: "*using very heavy machinery (generally tracked vehicles) within 30 metres of any entrance to an active sett; using lighter machinery (generally wheeled vehicles), particularly for any digging operation, within 20 metres; light work such as hand digging or scrub clearance within 10 metres. There are some activities which may cause disturbance at greater distances (such as using explosives or pile driving) and these should be given individual consideration.*"

Bats

In England, all bats and their roosts are protected under the Conservation of Habitats and Species Regulations 2017 and the Wildlife & Countryside Act 1981 (as amended). Several species of bat are also highlighted as Priority Species under the UK Biodiversity Action Plan and within the Local BAP.

Under the current legislation as summarised on pages 9 and 10 of the Bat Surveys for Professional Ecologists Good Practice Guidelines – 4th Edition (2023) it is a criminal offence to:

“To kill, capture, injure or take a wild bat;

- To damage or destroy a place used by a bat for breeding or resting. All offences of this nature are identified within the Habitats Regulations. This offence is unique in that it can be committed accidentally. No element of intentional, reckless or deliberate action needs to be evidenced;*
- To disturb bats anywhere (roosts, flight lines or foraging areas) if levels of disturbance can be shown to impair their ability to survive, to breed or reproduce, to rear or nurture their young, to hibernate or migrate or to affect significantly local distribution or abundance;*
- To intentionally or recklessly disturb a bat, whilst it is occupying a place of shelter or protection;*
- To intentionally or recklessly obstruct access to any place used by a bat for shelter or protection; and*
- To be in possession or control of a bat alive or dead (or any part of a bat or anything derived from a bat, although bat droppings are generally considered to be acceptable), or to transport a bat, to sell or exchange a bat or to offer to sell or exchange a bat taken from the wild.”*

Breeding Birds

Breeding Birds are protected under the Wildlife and Countryside Act which make it an offence to:

- intentionally kill, injure or take any wild bird or take, damage or destroy the nest of any wild bird whilst it is in use or being built;*
- intentionally take or destroy the egg of any wild bird;*
- have in one's possession or control any wild bird, dead or alive, or any part of a wild bird (including eggs), which has been taken in contravention of the Act or the Protection of Birds Act 1954;*
- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.*

Great Crested Newt

The great crested newt (*Triturus cristatus*) is fully protected under the Wildlife and Countryside Act, 1981 (as amended) and the Habitats Regulations, 2017. It is also a Species of Principal Importance. The legislation makes it an offence to:

- Deliberately (or intentionally) kill, injure or capture (or take) a great crested newt, or great crested newt egg or eft;*
- Deliberately (intentionally) damage or destroy any breeding site or resting place (i.e. pond, refuge, hibernaculum);*
- Deliberately or recklessly obstruct access to any breeding site or resting place;*
- Deliberately, intentionally or recklessly disturb a great crested newt, in particular disturbance which is likely to:*
 - impair the ability of the great crested newt to survive, breed, reproduce, or to rear or nurture young;*
 - impair the ability of the great crested newt to hibernate or migrate; or significantly affect the local distribution or abundance of great crested newts*

Invasive Species

It is an offence under Section 14(2) of the Wildlife and Countryside Act 1981 to ‘plant or otherwise cause to grow’ in the wild any plant in Schedule 9 Part II.

Other Aquatic Species

Water vole (*Arvicola amphibious*) are a Species of Principal Importance and also fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to:

- *intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection;*
- *intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose;*
- *intentionally kill, injure or take water voles;*
- *possess or control live or dead water voles or derivatives;*
- *sell water voles or offer or expose for sale or transport for sale; and*
- *publish or cause to be published any advertisement which conveys the buying or selling of water voles.*

Otter (*Lutra lutra*) are similarly protected under the Wildlife and Countryside Act, 1981 (as amended) and have additional protection as a European Species under The Habitats Regulations 2017.

3.3 Local Policy

The site lies within the Rochdale Borough Council administrative area and is subject to the Rochdale Metropolitan Borough Council Unitary Development Plan (Adopted June 2006) and the Rochdale Core Strategy (Adopted October 2016 and updated February 2017). The policies of relevance here are policies NE3, NE4, NE5, NE8 and NE9 and policy G7 respectively and these policies have been taken into account when preparing this report. The Places For Everyone Joint Development Plan Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity, adopted March 2024 has also been considered within the report.

The following table provides a summary of the main species within the UK that could be encountered within or within proximity of this development site, together with the legislation that affords them protection.

Table 3.1 Protected Species and the Associated Legislation.

	Species	Legislation
Amphibians	Great crested newt (<i>Triturus cristatus</i>)	Schedule 5, W&C Act 1981 (as amended); Schedule 2, The Habitats Regulations 2017; and Section 41, NERC.
Mammals	Badger (<i>Meles meles</i>)	Protection of Badgers Act 1992.
	All species of bat	Schedule 5, W&C Act 1981 (as amended); Schedule 2, The Habitats Regulations 2017; and Section 41, NERC.
	Brown hare (<i>Lepus europaeus</i>)	Schedule 5, W&C Act 1981 (as amended); and Priority Species under the UK Post-2010 Biodiversity Framework.
	Water vole (<i>Arvicola amphibious</i>)	Schedule 5, W&C Act 1981 (as amended) and Section 41, NERC.
Birds	All wild birds	Schedule 5, W&C Act 1981 (as amended) and Section 41, NERC.
Reptiles	Adder (<i>Vipera berus</i>) Common lizard (<i>Zootoca vivipara</i>) Grass snake (<i>Natrix natrix</i>) Slow worm (<i>Anguis fragilis</i>)	Schedule 5, W&C Act 1981 (as amended) and Section 41, NERC.
Crustacean	White-clawed crayfish (<i>Austropotamobius pallipes</i>)	Schedule 5, W&C Act 1981 (as amended) and Section 41, NERC.

It is a criminal offence to intentionally, wilfully kill, injure or take any of the aforementioned protected species or to destroy or disturb its habitat.

4.0 Survey Methods

The Preliminary Ecological Appraisal involved the collection and review of data from a desk study and field survey along with assessment of the value of the habitats following CIEEM guidelines.

4.1 Desk Study

A review of the designated sites and habitats within 2km of the site has been undertaken using the Multi-Agency Geographic Information for the Countryside (MAGIC) and the Natural England websites.

An updated review of the designated sites and habitats within 2km of the site has been undertaken in March 2022 using the Multi-Agency Geographic Information for the Countryside (MAGIC) and the Natural England websites.

A review of UK and Local priority species and habitats known to occur in the region of the site has been undertaken; using the Joint Nature Conservation Committee website and local records from Greater Manchester Ecology Unit (Appendix 5).

4.2 Field Survey

A walkover survey of the site was conducted on 22nd, 29th and 30th May 2019 and 17th March 2022 when the habitat types and features of ecological interest were identified and mapped in compliance with the Handbook for Phase 1 Habitat Survey: a Technique for Environmental Audit (JNCC, 2010). The survey methods involve the recording and mapping of all habitat types and ecological features present on site, including the identification of the main species present and examination of the potential for any protected species. Habitats were mapped and target notes made for any interesting features.

The surveys particularly focused on the following species and habitat features:

- Mammals (badgers, bats, otter and water vole);
- Birds (including birds that are designation species of Ramsar or SPA sites);
- Amphibians and reptiles;
- Invertebrates;
- Hedgerows and boundaries;
- Invasive plant species; and
- Plant communities and trees.

4.3 Bat Survey Methods

The survey methods prior to the site walkover in 2024 followed the guidelines set out by the Bat Conservation Trust Bat Surveys for Professional Ecologists Good Practice Guidelines – 3rd Edition (2016). Habitats, Buildings and Trees were assessed for suitability for use by bats and categorised independently using table 4.1 page 35 within the Bat Conservation Trust Guidelines (Collins, 2016).

The survey methods on 13th March 2024, followed the guidelines set out by the Bat Conservation Trust's *Bat Surveys for Professional Ecologists Good Practice Guidelines – 4th Edition* (2023). Habitats, buildings and trees were assessed for suitability for use by bats and categorised independently using table 4.1 page 44 within the Bat Conservation Trust Guidelines (Collins, 2023).

Preliminary Ecological Appraisal for Bats

Habitats on site were assessed for their suitability for bats to use them for roosting, commuting and foraging both on the site and surrounding area. Commuting and foraging habitat suitability was categorised **low** to **high**. Commuting and foraging habitat valued as Moderate or above may need further survey effort if lost to the proposals.

Preliminary Roost Assessment Trees

All trees were inspected for Potential Roost Features (PRFs). Features searched for included: Natural or woodpecker holes, cracks/splits in major limbs, loose bark, hollows/cavities, dense epicormic growth, bird and bat boxes. Where such features were found they were investigated for scratches or staining, bat droppings and smoothing of surfaces around entry points. Trees assigned a suitability of **moderate** or above may require further inspection if they are to be lost to the development.

Table 4.1: Guidelines for assessing potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement. Guidelines taken from table 4.1 page 44 of the Bat Conservation Trust Bat Surveys for Professional Ecologists Good Practice Guidelines – 4th Edition (2023).

Potential suitability	Description	
	Roosting Habitats in structures	Potential flight-paths and foraging habitats
None	<i>No habitat features on site likely to be used by any roosting bats at any time of the year (i.e. a complete absence of crevices/suitable shelter at all ground/underground levels).</i>	<i>No habitat features on site likely to be used by any commuting or foraging bats at any time of the year (i.e. no habitats that provide continuous lines of shade/protection for flight-lines, or generate/shelter insect populations available to foraging bats).</i>
Negligible^a	<i>No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.</i>	<i>No obvious habitat features on site likely to be used as flight-paths or by foraging bats; however, a small element of uncertainty remains in order to account for non-standard bat behaviour.</i>
Low	<i>A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions ^b and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats ^c).</i>	<i>Habitat that could be used by small numbers of bats as flight-paths such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.</i>

Moderate	<i>A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions^b and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity or hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).</i>	<i>Continuous habitat connected to the wider landscape that could be used by bats for flight-paths such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.</i>
High	<i>A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions ^b and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g. maternity or classic cool/stable hibernation site.</i>	<i>Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by bats for flight-paths such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.</i>

^a Negligible is defined as ‘so small or unimportant as to be not worth considering, insignificant’. This category may be used where there are places that a bat could roost or forage (due to one attribute) but it is unlikely that they actually would (due to another attribute).

^b For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance.

^c Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2016 and Jansen et al., 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.

4.4 Badger Survey Methods

The site was searched for setts and badger field signs including foraging areas, latrines and tracks. Attention was paid to the presence of the following field signs:

- Setts: single holes or a series of holes likely to be interconnected underground;
- Latrines: badgers usually deposit faeces in excavated pits;
- Paths and footprints;
- Scratching posts: at the base of trees;
- Snuffle holes: areas where badgers have searched for insects;
- Day nest: bundles of vegetation where badgers may sleep above ground; and
- Traces of hair.

4.5 Water vole, Otter and White Clawed Crayfish

The watercourses within the site were assessed for use by otters and water voles following methods outlined in Chanin P (2003). *Monitoring the Otter Lutra lutra. Conserving Natura 2000 Rivers Monitoring Series No. 10, English Nature, Peterborough* and Strachan, R., Moorhouse, T., Gelling, M. (2011). *Water Vole Conservation Handbook*, 3rd Edition. Wildlife Conservation Research Unit: Abingdon.

Signs of otter use including prints, spraints, couches or holts were searched for from the banks as well as by walking within accessible sections of the watercourse. Signs of water vole use, including latrines, footprints, feeding remains, runs and burrows were searched for along the banks of the watercourses by walking with accessible sections. Inaccessible sections were assessed from the banks.

The habitat suitability for white clawed crayfish in the onsite watercourses was assessed in 2024. This involved recording physical characteristics of the water course (channel width, depth, substrate, bank profile and flow types) and the vegetation structure within the channel and along the banks. Features offering suitable refuge habitat such as undercut banks, submerged tree roots and cobbles were also noted. Professional judgement was used to assess the quality of the habitats for white clawed crayfish.

4.6 Evaluation

Habitats and species on the site were evaluated following the '*Guidelines for Ecological Impact Assessment in the UK and Ireland*' 2018. A geographical frame of reference is assigned to each habitat and species, with International Value being most important, then National, Regional, County, District, Local and lastly, within the immediate Zone of Influence (Zoi) of the proposals only

Value judgements are based on characteristics that can be used to identify ecological resources or features likely to be important in terms of biodiversity. These include site designations such as SSSIs. For undesignated features, the size, conservation status (locally, nationally or internationally), and the quality of the ecological resource are considered. Ecological resource quality can refer to habitats (for instance if they are particularly diverse, or a good example of a specific habitat type), other features (such as wildlife corridors or mosaics of habitats) or species populations or assemblages.

Although we cannot assess the survey findings fully in relation to the draft Environment Bill and Biodiversity Metric, the recommendations detailed within this report aim to meet requirements of the Environment Bill and Biodiversity Metric as far as possible at this stage.

4.7 Limitations

The initial site visits in 2019 were undertaken in late May, an optimal time of the year for phase 1 habitat surveys. Three fields within the site were not accessible due to livestock and calves present within the fields. These fields were surveyed from the boundaries, however this is not considered a limit to the conclusions of the report based on the habitats found within the site and the high-level nature of the report.

On 17th March 2022, Fields F24, F25, F26, F27 and F28 and ponds P4 and P5 within the south of the site within Carr Gate Farm could not be fully assessed due to access restrictions however, these habitats could be partially surveyed from the field boundaries. These habitats are also to be retained within the current proposals.

Access to inspect the eastern, southern and western elevations of the green house building (B3) was unavailable due to fencing. These access restrictions have been considered within the conclusions of this report.

The updated site walkovers in 2022 were carried out in mid-March, although this is within the suboptimal time of year for phase 1 habitat surveys, sufficient vegetation was present to enable habitat identification. It is not considered a limitation to the conclusions of the report.

5.0 Survey Results

5.1 Desk Study

Three statutory sites were identified within a 2km radius of the proposed development site (with distance and direction from the site):

- Hopwood Woods Local Nature Reserve (LNR) (380m south-west)
- Rochdale Canal Sites of Special Scientific Interest (SSSI) and Special Areas of Conservation (SAC) (500m west)

Six non-statutory sites were identified within 1km of the proposals (with distance and direction from the site):

- Lords Wood Site of Biological Importance (SBI) (380m south-west);
- Hopwood Clough SBI (870m, south-west);
- Rochdale Canal SBI (Scowcroft to Warland, west) running north / south to the west of the site, with the nearest point lying 135m from the site boundary);
- A627m by Tandle Hill SBI (40m south-east and 645m north);
- Gerrard Wood SBI (235m south-east); and
- Tandle Hill Country Park SBI (700m, east)

The site lies within a Natural England SSSI Impact Risk Zone, and the development will trigger a consultation with Natural England as the proposals fall within the likely impacts to the SSSI. The category that would currently trigger a consultation with Natural England if residential development is of 100 units or more.

Following a review of records held by the Greater Manchester Ecology Unit (GMEU), several priority species that have the potential to occur within the vicinity of the proposed development have been identified. These include bats, reptile, GCN, brown hare, water vole, bird species, white clawed crayfish and badger.

One European Protected Species Licence (EPSL) application within 2km of the site since 2016 was identified using Magic Maps;

- 2016-20262-EPS-MIT for the destruction of a resting place for common pipistrelle (758m north-east).

One priority habitat is present within the site. This habitat is deciduous woodland and is located along the northern boundary.

A list of key habitats is shown in **Table 5.2** below and a summary description of key habitats within the survey area is provided in **Section 5.2**. Notes on the presence or potential presence of protected species are provided in **Section 5.3**. The Phase 1 Habitat map can be found in **Appendix 1**. The Target Notes (TN) and lists of species recorded during survey are presented in **Appendix 3**.

5.2 Habitat Survey

The site lies south of junction 20 on the M62 carriageway, located south of Rochdale. The site comprises an area of farmland. The habitats on site comprise semi improved grassland of varying species richness, improved grassland, hedgerows, waterbodies and watercourses, scrub, scattered trees and tall ruderal vegetation. These habitats are presented on plan P.1172.19.01A (Appendix 1).

The site is bound by Thornton New Road to the north, the A672 to the east, Manchester Road (A664) to the west and Slattocks Link Road (A664) to the south.

Within the wider environment there is agricultural land, residential dwellings, Manchester Golf Course, industrial and retail units.

Weather conditions during the survey are detailed within Table 5.1 below:

Table 5.1: Weather conditions

Date	Temperature (°C)	Cloud cover	Wind (Beaufort Scale)	Rain
22 nd May 2019	16	7/8	F1	Dry
29 th May 2019	13	5/8	F2	Dry
30 th May 2019	16	8/8	F1	Dry
17 th March 2022	6	1/8	F1	Dry

The weather conditions on 22nd, 29th, 30th May 2019 and 17th March 2022 were appropriate for this type of survey.

Table 5.2 on the following pages details the habitat types recorded on the site.

Description	Photograph
Semi-improved grassland: The site is dominated by semi improved grassland with varying levels of species richness. The height of the sward ranges between 30-50cm. The grassland is mown once a year as discussed with the tenant on 29th May 2019. Species present include Yorkshire fog, False oat grass, Cock's foot, Perennial ryegrass, Meadow buttercup, White clover, yellow vetchling and common mouse ear for example. Additional species are listed within Appendix 3. This habitat is of value to amphibians, small mammals and birds. This habitat is common within the wider landscape. Bats may also use the areas for forage. The longer sward also provides good foraging habitat for barn owl. This type of habitat would need to be replaced with wildflower planting or areas of grassland under a relaxed mowing regime. In March 2022, the areas of semi-improved grassland were found to be in the same condition as when last assessed in 2019. The sward height ranges from between 5cm-30cm. One field, F13 within the east of the site, that was previously assessed as semi-improved was found to be improved grassland.	 May 2019  March 2022, semi-improved grassland field F2
Ecological Value	Within the Zone of Influence

Description	Photograph
Further Work	Nocturnal bat activity surveys and the deployment of static bat detectors have been undertaken in 2022 (Ascerta report <i>P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill</i>) which should be read in conjunction with this report. Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site. Lapwing were noted within the site during the visits in 2022. A lapwing nest was also identified within F12. Breeding bird surveys were undertaken by Ascerta between February and August 2023 (report <i>P.1172.19 Breeding Bird Survey Report</i>). During each visit to site, rabbits were recorded throughout the site. Small mammal Reasonable Avoidance Measures will be implemented for the species, to include fox, rabbit and hedgehog (report <i>P.1172.19 Small Mammal and Amphibian Reasonable Avoidance Measures (RAMS)</i>).
Improved Grassland: Areas of improved grassland grazed by cattle are located within the north of the site. The grass sward height is approximately 5cm. Species present include Yorkshire fog and perennial ryegrass. Additional species are listed within Appendix 3. The areas are of value to birds, small mammal species and amphibians. Bats may also use the areas for forage. This type of habitat is common within the wider environment and can be replaced with wildflower planting or areas of grassland under a relaxed mowing regime. In March 2022, field F6 was found to be in the same condition as when assessed in May 2019. Field F5 was noted to be predominately disturbed land and a JCB was recorded digging and moving soil within F5. Field F13, previously assessed as semi-improved grassland, was recorded as improved grassland.	 May 2019  March 2022, improved grassland field F13
Ecological Value	Within the Zone of Influence

Description	Photograph
Further Work	Nocturnal bat activity surveys and the deployment of static bat detectors have been undertaken in 2022 (Ascerta report P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill) which should be read in conjunction with this report. Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site. Lapwing were noted within the site during the visits in 2022. A lapwing nest was also identified within F12. Breeding bird surveys were undertaken by Ascerta between February and August 2023 (report P.1172.19 Breeding Bird Survey Report) During each visit to site, rabbits were recorded throughout the site. Small mammal Reasonable Avoidance Measures will be implemented for the species, to include fox, rabbit and hedgehog (report P.1172.19 Small Mammal and Amphibian Reasonable Avoidance Measures (RAMS).

Description	Photograph
Tall Ruderal: Small pockets of tall ruderal vegetation have established along field margins and footpaths. These are dominated by nettle, broadleaved dock and common hogweed. This habitat is common in the wider landscape and any loss can be mitigated for by the provision of areas of wildflowers. In March 2022, tall ruderal species, including cleavers and common nettle, were recorded within field margins.	 May 2019
Ecological Value	Within the Zone of Influence
Further Work	Detailed vegetation surveys are unlikely to be required due as this habitat is common in the wider area and not species rich.
Wet Grassland: Areas of wet grassland are present throughout the site. The areas are of value to birds, small mammal species and amphibians. Bats may also use the areas for forage. This type of habitat is less common within the wider environment and can be replaced with either a SUDs or attenuation basin. It is recommended that any SUDs or attenuation basin to include native planting to enhance the ecology and biodiversity of the site. In March 2022, areas of wet grassland remain present throughout the site. The locations of these areas can be seen on drawing P.1172.19.01A.	 May 2019  May 2022, field F3 with large pockets of rush.
Ecological Value	Within the Zone of Influence

Description	Photograph
Further Work	Nocturnal bat activity surveys and the deployment of static bat detectors have been undertaken in 2022 (Ascerta report P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill) which should be read in conjunction with this report. Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site. Lapwing were noted within the site during the visits in 2022. A lapwing nest was also identified within F12. Breeding bird surveys were undertaken by Ascerta between February and August 2023 (report P.1172.19 Breeding Bird Survey Report) During each visit to site, rabbits were recorded throughout the site. Small mammal Reasonable Avoidance Measures will be implemented for the species, to include fox, rabbit and hedgehog (report P.1172.19 Small Mammal and Amphibian Reasonable Avoidance Measures (RAMS). Vegetation clearance or pruning should be undertaken outside of the nesting bird season (1st March to 31st August Inclusive) to avoid any impact on breeding birds. Or a nesting bird check undertaken by a suitably experienced ecologist should be undertaken immediately prior to works commencing.

Description	Photograph
Hedgerows: Boundary hedgerows border the semi-improved and improved grassland fields within the site. The hedgerows were not surveyed under the Hedgerow Regulations Act 1997 methodology during the May 2019 survey. Flora species present within the hedgerows were noted during the survey and are listed within Appendix 3. Hawthorn, blackthorn, ash and elder were present within the majority of hedgerows within the site. This habitat is common within the wider landscape. It is currently unknown which hedgerows that lie within the zone of influence are to be removed to accommodate proposals. Further surveys may be required to assess the importance of the hedgerows if significant areas are to be lost and to inform further mitigation requirements. In March 2022, the boundary hedgerows on site were found to be in the same condition as when last assessed in 2019. The unmanaged hedgerow that lines the footpath within the north of the site adjacent to the F1 and F3 is of value to amphibians, small mammals, birds and bats. The unmanaged hedgerow areas also provide connectivity to the small patch of semi-natural broadleaved woodland on site and the priority woodland habitat offsite adjacent to the northern site boundary. The unmanaged hedgerow areas are to be retained within the current proposals.	 May 2019  Unmanaged hedgerow that lines footpath within the north of the site adjacent to F1 and F3 (March 2022).  Managed hedgerow along the southern boundary of F3 (March 2022)
Ecological Value	Within the Zone of Influence

Description	Photograph
Further Work	Nocturnal bat activity surveys and the deployment of static bat detectors have been undertaken in 2022 (Ascerta report P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill) which should be read in conjunction with this report. Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site. Vegetation clearance or pruning should be undertaken outside of the nesting bird season (1st March to 31st August Inclusive) to avoid any impact on breeding birds. Or a nesting bird check undertaken by a suitably experienced ecologist should be undertaken immediately prior to works commencing. Within the future phases of the site any sections of hedgerow that will be lost be subject to assessment for species including bats and birds.

Description	Photograph
Running Water (D1): A stream (slow flowing) is located within the south-east of the site. The stream follows the field boundaries and is culverted in places. The water within the stream is flowing from north-west to south-east direction. The stream is heavily vegetated and surrounded by dense scrub and wet grassland. The water within the stream located at approximate OS central grid reference SD 887 091 was orange in colour. The banks of the drainage ditches are earth and could provide water vole habitat. Species present within the stream and its banks include rosebay willow-herb, soft rush and yellow flag iris. The drainage ditches connect habitats of value and are of ecological value in their own right. Therefore, measures will need to be taken to ensure the water is not contaminated during works or once the proposals are implemented. The drainage ditches are of value to birds and small mammal species. Bats may also use the areas for forage and as connectivity to more favourable habitat.	 Figure 1: drainage ditch located at SD 8877091  Figure 2: Heavily vegetated drainage ditch located at SD885088  Section of stream (D1) located on the boundary of fields F19 and F20.

Description	Photograph
In March 2022, the stream (D1) was noted to be in a similar condition to when it was assessed in May 2019. The ditch was slow flowing from north-west to south-east and was surrounded by scrub and rubble (TN12). D1 was subject to a great crested newt (GCN) habitat suitability index assessment (HSI). D1 has a HSI score of 0.66 'Average'. In July 2022 cattle were present withing F4 and D4 had become heavily poached and polluted by animal waste.	 Stream (D1) from F19, surrounded by scattered trees, scrub and rubble (TN12) (March 2022)
Ecological Value	Local
Further Work	Water vole surveys have been carried out within the site (report P.1172.19, Water vole letter report) and the report should be read in conjunction with this for further recommendations for water vole.

Description	Photograph
Standing water: Five ponds and a wet ditch are present within the site. All ponds and one ditch were assessed for their suitability to support amphibians This was done using the Habitat Suitability Index (HSI). A summary of the assessment is listed below, and detailed results are located within Appendix 4. In March 2022, five ponds, three wet ditches and a stream were identified within the site. Ponds P1, P2 and P3 and ditches D1, D2, D3 and D4 were subject to an updated HSI assessment. Ponds P4 and P5 could not be assessed due to access restrictions, however these ponds are to be retained within the current proposals. Pond 1-This pond is located within the north of the site. the pond is approximately 330m² and is located within a SI grassland field. This pond is a fishing pond and two Canada geese where present at the time of survey in 2019. The pond has a HSI score of 0.48 'Poor'. In March 2022, pond 1 remains a fishing pond and was approximately 350m² and was holding approximately >50cm of water. Two Canada Geese and one moorhen were noted within the pond during inspection. The pond has a HSI score of 0.49 'Poor'.	 Figure 3: Pond 1  Figure 4: Pond 1 (2022)

Description	Photograph
Pond 2- This pond is man-made and is approximately 1,200m². Two Canada geese and two goslings were present at the time of survey in 2019. In March 2022, pond 2 was holding approximately >50cm of water and was surrounded by yellow flag iris, canary reed grass and rush. The pond has a HSI score of 0.46 'Poor'.	 Figure 5: Pond 2  Figure 6: Pond 2 (2022)
Pond 3- In March 2022, pond 3 was approximately 500m² and was holding >50cm of water and was surrounding by canary reed grass and rush. Two Canadian Geese were noted adjacent to the pond during the inspection. The pond a HSI score of 0.83 'Excellent'. P3 is to be retained within the current proposals.	 Figure 6: Pond 3  Figure 7: Pond 3 (2022)

Description	Photograph
Pond 4- Pond 4 is located within an improved grassland field grazed by cattle. This pond is approximately 156m² and was assessed in May 2019 for GCN HSI. The pond was assessed to have a HSI score of 0.70 'Good'. P4 is to be retained within the current proposals.	 Figure 8: Pond 4 
Pond 5- Pond 5 is a fishing pond located within the south of the site. This pond is lies within a semi improved grassland field. The pond is approximately 2,662m² and was assessed in May 2019 for GCN HSI. The pond was assessed to have a HSI score of 0.45 'Poor'. P5 is to be retained within the current proposals.	 Figure 10: Pond 5 (2022)

Description	Photograph
Ditch D2- A ditch is located within the north-west of the site. Standing water is present within the ditch. The ditch has a HSI score of 0.66 'Average'. In March 2022, ditch D2 was holding water approximately >20cm deep. The ditch was surrounded by canary reed grass and rush. The ditch has a HSI score of 0.66 'Average'.	 Figure 11: Ditch D2  Figure 12: Ditch D2 (2022)
Ditch D3- is located within field F1 and is connected to pond P1 and cultivated at the western end. The ditch was recorded as dry in May 2019. The ditch was holding very little water (approximately <5cm) and was surrounded by canary reed grass. The ditch has a HSI score of 0.49 'Poor'.	 Figure 13: Ditch D3 (2022)
Ditch D4- is located on the boundary of fields F3 and F4 and leads through the small patch of semi-natural broadleaved woodland. The ditch was recorded as dry in 2019. The ditch was holding approximately <20cm water and was surrounded by scattered trees. The ditch has a HSI score of 0.53 'Below Average'. The areas of habitat are of value to birds and amphibians. Bats may use this habitat for foraging.	 Figure 14: Ditch D4 (2022)

Description	Photograph
Ecological Value	Within the Zone of Influence
Further Work	There are suitable aquatic and terrestrial habitat present within the site to support GCN and other amphibians. The ponds (P1 and P2) that are to be removed to accommodate proposals. Ditch D2 will be impacted by a proposed access road. The water bodies fall under the Natural England Led District Level Licensing (DLL) scheme for GCN. A DLL licensing application to Natural England will also be submitted in 2024.
Dry ditch: During the site walkover in March 2022, two dry ditches were recorded within the site. Ditch D5 is connected to D4 located within the small patch of broadleaved woodland within the northern sector of the site. The ditch had a layer of leaf litter present during inspection. Ditch D6 is located within field F2, and rush is present within the ditch.	 Dry ditch (D5) in semi-natural broadleaved woodland within the north of the site (March 2022)  Dry ditch (D6) in field F2 with pockets of rush within the ditch (March 2022)
Ecological Value	Within the Zone of Influence
Further Work	Further survey is not required.

Description	Photograph
Scrub: Dense willow scrub is present along the drainage ditch within the south-west of the site. Scattered hawthorn scrub is also present within the site as per the photograph. These areas of habitat are of value to birds and small mammals. This habitat is common within the wider landscape and the loss can be mitigated with native species planting incorporated within the design and bird nest boxes erected onto retained trees and new dwellings. Scattered hawthorn scrub was identified throughout the site and willow and bramble scrub was also identified within fields F19 and F20 adjacent to the stream (D1) during the site walkover in March 2022.	 May 2019
Ecological Value	Within the Zone of Influence
Further Work	Nesting bird surveys may be required if this habitat is to be cleared between 1 March and 31 August (see section 5.3 below)

Scattered Trees: Trees occur throughout the site. Species present include predominantly silver birch and willow. The trees are of value to birds and small mammal species. Some are of value to nesting birds and roosting bats. Bats may use the trees for forage and as a commuting corridor to surrounding habitats. This type of habitat is common within the wider environment. However, the proposals should seek to retain as many of the mature scattered trees as possible as they could not be replaced in the short term.

During the site walkover in March 2022, scattered trees were identified within the garden centre carpark within the western sector of the site and along the site boundaries. Species present include cherry and conifer species. The trees were assessed to provide **negligible** potential to support roosting bats however are value to nesting birds.



May 2019



March 2022



March 2022



March 2024

Ecological Value

Within the Zone of Influence

Description	Photograph
Further work	The trees within the site provide negligible to low bat roost habitat. The trees in G15, (Drawing P.1172.19.03 <i>Tree Survey</i>, Appendix 1) are to be removed to accommodate phase one of the works. The trees were inspected for potential roost features in March 2024 and were assessed to provide negligible bat roost potential as no suitable potential roost features were identified. If works have not begun by September 2025, an updated preliminary bat roost assessment of all trees to be removed to accommodate the proposals. Trees with moderate or higher bat roost potential may require nocturnal surveys if they are to be lost within the proposals. Nesting bird surveys will be required if these tree are to be cleared between 1 March and 31 August (see section 5.3 below) Within the future phases of the site any trees that will be lost be subject to assessment for roosting bats.
Semi-natural broadleaved woodland: A small patch of broadleaved woodland lies within the northern section of the site. Species present include predominately ash, silver birch, hawthorn and goat willow. The trees currently provide negligible roosting habitat for bats, however the woodland does provide foraging habitat and a commuting corridor to surrounding habitats. This type of habitat is common within the wider environment. The semi-natural broadleaved woodland is to be retained within the current proposals.	 March 2022
Ecological Value	Within the Zone of Influence
Further work	The semi-natural broadleaved woodland is of value to bats and birds. This habitat is to be retained within the current proposals. The trees will be subject to further surveys for species including bats within the outline application for each phase of works.

Description	Photograph
Building B1: One stable is present within the site. The stable is constructed with breeze block structure with a metal corrugated roof. The building is of value to nesting birds and bats. In March 2024, the building was assessed to provide negligible potential top support roosting bats due to its construction of which would allow torture to fluctuate, along with the openness of the building making it unsuitable for roosting bats. Buildings are present within the western section of the site. The buildings comprise a garden centre and associated greenhouses and areas of storage. These buildings were demolished in 2023 under a separate prior approval application.	 B1 in May 2019
Building B2: The main garden centre building is constructed in brickwork walls with a pitched tiled roof with glass skylights towards the west. Lifted tiles and gaps were noted within the roof. Gaps were also noted at the western gable end. Wooden facias and soffits boards line the building towards the west and gaps were noted between the facias and walls. A dense coverage of ivy is present off the northern and eastern elevations. Single glazed uPVC windows sit within the building and no gaps were identified between the frames and walls. The section roof towards the east is pitched and constructed in metal corrugated sheets with metal beams. A green house is present off the southern elevation of the building and is open fronted with plastic sheets and metal beams forming the roof. B2 was assessed to provide low roost potential during the site walkover in March 2022. A nocturnal survey for bats was undertaken in 2022 (Ascerta report <i>P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill</i>) which should be read in conjunction with this report. The nocturnal survey found no evidence of bats and the building. The building was removed in 2023 under a separate prior approval application.	 B2 in March 2022

Description	Photograph
Building B3: Three connected greenhouses lie east of B1. The green houses are constructed in brickwork walls with a roof that comprises a mixture of glass and plastic sheets that are supported by metal beams. No gaps were identified between the roof sheets or between the roof and the walls and the brickwork is in good condition. Single glazed uPVC windows sit within the building and no gaps were identified between the frames and walls. B3 was assessed to provide negligible bat roost potential during the site walkover in March 2022. The building was removed in 2023 under a separate prior approval application.	 B3 in March 2022
Garages (TN15): Two small garages lie north of B1. The garages are constructed in brickwork with pebbledash rendering and a flat felt roof. Wooden facias boards surround the garages and garage doors and single glazed uPVC windows are present. The garages (TN15) were assessed to provide negligible bat roost potential during the site walkover in March 2022. The building was removed in 2023 under a separate prior approval application.	 Garages (TN15) in March 2022
Ecological Value	Within the Zone of Influence
Further work	Nesting bird surveys may be required if these buildings are to be demolished between 1 March and 31 August (see section 5.3 below).

Description	Photograph
Introduced shrubs: Areas of introduced shrubs are present within the formal landscaping of the garden centre car park present within the western sector of the site. No native invasive species cotoneaster (TN13) and rhododendron (TN14) were identified within the formal landscaping. Other species present include ivy, lavender, creeping euonymus and firethorns. The invasive species have been removed as part of the site clearance works in 2023.	 Rhododendron (TN14) identified within the formal landscaping of garden centre car park (March 2022)  Cotoneaster (TN13) identified within the formal landscaping of garden centre car park (March 2022).

Description	Photograph
Ecological Value	Within the Zone of Influence
Further work	The invasive species have been removed as part of the site clearance works in 2023 and require no further consideration within the report.
Bare ground: An area of bare ground is located within the north of the site at a gate entrance. This area consists of bare earth where vehicles have been entering the field.	No photo available
Ecological Value	N/A
Further work	N/A
Hardstanding: Thornham New Road runs through the northern section of the site between fields F1 and F3. A single lane stone track leads south from Thornham New Road and leads up to the offsite farm buildings within the east of the site. Thornham Lane runs through the southern section of the site. Tarmac hardstanding is present within the western sector of the site and comprises the garden centre car park.	 Hardstanding garden centre carpark within the western sector of the site (March 2022)
Ecological Value	N/A
Further work:	N/A

5.3 Protected and Invasive Species

Species Results	Evaluation and Recommendations
Badger: Seven records of badger setts and signs have been returned within 1km of the site. The closest record of badger was field signs located along the M62 carriageway embankment approximately 14m north of the site boundary. The closest record of a sett is located approximately 219m south-west of the site boundary. Two badger setts were identified within the site during the survey in May 2019. These outlier setts (TN1) were identified during the site walkover in March 2022 and mammal paths were noted across the bank. The location of the setts and mammal paths can be seen on P.1172.19.01A. Additional outlier setts (TN1) were identified during an updated survey for badger undertaken on 17th November 2022. The site provides good badger habitat and connectivity to the wider environment. Mammal tracks were evident throughout the north and east of the site indicating that badger may be foraging and commuting across the area.	As badger was found to be using the site for foraging, commuting and sett creation, further surveys were undertaken to determine the level of badger activity within the site. The full results will be detailed within an additional report. Measures will need to be taken to ensure no harm to badger as a result of the proposals and would likely require the inclusion of wildlife corridors along key badger commuting routes, to enable continued badger access across the site. Badger surveys and the deployment of camera traps have been carried out with the site, report P.1172.19 Badger Mitigation report should be read in conjunction to this report. Sett TN1c (drawing P.1172.19.01A) will be required to be closed under a Natural England licence, as it will be impacted within the full planning application for the site. Updated badger surveys will also be required for each phase of the works. To avoid harm to badger that may stray on to site during construction, it is advised that spoil heaps are fenced off to prevent badger access and that deep excavations have ramps to enable badger escape should they fall in. A Badger Method Statement, which will be supported by data collected by the camera trap surveys and the badger activity survey, will be produced to support the proposals at planning application stage.
Ecological Value	Within the Zone of Influence

Species Results	Evaluation and Recommendations
Bats: Thirteen roosts and 21 records of activity were returned within 1km of the site. The closest record was for a pipistrelle sp. roost located approximately 48m west of the site. Records returned included common pipistrelle, pipistrelle sp., Daubenton's bat, Noctule bat, soprano pipistrelle and bat sp. One record for European Protected Species (EPS) licence applications to destroy a resting place for common pipistrelle was returned within 1km of the site in 2016 from Magic maps. <u>Preliminary Ecological Appraisal for Bats</u> <i>Habitats:</i> The habitats on site, including the hedgerows, semi improved, improved and wet grassland and scattered trees have the potential to provide good bat foraging and commuting habitat. <i>Trees:</i> The willow and hawthorn are too young to have formed features suitable for use by bats as a roost. <i>Buildings:</i> Three buildings have been identified within the site. B1 and B2 were assessed to provide low bat roost potential and B3 was assessed to provide negligible bat roost potential.	<i>Habitat:</i> The habitats on the site provide moderate-high bat commuting and foraging suitability. Two nocturnal activity surveys for bats have carried out monthly between April 2022 and October 2022. Three static bat detectors have also deployed throughout the site for five consecutive nights per month between April 2022 and October 2022. Low levels of bat activity were recorded throughout the bat activity surveys and static deployment with common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and serotine bat species found using the site for commuting and foraging. The full results of the nocturnal bat surveys are detailed within the report <i>P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill</i> which should be read in conjunction with this report. Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site. <i>Trees:</i> The trees within the site provide negligible to low bat roost habitat. The trees were not subject to a detailed inspection during the visit in May 2019 or March 2022 and it is currently unknown which trees are to be removed for the proposals. It is recommended that if works have not begun by September 2025, an updated preliminary bat roost assessment of all trees to be removed to accommodate the proposals. Trees with moderate or higher bat roost potential may require nocturnal surveys if they are to be lost within the proposals. Updated assessments of the trees proposed to be lost within the future phases will also be required.

Species Results	Evaluation and Recommendations
	The trees in G15 (Drawing P.1172.19.03 <i>Tree Survey</i>, Appendix 1) to be removed to accommodate phase one of the works were inspected for potential roost features in March 2024 and were assessed to provide negligible bat roost potential as no suitable potential roost features were identified. Buildings: During the site walkover in 2019, building B1 present within the south of the site was assessed to provide at least low bat roost potential. B1 could not be fully inspected during the site walkover in 2022 due to access restrictions. In March 2024, B1 was assessed to provide negligible bat roost potential and will require no further surveys for bats. Buildings B2 and B3 were inspected in March 2022. B2 was assessed to provide low bat roost potential and B3 and the garages (TN15) were assessed to provide negligible bat roost potential.
	A bat emergence survey was carried out on building B2 within the site on 27th July 2022 by Lizzie Atkinson, Liz Kenyon and Fran Stallman. During the survey, no bats were recorded emerging building B2 with only common pipistrelle and noctule bat identified within the site during the survey. The full results of the nocturnal bat survey are detailed within the report <i>P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill</i> which should be read in conjunction with this report. Buildings B2 and B3 were removed in 2023 under a separate prior approval application. To enable bats continued use of retained commuting and foraging habitats on the site it is advised that lighting is kept to a minimum and designed to avoid spill into the foraging habitat i.e. the areas of broadleaf woodland. Lighting design should follow advice set out in <i>Bats and lighting in the UK- bats and the built environment series</i>, (Bat Conservation Trust, 2018).
Evaluation	Moderate-high bat commuting and foraging habitat, at least low roosting habitat.

Species Results	Evaluation and Recommendations
Breeding Birds: Two records for barn owl were returned approximately 630m south of the site. Other records of barn owl and kingfisher occur within 1km of the site. The site provides high quality foraging habitat for barn owl. Twenty records of Section 41 bird species were returned within the site boundary. These species included bullfinch, cuckoo, curlew, dunnoek, herring gull, house sparrow, lapwing, linnet, redpoll, reed bunting, skylark, song thrush and starling. Other bird records were returned within 1km of the site. Full details are included within Appendix 5. The site provides nesting and foraging habitat for these species. The habitats on site offer nesting opportunities for common bird species within trees and the species poor hedgerow. The less intensively managed grasslands offer habitat for ground nesting birds such as lapwing. During the surveys in 2019, on all three dates lapwing were recorded calling over the north of the site. Birds including blackbird, swift, robin, wood pigeon and Canada geese were noted during the walkover surveys in 2019. During the updated walkover survey in March 2022, multiple lapwings were recorded calling and flying over site (TN3). Long tailed tit, chaffinch, Canadian geese, robin, wren, wood pigeon, crow, jackdaw were recorded within the habitats on site. In May 2022 a lapwing nest was identified within F12.	There will be habitat loss for breeding and foraging birds as a result of the proposals. However, the loss can be mitigated for by appropriate provision within the development proposals, to include inbuilt nest features for birds within buildings, together with provision of tree and shrub planting to include nesting habitat and retaining areas of grassland for barn owl in within the south and north of the site. Areas of grassland under a relaxed management regime are to be lost to the proposals. Breeding bird surveys are required to inform mitigation requirements for ground nesting birds such as lapwing. Most resident and migrant birds breed in the spring and summer months, although woodpigeons and collard doves' nest throughout the year. In order to avoid harm to nesting birds, vegetation clearance, pruning and building works should not be cleared during the bird breeding season along with any demolition works on the building (between 1 March and 31 August). If vegetation or buildings need to be cleared during this period a nesting bird survey will be required, conducted by a suitably qualified ecologist, before works begin. If any active nests are observed during the survey, exclusion zones will be set up and works will not occur in these areas until nesting is complete. Breeding bird surveys were undertaken between February and August 2023 (report P.1172.19 Breeding Bird report).
Ecological Value	Within the Zone of Influence to local

Species Results	Evaluation and Recommendations
Amphibians: Records of common toad have been returned approximately 965m south-west of the site located within Hopwood Woods Local Nature Reserve (LNR). Records of great crested newt (GCN) absence were returned approximately 900m south-east of the site beyond the M6. No records of GCN presence were returned by GMEU. The waterbodies, wet grassland, hedgerows and areas of scrub and grassland provide suitable aquatic and terrestrial habitat for amphibians. Records of EPS Licences for GCN were not returned within 2km of the site from Magic maps.	The site contains suitable terrestrial and aquatic habitat for amphibians, within waterbodies hedgerows, improved, semi-improved and wet grassland, and scrub. The stream (D1) present on site was assessed as unsuitable breeding habitat for amphibians due to the speed of the flowing water. The ponds (P1 and P2) will be removed to accommodate proposals and ditch D2 will be impacted to accommodate an access road. The water bodies fall under the Natural England Led District Level Licensing (DLL) scheme for GCN. A DLL licensing application to Natural England will also be submitted in 2024. Reasonable Avoidance Measures for amphibians will also be implemented during the works. There is the potential to significantly enhance the area for amphibians by open water habitat provision within the proposals.
Ecological Value	To be confirmed
Reptiles: Two records for reptiles were returned within 1km of the site. The records were for Slow worm and grass snake located approximately 920m east of the site beyond the M6 motorway. No records of reptiles were returned for the site or the wider area, this could be due to lack of survey effort for these species rather than the species not being present on the site. The site provides suitable commuting and foraging habitat for grass snake, common lizard and slow worm.	The site provides suitable habitat for basking, sheltering, commuting and foraging reptiles. Suitable habitats include the waterbodies and watercourses on site for grass snake providing connectivity to the wider land scape. The grasslands, hedgerows embankments, manure piles, earth banks and scrub provide suitable habitat for basking, foraging, shelter and commuting grass snake, slow worm and common lizard.
Ecological Value	To be confirmed

Species Results	Evaluation and Recommendations
Other species: Three records of hedgehog were returned within 1km of the site with the closest record located approximately 235m north-east of the site. The site provides suitable foraging and sheltering habitat for hedgehog within the grassland, scrub and hedgerows. No records of otter were returned within 1km of the site. Two record of white clawed crayfish was returned within 1km of the site. This was identified within the Rochdale canal with the closest recording to the site located approximately 118m south-west of the site. Records of water vole and water vole signs were returned located within the Rochdale canal approximately 200m south-west of the site. The watercourses may provide suitable habitat for water vole and crayfish. They may also provide commuting corridors and forage for otter. Two records for brown hare were returned within the site and an additional two records were returned east of the site within 1km. Brown hare were recorded on the site during within the semi improved grassland fields within the north of the site (TN2). A dead brown hare was recorded near the entrance to off-site farm buildings TN7. The site provides suitable habitat for hares within the semi improved and improved grassland areas. Other species noted on the site during 2019 include fox and rabbit. A rabbit (TN2) and two brown hare (TN8) were identified within the site during the site walkover in March 2022.	The site provides suitable habitat for brown hare and brown hare were recorded within the site during the initial walkover in 2019. Transect surveys were recommended. Brown hare surveys were carried out in November 2021, December 2021, January 2022 and February 2022 and a small population of brown hare were found to be present onsite. Results, Reasonable Avoidance Measures (RAMs) and appropriate mitigation are detailed in Ascerta report <i>P.1172.19 Brown Hare Survey Report Manchester Road</i>. Prior to the next stage of the development a brown hare welfare and mitigation strategy will be produced and implemented. The site provides suitable habitat for water vole and evidence of water vole (footprints) have been identified within the ditch (D1) during the survey for water vole on 14th October 2022. An updated survey was carried out on 13th March 2024. The results and further recommendations for the species are detailed in the Ascerta letter <i>P.1172.19A Water Vole Survey Letter Report, Land at Stakehill</i>. The stream substrate is unknown due to the overgrown vegetation along the banks of the watercourses. Ditch D1 was assessed for white claw crayfish suitability on 13th March 2024, however, provides limited habitat for the species due to the lack of stones within ditch bed which lack suitable areas for refuge. The ditch is not hydrologically linked to Rochdale Canal SSSI/SAC/SBI, where white clawed crayfish have previously been recorded, therefore it is considered that white-clawed crayfish are unlikely to be present within the site.

Species Results	Evaluation and Recommendations
	Habitat exists for hedgehog and hedgehog could be influenced by the proposals as they have large territories. Therefore, it is recommended that Reasonable Avoidance Measures (RAMs) be employed in respect to hedgehog during the works. These include: • Construction materials stored on pallets so as not to create a hedgehog refuge area; • Existing refuge areas (brash pile and bramble scrub) should be removed by hand so hedgehog within are not harmed during their removal; To enable hedgehog continued use of the site it is advised that gaps of at least 13cm by 13cm are left under any new garden fences to enable hedgehog to roam freely within the area following development. To mitigate for the loss of habitat that could be used by hibernating hedgehog (such as bramble scrub) it is recommended that a hedgehog hibernaculum is provided within the landscaping.
Ecological Value	Within the Zone of Influence

Species Results	Evaluation and Recommendations
Invasive Species: During the survey, Himalayan balsam was identified in three locations within the site. the locations where Himalayan balsam where recorded are displayed as Target Note 8 on the Phase one habitat plan P.1172.19.01. During the site walkover on 17th March 2022, invasive species Himalayan Balsam was not found on site however the walkover survey was conducted in the sub-optimal survey period for invasives, and it is likely that the plant had not yet germinated. During the site walkover on 22nd March 2022, invasive species cotoneaster (TN13) and rhododendron (TN14) were identified within the formal landscaping around the garden centre car park within the western section of the site. These locations can be identified on plan P.1172.19.01B within Appendix 1. During the bat surveys conducted in September 2022, Himalayan Balsam (TN16) was identified along the southern bank of the stream, within F22 and along the track the lines the eastern boundary of fields F13, F8 and F7.	Invasive species are listed in Schedule 9 Part II of the Wildlife and Countryside Act 1981. It is advised that an updated survey for invasive species to be undertaken between May and October to support any future planning application for the site. Production of an invasive species method statement will be required to avoid the spread of and Himalayan Balsam (TN16) into the wider landscape during the proposed works. An updated checks for Himalayan balsam will also be undertaken within the site in the growing season of 2024 to ensure the species has not spread.
Ecological Value	N/A

6.0 Assessment & Recommendations

6.1 Designated Sites and Habitats

The site lies within a Natural England SSSI Impact Risk Zone. Natural England will need to be consulted for this type of planning proposal as the proposals are for the erection of residential dwellings and the likely impacts are 'Residential development of 100 units or more'. The influence of the proposals on the statutory and non-statutory protected sites within the search area cannot be confirmed until the proposals have been finalised.

The habitats on site comprise semi-improved grassland, improved grassland, semi-natural broadleaved woodland, scrub, hardstanding, introduced shrubs, bare ground, building, tall ruderal, scattered trees, woodland, wet grassland, water bodies, water courses and hedgerows with varying species richness. These habitats are considered to have an ecological value of **within the Zone of Influence** of the site or lower. Some of these habitats will be lost to the proposals, such as the areas of semi-improved grassland. It is recommended that the hedgerows be retained and habitats within the northern and southern sections of the site are retained and enhanced with suitable native species provide shelter and forage for species as well as provide connectivity to the surrounding landscape. New hedgerow planting within the site is also recommended to improve the connectivity for species such as small mammals between existing and new habitats. Improving the species diversity of hedgerows and the woodlands, together with wildflower planting, will help to mitigate for loss of vegetated habitat. The inclusion of new habitats and the improvement of existing habitats will improve the ecological connectivity across the site following development.

Areas of more valuable habitat have been marked on drawing **P.1172.19.02** in **Appendix 2** as a potential constraint to development (pink). Although there could be some development in these areas, they will require greater compensatory measures than other areas such as the improved grassland. If retained, these pink areas could be used as potential areas for ecological enhancement in order to meet the biodiversity net gain requirements. Areas marked in blue are areas that could be significantly enhanced in order to meet the biodiversity net gain requirements, for example by hedgerow or screening belt planting. The majority of blue areas are marked along the site boundaries, in order to improve connectivity to offsite habitats. The areas are indicative, and there is some flexibility with zones for retention and enhancement to fit in with the development requirements for access for example.

Bats

The trees on site have been assessed to provide between **negligible** and **low** roosting potential for bats. It is recommended that if works have not begun by September 2025 an updated preliminary bat roost assessment of trees to be lost to the proposals to be undertaken to further inform proposals. Trees assessed to provide moderate or higher bat roost potential will be require additional nocturnal surveys. Further ground level assessment of the trees to be lost to future phases will be required prior to any works.

Building B1 has been assessed to provide **negligible** bat roost potential and therefore no further survey effort was required. As building B3 and the Garages (TN15) were assessed to provide **negligible** bat roost potential, no further survey effort for bats is required.

A bat emergence survey was carried out on building B2 within the site on 27th July 2022 by Lizzie Atkinson, Liz Kenyon and Fran Stallman. During the survey, a moderate level of bat activity was recorded during the survey on building B2 with only common pipistrelle and noctule bat identified within the site during the survey. No bats were recorded emerging building B2 during the survey and therefore it is considered that bats are not using building B2 as a roost at the time of the survey. Buildings B2, B3 and the garages (TN15) were removed in 2023 under a prior planning application.

The habitats on the site are considered to provide **moderate-high** bat commuting and foraging suitability. Two nocturnal activity surveys for bats have been carried out monthly between April 2022 and October 2022. Three static bat detectors have also been deployed throughout the site for five consecutive nights per month between April 2022 and October 2022.

Low levels of bat activity were recorded throughout the bat activity surveys and static deployment with common pipistrelle, soprano pipistrelle, noctule, brown long-eared bat and serotine bat species found using the site for commuting and foraging. Activity was predominately concentrated to the north and east of the site, where habitats are to be retained and enhanced. The full results of the nocturnal bat surveys are detailed within the report *P.1172.19 Bat Nocturnal Surveys and Static Detector Deployment Land at Stakehill* which should be read in conjunction with this report.

Bat activity surveys and the deployment of static bat detectors will be undertaken in the full application section of the site in 2024, with further surveys secured by condition for the future phases of the site.

If at a later stage, bats are found to be roosting within the building or trees, a licence from Natural England will be required for the destruction of a bat roost. The site also provides habitat for nesting birds and badger. Further works to be taken in relation to protected species are presented in **Section 5.3** above

Amphibians

The site provides suitable aquatic and terrestrial habitat for amphibians. The ponds (P1 and P2) will be removed to accommodate proposals and D2 will be impacted by a proposed access road. The water bodies fall under the Natural England Led District Level Licensing (DLL) scheme for GCN. A DLL enquiry form will be submitted to Natural England.

To avoid harm to amphibians during works it is recommended that an Amphibian Reasonable Avoidance Measures (RAMS) Method Statement is produced and implemented during the works.

Breeding birds

There will be habitat loss for breeding and foraging birds as a result of the proposals. However, some nesting habitat will be retained, and the loss can be mitigated for by:

- appropriate provision within the development proposals, to include inbuilt nest features for birds within buildings; and
- provision of tree and shrub planting to include nesting habitat.

Lapwing were identified calling above the semi-improved grassland fields within the north of the site in May 2019 and throughout the site in March 2022. Suitable nesting habitat for lapwing is to be impacted by the proposals, therefore works should be undertaken outside of the nesting bird season (1st March- 31st August inclusive) where possible. Breeding bird surveys were carried out in 2023 and the results and recommendations are detailed within a separate report *P.1172.19 Ascerta Breeding Bird Survey Report, Land at Stakehill*.

Vegetation removal should avoid the nesting bird season (1st March – 31st August inclusive). If works cannot avoid the nesting bird season a nesting bird check undertaken by a suitably qualified ecologist will be required prior to works commencing.

Badger

Badger were found to be using the site during the site walkovers in May 2019, March 2022 and March 2024 for foraging, commuting and sett creation and further surveys are currently being carried out by Ascerta to determine the level of badger activity within the site. Measures will need to be taken to ensure no harm to badger as a result of the proposals and would likely require the inclusion of wildlife corridors along key badger commuting routes, to enable continued badger access across the site.

A Badger Reasonable Avoidance Measures (RAMS) Method Statement is to be produced and implemented during the works to avoid harm to this species. The RAMS should include:

- Construction materials stored on pallets so as not to create a badger refuge area; and
- Existing refuge areas (bramble scrub) should be removed by hand so badger within are not harmed during their removal.

To avoid harm to badger that may stray on to site during construction it is advised that spoil heaps are fenced off to prevent badger access and that deep excavations have ramps to enable badger escape should they fall in. A Badger Mitigation Strategy been produced by Ascerta and the full results from the surveys and recommendations are detailed within the separate *P.1172.19A Badger Mitigation Strategy and Works Schedule, Land at Stakehill*.

Other Species

The site provides suitable habitat for brown hare and brown hare were recorded within the site during the initial walkover in May 2019 and the updated appraisal in March 2022. Transect surveys were recommended to assess the current population of brown hares on site. Brown hare surveys were carried out in November 2021, December 2021, January 2022 and February 2022 and a small population of brown hare were found to be present onsite. Results, Reasonable Avoidance Measures (RAMs) and mitigation are detailed in Ascerta report *P.1172.19 Brown Hare Survey Report Manchester Road*.

Prior to the next stage of the development a brown hare welfare and mitigation strategy will be produced and implemented.

The site provides suitable habitat for water vole and evidence of water vole (footprints and burrow) have been identified within the ditch (D1) during the surveys for water vole on 14th October 2022 and March 2024. The results and further recommendations for the species are detailed in the Ascerta letter *P.1172.19 Water Vole Survey Letter Report, Land at Stakehill*.

White-clawed crayfish records were returned within the Rochdale Canal SSSI/SAC/SBI, however as Rochdale Canal is not hydrologically linked to the water courses within the site, it is considered that white-clawed crayfish are unlikely to be present within the site and do not require further consideration.

Habitat exists for hedgehog and hedgehog could be influenced by the proposals as they have large territories. Reasonable Avoidance Measures (RAMs) have produced and will be implemented in respect to hedgehog during the works (report P.1172.19 Small Mammal and Amphibians Reasonable Avoidance Measures). These include:

- Construction materials stored on pallets so as not to create a hedgehog refuge area;
- Existing refuge areas (brash pile and bramble scrub) should be removed by hand so hedgehog within are not harmed during their removal;

To mitigate for the loss of habitat that could be used by hibernating hedgehog (such as bramble scrub) it is recommended that a hedgehog hibernaculum is provided within the landscaping within retained habitats within the north or south of the site. Gaps of 13cm by 13cm would be required under new fencing to enable hedgehog continued access across the area following development.

6.2 Enhancements

In order to meet requirements for biodiversity protection and enhancement outlined within the NPPF, it is recommended that ecological enhancements are included. These need to be confirmed once the proposals are finalised but could include:

1. Provision of bird boxes (25mm or 32mm entrance hole boxes, house sparrow terraces, swift boxes, house martin cups, barn owl boxes), attached to retained trees and new buildings as appropriate on site;
2. Provision of bat boxes (e.g. Schwegler 2F type) attached to a retained tree on site and provision of bat boxes (e.g. Beaumaris woodstone box, Vivara pro products ibstock bat bricks) attached to or incorporated within new buildings;
3. Provision of hedgehog, amphibian and reptile hibernacula and bug boxes;
4. Retain hedgerows and trees where possible and replace any trees to be removed from a site at a ratio of 2:1;
5. Retain and enhance habitats within the northern and southern sections of the site and enhance existing water courses on site to include oak, hazel, field maple, holly, hawthorn, silver birch, crab apple, rowan and bird cherry as tree species, a woodland wildflower mix and bulb planting to include English bluebell, native daffodil and snowdrop;
6. Wildflower planting incorporating meadow flower mix to include meadow buttercup, meadow fescue, sweet vernal grass, common knapweed, vetch, cranesbill and clover species;
7. Hedgerow planting to improve connectivity between existing and newly created habitats to include hawthorn, honeysuckle, blackthorn, hazel and holly; and
8. Suitable landscaping within the residential development incorporating species that provide a food or shelter resource to wildlife such as hawthorn, lavender, rowan, hazel, field maple, crab apple, pear, bird cherry, spring bulbs and late flowering species.

7.0 Conclusions

The impact on the local ecology as a result of the proposals cannot be fully confirmed until the proposals have been finalised. However, provided the recommendations detailed above are followed the impact on the local ecology should be limited and there could be net gain in biodiversity. In summary, these include:

1. If works have not commenced by September 2025, an updated site visit and preliminary bat roost assessment of trees that will be lost to the proposals for the detailed element of the application to determine the suitability of any features that may be present to support a bat roost and to inform further recommendation if required;
2. An application to Natural England for the closure for badger sett TN1c within the detailed element of the application (report P.117219 Ascerta Badger Mitigation Strategy);
3. Further surveys for badger prior to the future phases of the development, to establish the level of badger activity within the site (see section 5.3);
4. Implementation of a hedgehog RAMS to avoid any harm to this species during the proposed works;
5. Implementation of a badger RAMS to avoid any harm to this species during the proposed works and a Badger Mitigation Strategy;
6. Implementation of an amphibian RAMS to avoid any harm to this species during the proposed works;
7. An updated survey for water vole immediately prior to the commencement of development and site supervision for all works within 5m of the onsite ditch (D1);
8. Implementation of a rabbit RAMS to avoid any harm to this species during the proposed works (see section 6.0 and Ascerta letter P.1172.19A Ascerta Water Vole Survey Letter Report, Land at Stakehill);
9. As part of any subsequent Reserved Matters Application, a brown hare welfare and mitigation strategy will be produced and implemented;
10. An updated invasive species survey (between March and September) for Himalayan balsam (TN16) to confirm the location of the invasive species across the site. Further surveys for invasive species will be required prior to the start of works at each future phase;
11. An updated invasive species survey (between March and September) for Himalayan balsam (TN16) to confirm the location of the invasive species across the site. Further surveys for invasive species will be required prior to the start of works at each future phase;

12. Avoiding vegetation removal or any demolition or roof works of the buildings during the bird breeding season (1 March to 31 August inclusive) or undertaking a survey for breeding birds and ensuring any active nests found are protected within a suitable buffer zone until they are no longer in use;
13. Mitigation for the loss of nesting bird habitat with the provision of bird boxes such as open fronted nest boxes, 26mm hole nest boxes and 32mm hole nest boxes;
14. Provision of a hedgehog hibernaculum on site to mitigate for loss of the bramble scrub, or enhance the site for hedgehog;
15. Provision of gaps of 13cm by 13cm under fences to enable hedgehog continued access across the site following development;
16. Lighting sensitive to the needs of bats, designed to avoid overspill onto key habitats including the River Beal and any identified during the bat activity surveys;
17. Habitat enhancement with the provision of bird and boxes, hedgehog, amphibian, and reptile hibernacula and bug boxes. The provision of new ponds, woodland or shelter belts and hedgerow planting to improve connectivity between existing and new habitats could also enhance the site for wildlife. Suitable landscaping within the residential development incorporating species that provide a food or shelter resource to wildlife would also be beneficial to biodiversity;
18. Any future SUDS or attenuation basin to include native planting to enhance the ecology and biodiversity of the proposed site; and
19. Production of a Management Plan to ensure the long-term commitments to manage the planting, protection and enhancement of biodiversity in and around a new development site.

If the above recommendations are fully implemented, they should be enough to support the continued allocation of the site for redevelopment. The recommendations will enable the proposals to meet the current requirements of national and local guidance and legislation including the NPPF and Policies NE3, NE4, NE5, NE8 and NE9 and policy G7 within Rochdale Metropolitan Borough Council Unitary Development Plan (Adopted June 2006) and the Rochdale Core Strategy (Adopted October 2016 and updated February 2017). The Places For Everyone Joint Development Plan Policy JP-G8: A Net Enhancement of Biodiversity and Geodiversity, adopted March 2024 has also been considered within the report.

8.0 References

- Bat Conservation Trust (2018) *Bats and lighting in the UK- bats and the built environment series 08/18* Bat Conservation Trust, London.
- BTHK 2018. *Bat Roosts in Trees-A Guide to Identification and Assessment for Tree -Care and Ecology Professionals*. Exeter: Pelagic Publishing.
- CIEEM (2017) *Guidelines on Ecological Report Writing*. Chartered Institute of Ecology and Environmental Management, Winchester
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- Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.
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Appendix 1



Key

- Site boundary
- J1.3 - Disturbed land
- B4 - Improved grassland
- B6 - Semi-improved grassland
- B5 - Marsh/marshy grassland
- J4 - Bare ground
- A1.1.1 - Semi-natural Broadleaved woodland
- A2.1 - Scrub
- C3.1 - Tall ruderal
- J1.4 - Introduced shrub
- J3.6 - Buildings
- G1.1 - Standing water
- G2.1 - Running water
- J2.6 - Dry ditch
- J2.1.2 - Hedgerow
- Scattered trees
- Mammal tracks
- Target note

- TN1 - Outlier badger sett
- TN2 - Rabbit warren
- TN3 - Lapwing
- TN4 - Ephemeral waterbody
- TN5 - Geese droppings
- TN6 - Canadian Geese
- TN7 - Stone pile
- TN8 - Rabbit
- TN9 - Brown hare
- TN10 - Rubble pile
- TN11 - Manure pile
- TN12 - Equestrian exercise arena
- TN13 - Cotoneaster
- TN14 - Rhododendron
- TN15 - Garages
- TN16 - Himalayan Balsam

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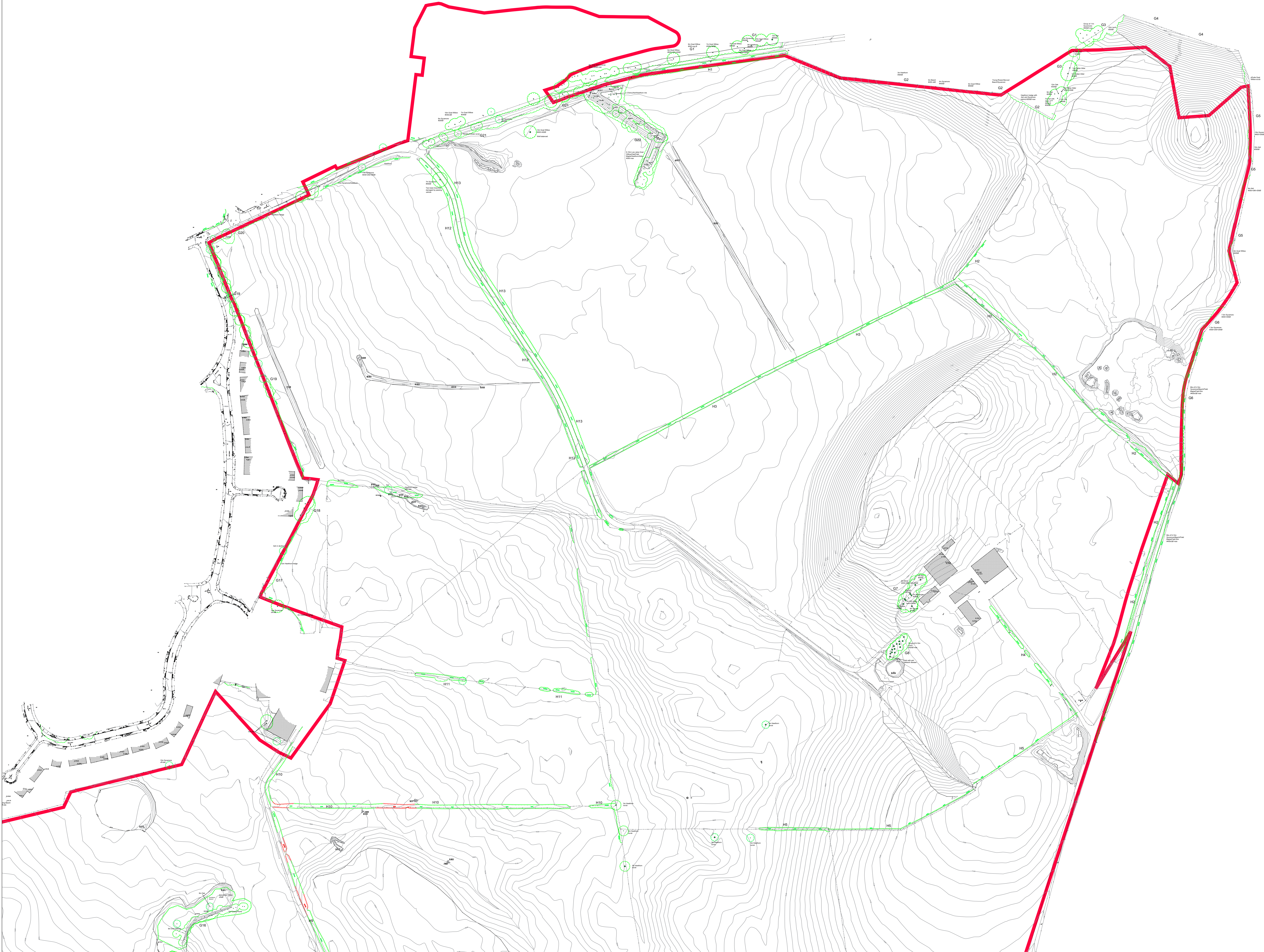
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www.landscapetreesecology.com

CLIENT:
Redrow Homes

PROJECT:
Manchester Road, Slattocks

DRAWING TITLE:
Phase one habitat survey

SCALE: NTS@A3	DRAWN BY: LA	DRAWING No: P.1172.19.01
DATE: 31/10/2022	CHKD BY: LK	REV: B

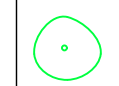


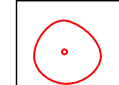
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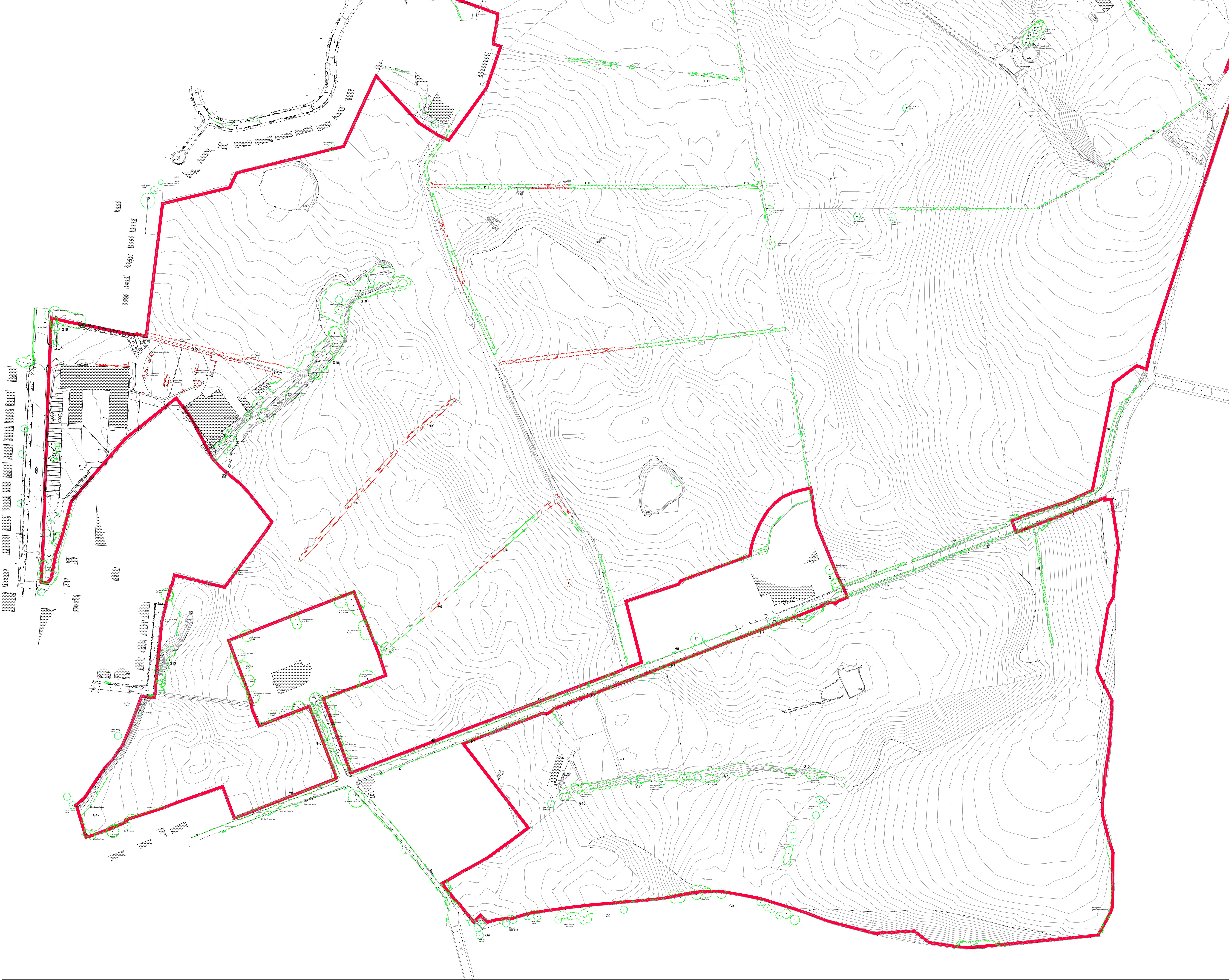
KEY

Existing tree to be retained

Existing tree to be removed

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CLIENT: Redrow Homes Ltd			
PROJECT: Land at Stake Hill, M24 2SH			
DRAWING TITLE: Tree Survey (Sheet 1 of 2)			
SCALE: 1:1000 @ A0		DRAWING No:	
DRAWN BY: KP	CHKD BY: CP	DATE: 23/08/2022	REV: P.1172.22.03



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KEY

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- Existing tree to be removed

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CLIENT:
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PROJECT:
Land at Stake Hill, M24 2SH

DRAWING TITLE:
Tree Survey
(Sheet 2 of 2)

SCALE:
1:1000 @ A0

DRAWN BY:
KP

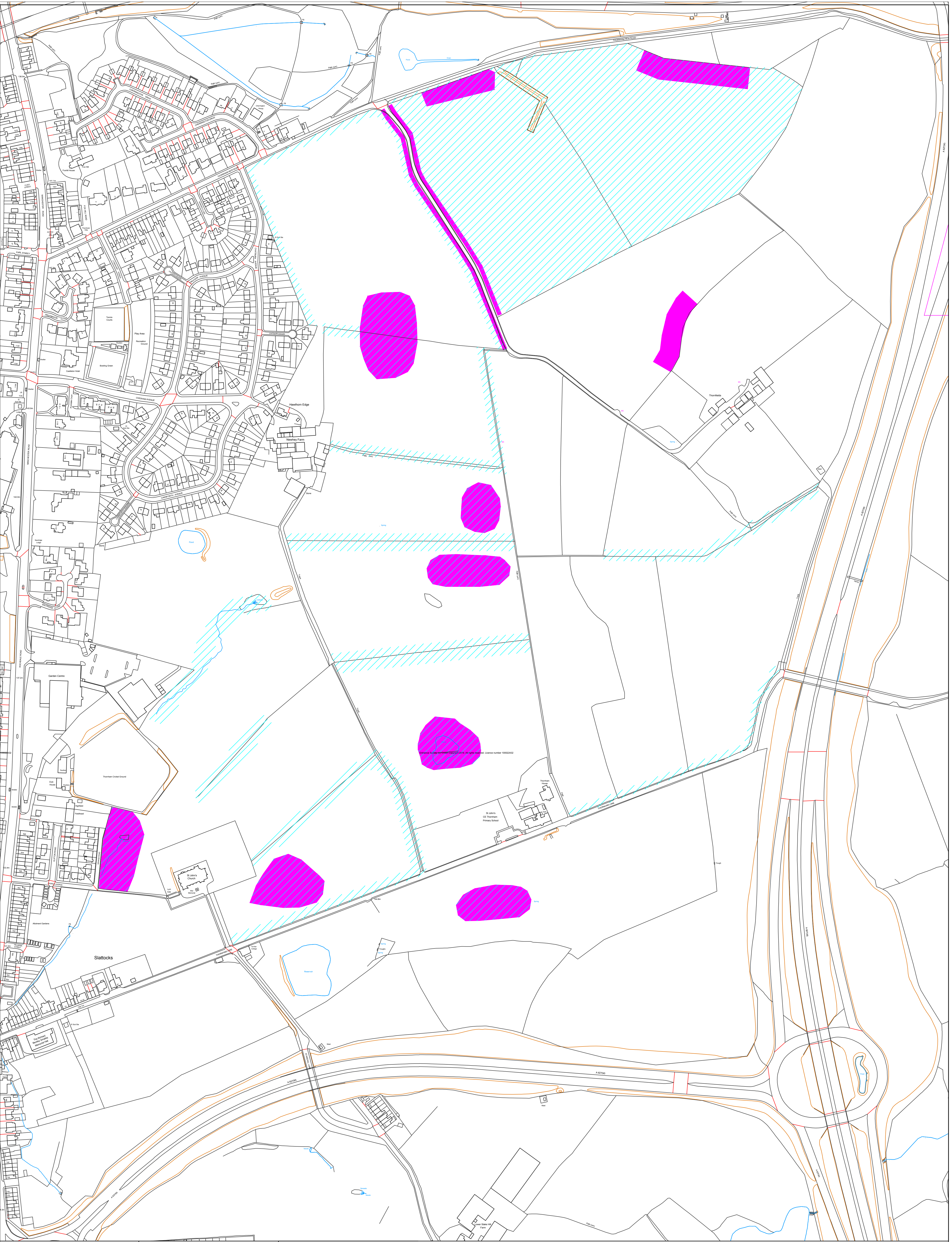
CHKD BY:
CP

DATE:
23/08/2022

DRAWING No:
P.1172.22.03

REV:
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Appendix 2



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CLIENT: Redrow Homes Ltd	
PROJECT: Manchester Road, Slattocks	
DRAWING TITLE: Ecological Constraints & Opportunities Plan	
SCALE: 1:2000@A1	DRAWN BY: CP
DATE: 17/06/2019	CHKD BY: TA
	P.1172.19.02

KEY

Constraints (areas of more valuable ecological habitat)

Opportunities for enhancement of habitat

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S:\All Jobs\1172.19 Manchester Road, Slattocks, M24 2SH\Drawings\P.1172.19.02 Ecological Constraints & Opportunities Plan

Appendix 3

Flora Species List

English Name	Scientific Name
Alder	<i>Alnus glutinosa</i>
Ash	<i>Fraxinus excelsior</i>
Beech	<i>Fagus sylvatica</i>
Bindweed	<i>Convolvulus arvensis</i>
Bird's foot trefoil	<i>Lotus corniculatus</i>
Bistort	<i>Polygonum bistorta</i>
Bittercress	<i>Cardamine sp.</i>
Blackthorn	<i>Prunus spinosa</i>
Bramble	<i>Rubus fruticosus agg</i>
Broadleaved dock	<i>Rumex obtusifolius</i>
Brome	<i>Bromus sp.</i>
Cherry	<i>Prunus sp.</i>
Chickweed	<i>Stellaria media</i>
Cleavers	<i>Galium aparine</i>
Clover	<i>Trifolium repens</i>
Cock's-foot	<i>Dactylis glomerata</i>
Common bent	<i>Agrostis capillaris</i>
Common mouse ear	<i>Cerastium fontanum</i>
Common daisy	<i>Bellis Perennis</i>
Cow parsley	<i>Anthriscus sylvestris</i>
Creeping bent grass	<i>Agrostis stolonifera</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping euonymus	<i>Eunymus fortunei</i>
Creeping thistle	<i>Cirsium arvense</i>
Crested dog's-tail	<i>Cynosurus cristatus</i>
Cuckoo flower	<i>Cardamine pratensis</i>
Curled dock	<i>Rumex crispus</i>
Dandelion	<i>Taraxacum officinale</i>
Elder	<i>Sambucus nigra</i>
False oat grass	<i>Arrhenatherum elatius</i>
Field maple	<i>Acer campestre</i>
Firethorn	<i>Pyracantha</i>
Forget-me-not	<i>Myosotis sp.</i>
Foxglove	<i>Digitalis purpurea</i>
Garlic mustard	<i>Alliaria petiolata</i>
Goat willow	<i>Salix caprea</i>
Hawthorn	<i>Crataegus monogyna</i>
Herb robert	<i>Geranium robertianum</i>
Himalayan balsam*	<i>Impatiens glandulifera</i>
Hogweed	<i>Heracleum sphondylium</i>
Holly	<i>Ilex aquifolium</i>
Honeysuckle	<i>Lonicera periclymenum</i>
Horse chestnut	<i>Aesculus hippocastanum</i>
Horsetail	<i>Equisetum sp.</i>
Ivy	<i>Hedera Helix</i>
Lavender	<i>Lavandula</i>
Leyland cypress	<i>Cupressus × leylandii</i>
Marsh thistle	<i>Cirsium palustre</i>
Meadow buttercup	<i>Ranunculus acris</i>
Meadow grass	<i>Poa sp.</i>
Meadow foxtail	<i>Alopecurus pratensis</i>
Moss	<i>Sphagnum</i>
Oak	<i>Quercus robur</i>
Perennial ryegrass	<i>Lolium perenne</i>

English Name	Scientific Name
Pine	<i>Pinus sp.</i>
Pond weed	<i>Potamogeton natans</i>
Privet	<i>Ligustrum vulgare</i>
Ragwort	<i>Senecio jacobaea / Jacobaea vulgaris</i>
Red campion	<i>Silene dioica</i>
Red fescue	<i>Festuca rubra</i>
Redshank	<i>Polygonum persicaria</i>
Reed canary grass	<i>Phalaris arundinacea</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Rose	<i>Rosa sp.</i>
Scentless mayweed	<i>Tripleurospermum inodorum</i>
Shepard's purse	<i>Capsella bursa-pastoris</i>
Silver birch	<i>Betula pendula</i>
Soft rush	<i>Juncus effusus</i>
Sow thistle	<i>Sonchus sp.</i>
Stinging nettle	<i>Urtica dioica</i>
Sweet vernal	<i>Anthoxanthum odoratum</i>
Sycamore	<i>Acer pseudoplatanus</i>
Vetch	<i>Vicia sp.</i>
Whitebeam	<i>Sorbus aria</i>
White clover	<i>Trifolium repens</i>
Willowherb	<i>Epilobium sp.</i>
Yellow flag iris	<i>Iris pseudacorus</i>
Yorkshire fog	<i>Holcus lanatus</i>

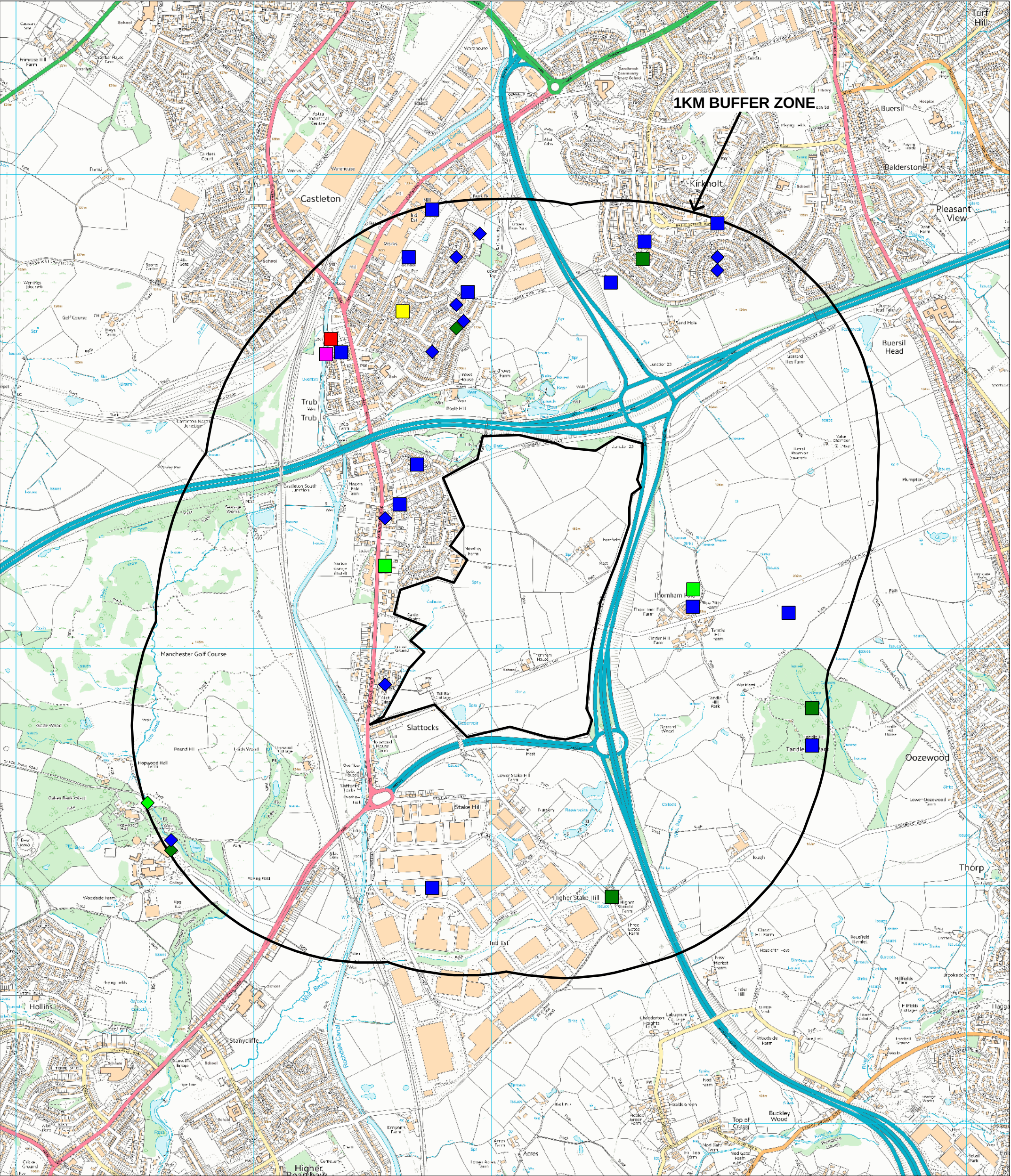
Fauna Species List

English Name	Scientific Name
Black bird	<i>Turdus merula</i>
Brown hare	<i>Lepus europaeus</i>
Canada Goose	<i>Branta canadensis</i>
Chaffinch	<i>Fringilla coelebs</i>
Coot	<i>Fulica</i>
Crow	<i>Corvus</i>
Jackdaw	<i>Corvus monedula</i>
Lapwing	<i>Vanellus vanellus</i>
Long tailed tit	<i>Aegithalos caudatus</i>
Magpie	<i>Pica pica</i>
Mallard	<i>Anas platyrhynchos</i>
Moorhen	<i>Gallinula</i>
Reed bunting	<i>Emberiza schoeniclus</i>
Robin	<i>Erithacus rubecula</i>
Swallow	<i>Hirundo rustica</i>
Wood pigeon	<i>Columba palumbus</i>
Wren	<i>Troglodytidae</i>

Target Notes

Target Note Number	Description
TN1	Outlier badger sett
TN2	Rabbit warren
TN3	Lapwing
TN4	Ephemeral waterbody
TN5	Geese droppings
TN6	Canadian Geese
TN7	Stone pile
TN8	Rabbit
TN9	Brown hare
TN10	Rubble pile
TN11	Manure pile
TN12	Equestrian exercise arena
TN13	Cotoneaster
TN14	Rhododendron
TN15	Garages
TN16	Himalayan Balsam

Appendix 4



- KEY**
- BAT ROOSTS**
- ◆ BAT SP
 - ◆ COMMON PIPISTRELLE
 - ◆ PIPISTRELLE SP
- BATS OTHER SIGNS**
- BAT SP
 - COMMON PIPISTRELLE
 - DAUBENTON'S BAT
 - NOCTULE BAT
 - PIPISTRELLE SP
 - SOPRANO PIPISTRELLE

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ECOLOGICAL SEARCH - SD 8936 0942
MANCHESTER ROAD - MAP 4

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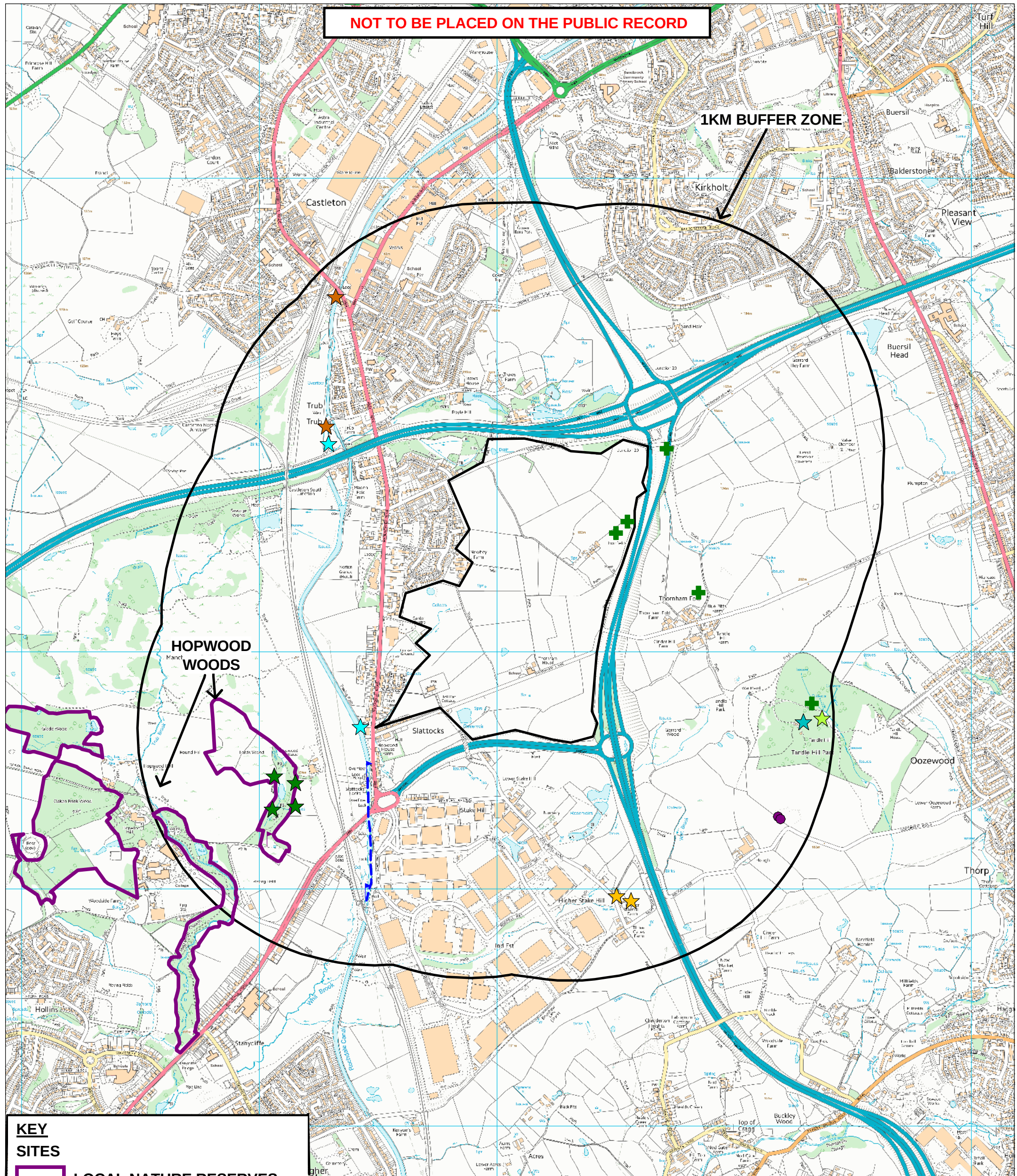


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KEY

SITES

LOCAL NATURE RESERVES

PROTECTED SPECIES

- GREAT CRESTED NEWT
- GREAT CRESTED NEWT ABSENCE
- EUROPEAN WATER VOLE
- EUROPEAN WATER VOLE SIGNS
- BROWN HARE
- BARN OWL
- FLOATING WATER-PLANTAIN
- GRASS SNAKE
- KINGFISHER
- SLOW-WORM
- WHITE-CLAWED CRAYFISH

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MANCHESTER ROAD - MAP 2

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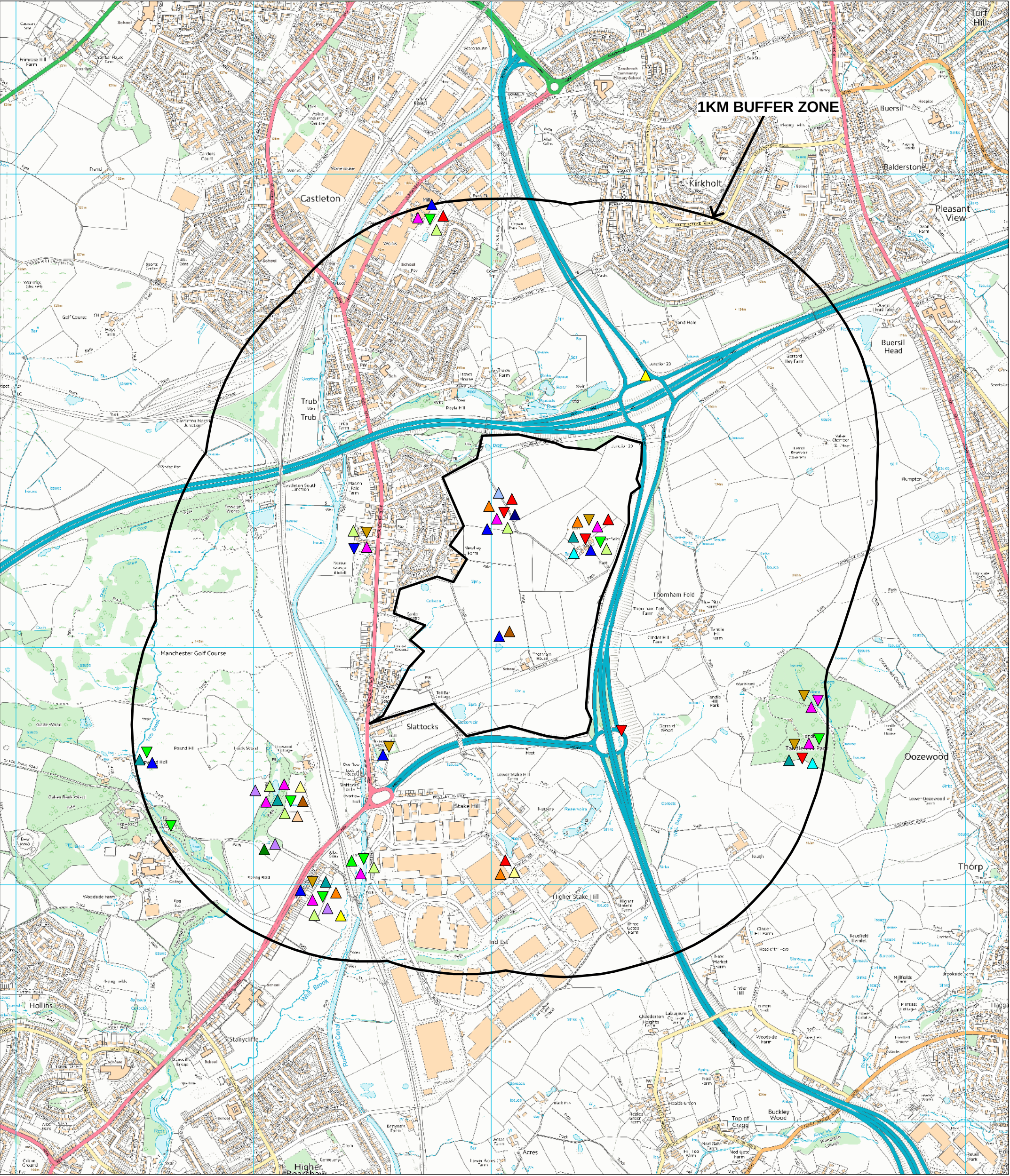
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KEY
SECTION 41 SPECIES

- | | |
|---------------------|----------------|
| ▲ BULLFINCH | ▲ LINNET |
| ▲ COMMON TOAD | ▲ MUD SNAIL |
| ▲ CUCKOO | ▲ REDPOLL |
| ▲ CURLEW | ▲ REED BUNTING |
| ▲ DUNNOCK | ▲ S41 MOTH |
| ▲ GR.HOPPER WARBLER | ▲ SKYLARK |
| ▲ GREY PARTRIDGE | ▲ SMALL HEATH |
| ▲ HEDGEHOG | ▲ SONG THRUSH |
| ▲ HERRING GULL | ▲ STARLING |
| ▲ HOUSE SPARROW | ▲ WILLOW TIT |
| ▲ LAPWING | |

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MANCHESTER ROAD - MAP 5

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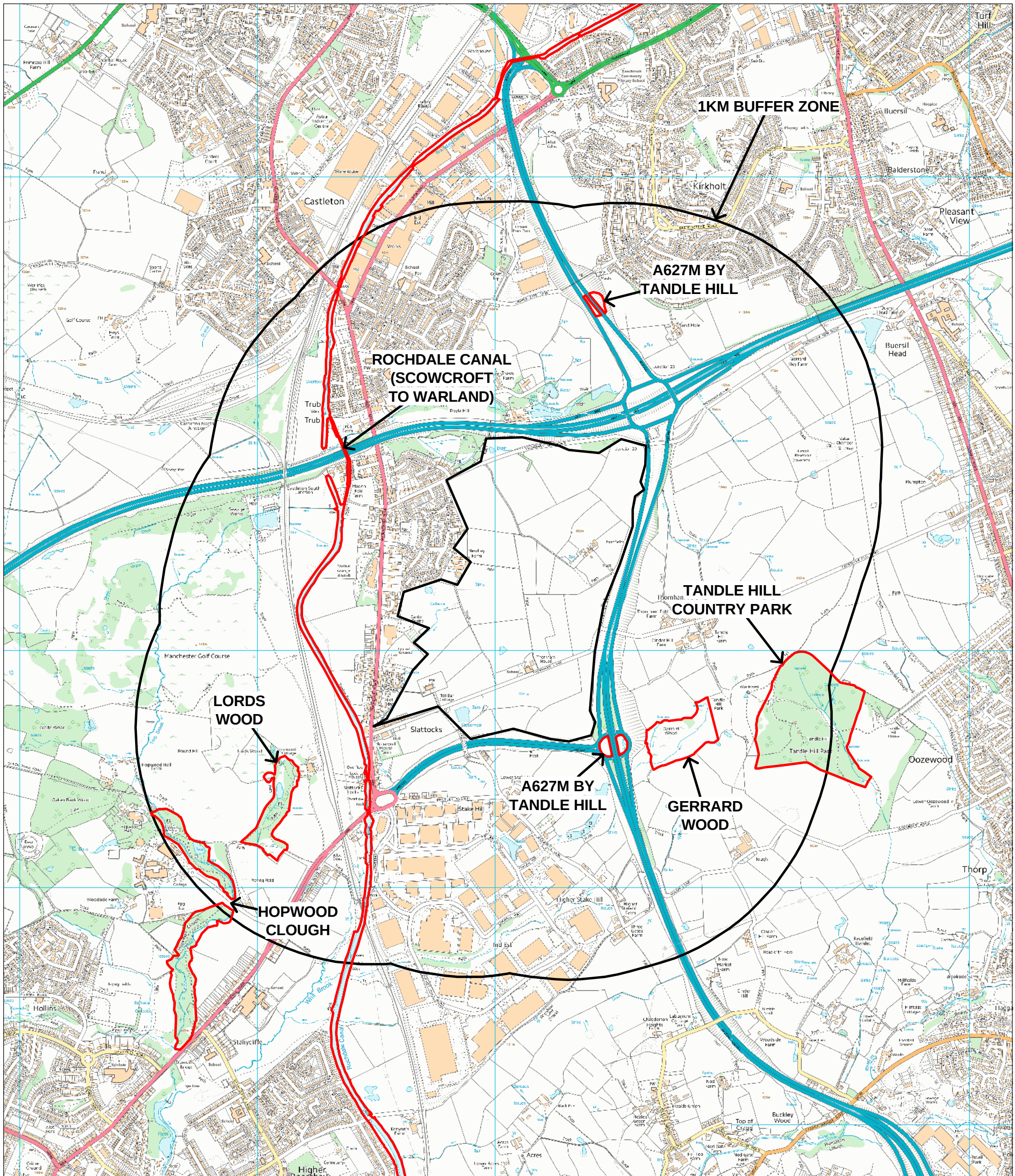
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KEY

SITE OF BIOLOGICAL IMPORTANCE

SBI BOUNDARY

**GREATER MANCHESTER ECOLOGY UNIT
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MANCHESTER ROAD - MAP 1**

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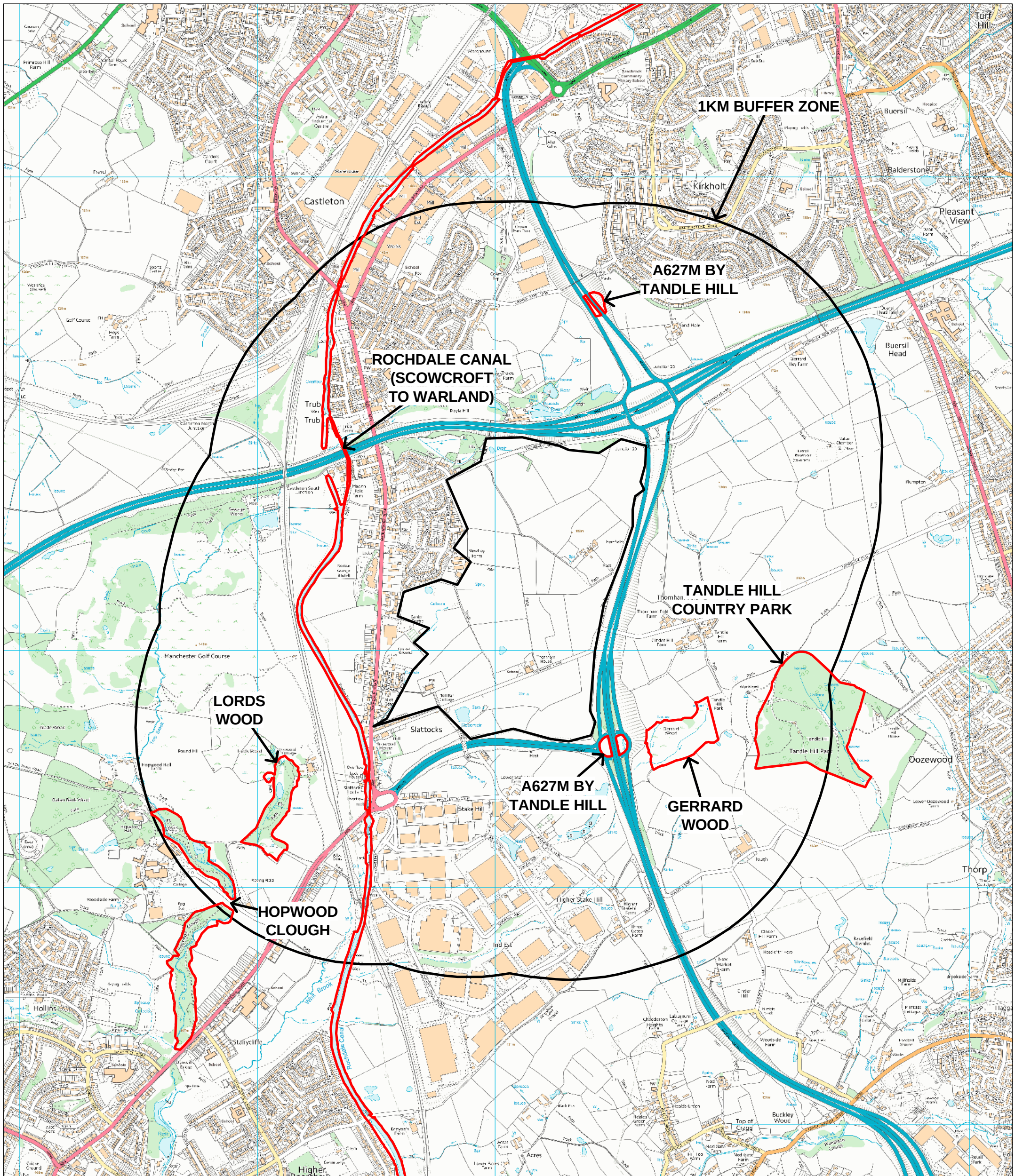
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KEY

SITE OF BIOLOGICAL IMPORTANCE

SBI BOUNDARY

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MANCHESTER ROAD - MAP 1**

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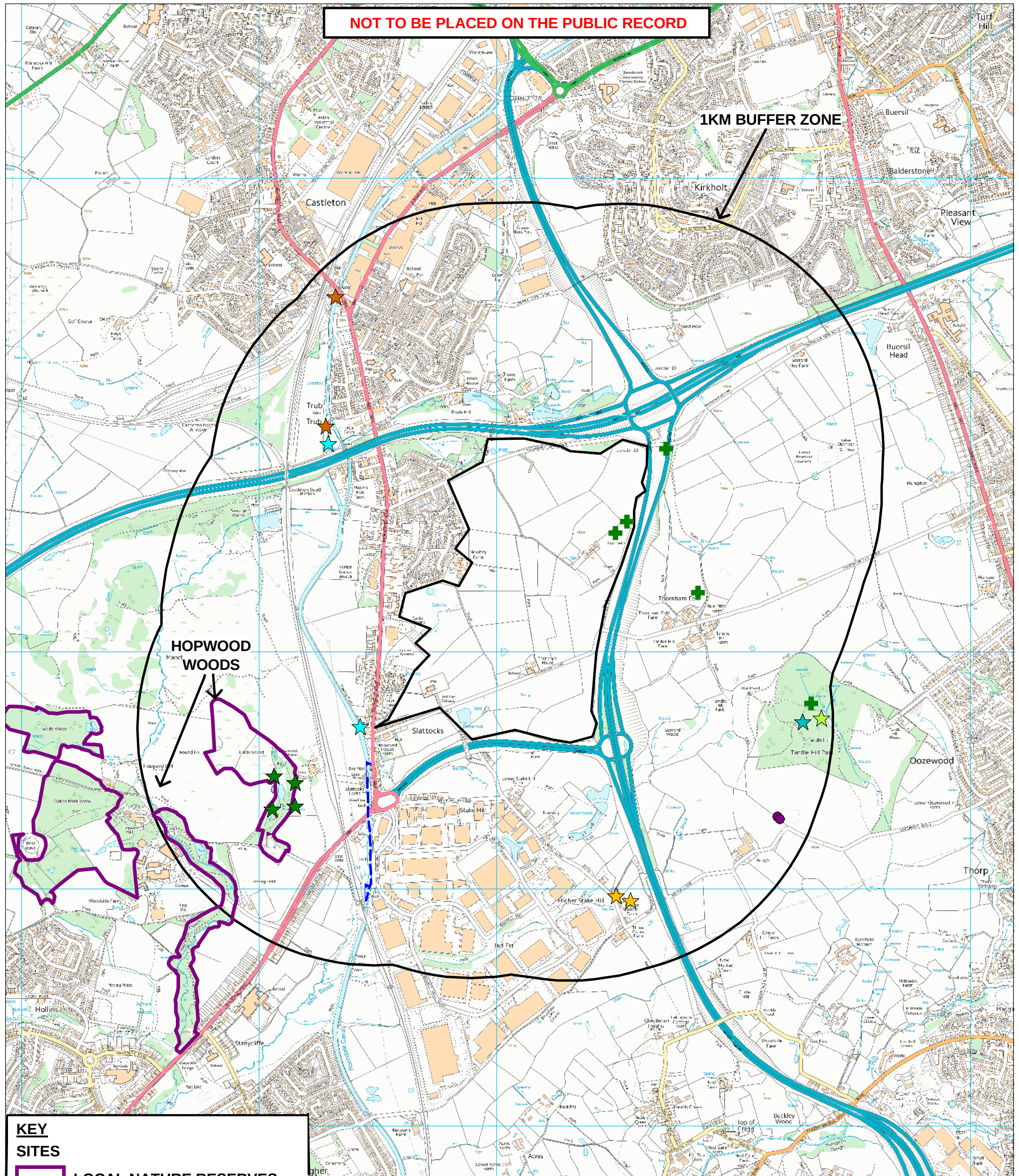


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- SLOW-WORM
- WHITE-CLAWED CRAYFISH

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MANCHESTER ROAD - MAP 2

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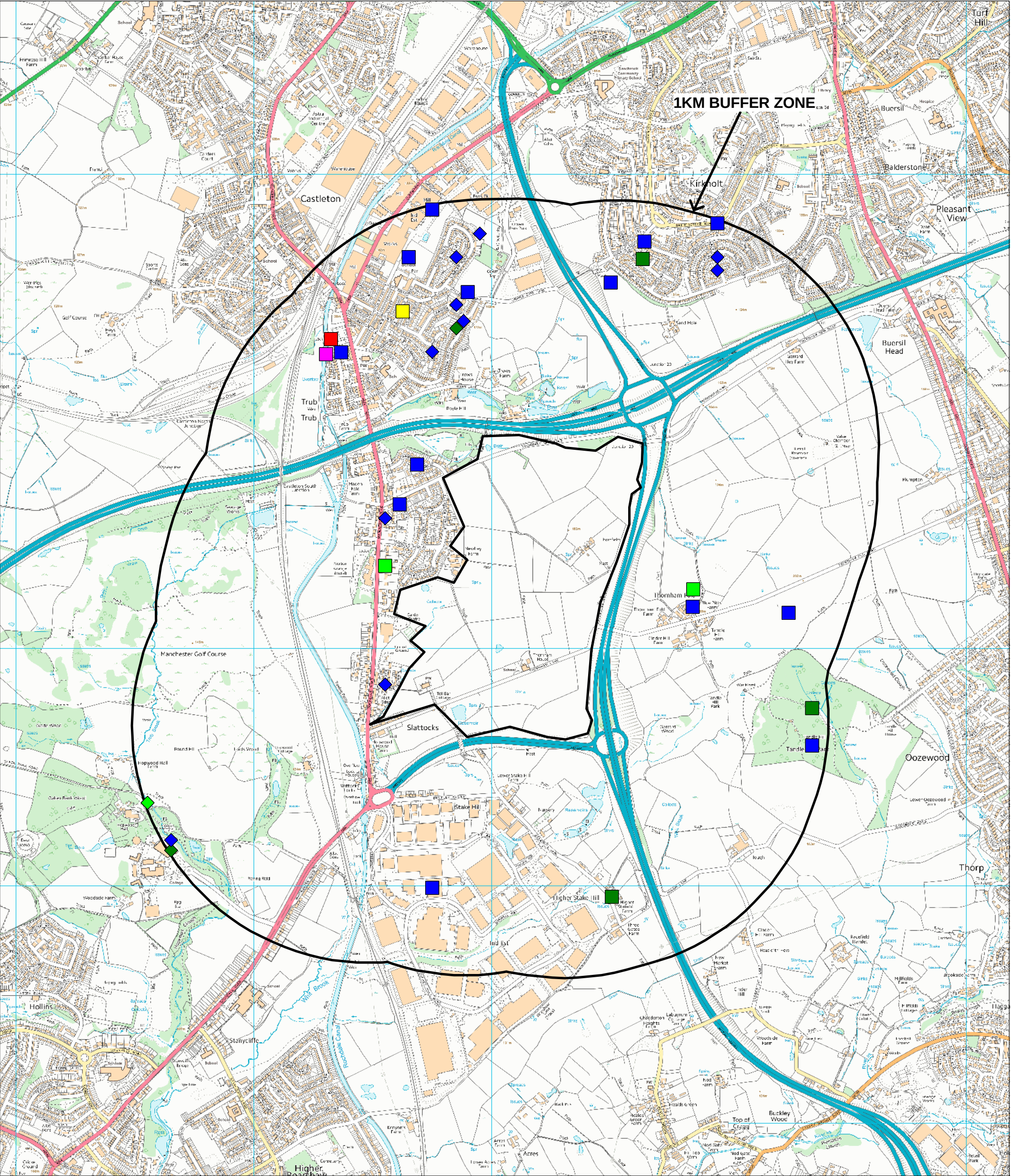
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- KEY**
- BAT ROOSTS**
- ◆ BAT SP
 - ◆ COMMON PIPISTRELLE
 - ◆ PIPISTRELLE SP
- BATS OTHER SIGNS**
- BAT SP
 - COMMON PIPISTRELLE
 - DAUBENTON'S BAT
 - NOCTULE BAT
 - PIPISTRELLE SP
 - SOPRANO PIPISTRELLE

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MANCHESTER ROAD - MAP 4

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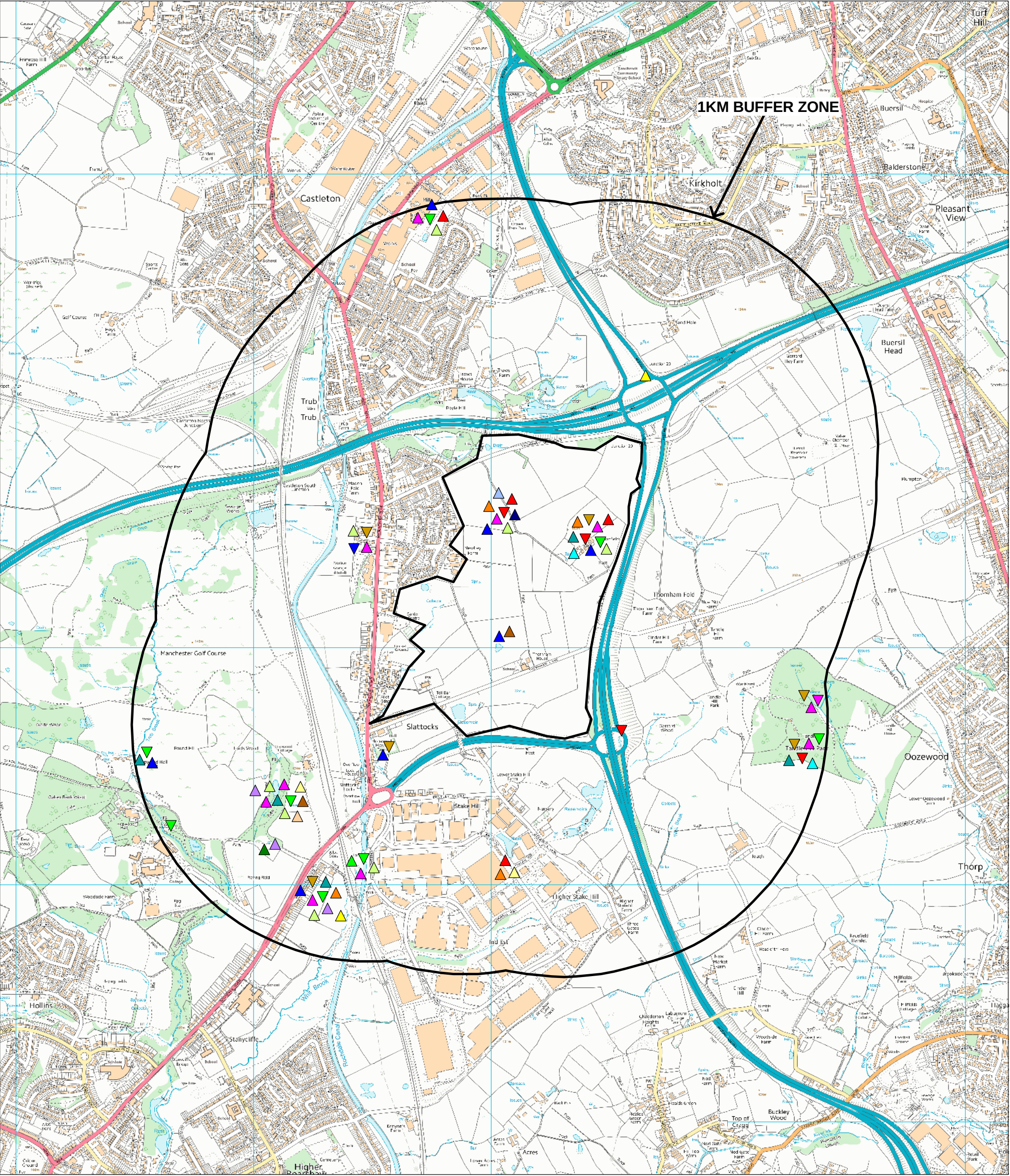
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KEY
SECTION 41 SPECIES

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|---------------------|----------------|
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| ▲ COMMON TOAD | ▲ MUD SNAIL |
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| ▲ HEDGEHOG | ▲ SONG THRUSH |
| ▲ HERRING GULL | ▲ STARLING |
| ▲ HOUSE SPARROW | ▲ WILLOW TIT |
| ▲ LAPWING | |

GREATER MANCHESTER ECOLOGY UNIT
ECOLOGICAL SEARCH - SD 8936 0942
MANCHESTER ROAD - MAP 5

SCALE 1:15,000

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Appendix 5

GCN Habitat suitability index assessment

Pond P1 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	350m2	0.7	Never Dries	0.9	Poor	0.33	0-60%	1	Minor	0.67	Major	0.01	10	0.95	Moderate	0.67	51-55%	0.85	0.00075	0.4872	Poor

Pond P2 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	1200m2	0.925	Never Dries	0.9	Moderate	0.67	0-60%	1	Major	0.01	Possible	0.67	10	0.95	Poor	0.33	16-20%	0.5	0.00059	0.4751	Poor

Pond 3 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	500-700m2	1	Sometimes D	0.5	Moderate	0.67	0-60%	1	Major	0.01	Absent	1	11	0.975	Moderate	0.67	11-15%	0.45	0.00098	0.5004	Below Average

Pond P4 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	150m2	0.3	Rarely Dries	1	Moderate	0.67	0-60%	1	Major	0.01	Absent	1	11	0.975	Moderate	0.67	11-15%	0.45	0.00059	0.4755	Poor

Pond P5 (2019)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	>2000 m2	0.8	Never Dries	0.9	Poor	0.33	0-60%	1	Minor	0.67	Major	0.01	>12	1	Poor	0.33	36-40%	0.7	0.00037	0.4535	Poor

Stream D1 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	450m2	0.9	Sometimes D	0.5	Moderate	0.67	0-60%	1	Major	0.01	Absent	1	11	0.975	Moderate	0.67	11-15%	0.45	0.00089	0.4952	Poor

Ditch D2 (2022)

Ditch D3 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	100m2	0.2	Dries Annually	0.1	Poor	0.33	0-60%	1	Minor	0.67	Possible	0.67	10	0.95	Moderate	0.67	6-10%	0.4	0.00075	0.4873	Poor

Ditch D4 (2022)

SI ₁		SI ₂		SI ₃		SI ₄		SI ₅		SI ₆		SI ₇		SI ₈		SI ₉		SI ₁₀		Product	HSI	Suitability
Location		Pond Area		Pond Drying		Water Quality		Shade		Fowl		Fish		Ponds		Terrestrial Habitat		Macrophytes				
Zone A	1	100m2	0.2	Dries Annually	0.1	Poor	0.33	0-60%	1	Absent	1	Absent	1	10	0.95	Moderate	0.67	6-10%	0.4	0.00168	0.5279	Below Average