

Appendices Chapter 10

Environmental Statement: Volume 2

784-B048803

Planning Policy and Legislation



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

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	Name	Date
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1 Executive Summary

Report purpose

This report provides details of all key relevant planning policies (national and local) and legislation pertaining to the M4 Junction 16 site.

Ecology by Design Ltd,

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2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins Ltd on behalf of Moto Hospitality Ltd to undertake an Ecological Impact Assessment of proposals for the construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710).

2.2 Site Description

- 2.2.1 The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.

2.3 Proposals

- 2.3.1 The proposals at the site are an outline planning application for Swindon Services (in line with Beech Design - M49_101 – proposed layout plan (illustrative) - rev G).

2.4 Aims of Report

- 2.4.1 This report is Technical Appendix 1 of the ES Ecology Chapter for M4 Junction 16, providing details of all key relevant planning policies (national and local) and legislation pertaining to the site.

3 Planning Policy

3.1.1 There are a number of national and local policy documents that relate to nature conservation and ecology within the planning process that are relevant to the proposals. As the planning application lies within the Wiltshire area, reference is made to local planning policies for this area to provide an indication of the likely requirements and expectations of statutory authorities and others in relation to planning application and nature conservation and ecology.

National Policy Planning Framework (MHCLG, 2023)

3.1.2 The National Planning Policy Framework (NPPF) was updated in September 2023 (MHCLG, 2022) thereby replacing the older version of July 2021. The new framework sets out in section 15 that planning policies and decisions should contribute to and enhance the natural and local environment by ... (d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures (Para 174).

3.1.3 To protect and enhance biodiversity and geodiversity (Para 179), plans should:

- identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation and
- promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

3.1.4 When determining planning applications, local planning authorities should apply the following principles (Para 180):

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the

features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;

- development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

3.1.5 The following should be given the same protection as habitats sites (Para 181):

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and
- sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

3.1.6 The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site (Para 182).

Wiltshire Core Strategy Development Plan (Adopted January 2015)

3.1.7 The Wiltshire Core Strategy Development Plan Document was formally adopted on 20 January 2015. The plan provides a positive and flexible overarching planning policy framework for Wiltshire for the period up to 2026. Core Policy 50 relates to Biodiversity and is included below.

Core Policy 50: Biodiversity and geodiversity

Protection

3.1.8 Development proposals must demonstrate how they protect features of nature conservation and geological value as part of the design rationale. There is an expectation that such features shall be retained, buffered, and managed favourably in order to maintain their ecological value, connectivity and functionality in the long-term. Where it has been demonstrated that such features cannot be retained, removal or damage shall only be acceptable in circumstances where the anticipated ecological impacts have been mitigated as far as possible and appropriate compensatory measures can be secured to ensure no net loss of the local

biodiversity resource, and secure the integrity of local ecological networks and provision of ecosystem services.

- 3.1.9 All development proposals shall incorporate appropriate measures to avoid and reduce disturbance of sensitive wildlife species and habitats throughout the lifetime of the development.
- 3.1.10 Any development potentially affecting a Natura 2000 site must provide avoidance measures in accordance with the strategic plans or guidance set out in paragraphs 6.75-6.77 above where possible, otherwise bespoke measures must be provided to demonstrate that the proposals would have no adverse effect upon the Natura 2000 network. Any development that would have an adverse effect on the integrity of a European nature conservation site will not be in accordance with the Core Strategy.

Biodiversity enhancement

- 3.1.11 All development should seek opportunities to enhance biodiversity. Major development in particular must include measures to deliver biodiversity gains through opportunities to restore, enhance and create valuable habitats, ecological networks and ecosystem services. Such enhancement measures will contribute to the objectives and targets of the Biodiversity Action Plan (BAP) or River Basin/ Catchment Management Plan, particularly through landscape scale projects, and be relevant to the local landscape character.

Local sites

- 3.1.12 Sustainable development will avoid direct and indirect impacts upon local sites through sensitive site location and layout, and by maintaining sufficient buffers and ecological connectivity with the wider environment. Damage or disturbance to local sites will generally be unacceptable, other than in exceptional circumstances where it has been demonstrated that such impacts:
 - i. cannot reasonably be avoided
 - ii. are reduced as far as possible
 - iii. are outweighed by other planning considerations in the public interest
 - iv. where appropriate compensation measures can be secured through planning obligations or agreements.
- 3.1.13 Development proposals affecting local sites must make a reasonable contribution to their favourable management in the long-term.

4 Legislation

Exit from the European Union

- 4.1.1 Various pieces of UK wildlife legislation are subject to a draft amendment at the time of writing by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. These include the Wildlife and Countryside Act 1981 (as amended), The Conservation of Habitats and Species Regulations 2017 (as amended), the Conservation of Offshore Marine Habitats and Species Regulations 2017 and the Offshore Petroleum (Conservation of Habitats) Regulations 2001.
- 4.1.2 The amendments prescribed by The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 allow existing protections afforded by current wildlife legislation and transposed EC Council Directives to continue following the UK's exit from the European Union.

Natural Environment and Rural Communities (NERC) Act 2006 – Habitats and species of principal importance (England)

- 4.1.3 The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.
- 4.1.4 The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'
- 4.1.5 Guidance for public authorities on implementing the Biodiversity Duty has been published by Defra. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments

with regard to biodiversity, and to make it a natural and integral part of policy and decision making.’

- 4.1.6 In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework , which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection and has been used as a reference to draw up the lists of species and habitats of principal importance in England.
- 4.1.7 In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

Protected and Priority Species

European Protected Species: Great crested newts and Bats

- 4.1.8 The Conservation of Habitats and Species Regulations 2017 (as amended) transpose the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.
- 4.1.9 “European protected species” (EPS) of animal are those which are shown on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:
- intentionally or deliberately capture, injure or kill any wild animal included amongst these species;
 - possess or control any live or dead specimens or any part of, or anything derived from these species;
 - deliberately disturb wild animals of any such species;
 - deliberately take or destroy the eggs of such an animal; or
 - intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place.

4.1.10 For the purposes of paragraph (c), disturbance of animals includes in particular any disturbance which is likely—

- to impair their ability—
 - to survive, to breed or reproduce, or to rear or nurture their young; or
 - in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

4.1.11 Although the law provides strict protection to these species, it also allows this protection to be set aside (derogated) through the issuing of licences. The licences in England are currently determined by Natural England (NE) for development works. In accordance with the requirements of The Conservation of Habitats and Species Regulations 2017 (as amended), a licence can only be issued where the following requirements, known as the “Three Tests”, are satisfied:

- 1) The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’
- 2) ‘There is no satisfactory alternative’
- 3) The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.’

Reptiles

4.1.12 All native reptile species receive legal protection in Great Britain under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Viviparous lizard, slow-worm, grass snake and adder are protected against killing, injuring and unlicensed trade only. Sand lizard and smooth snake receive additional protection as “European Protected Species” under the provisions of The Conservation of Habitats and Species Regulations 2017 (as amended) and are fully protected under the Wildlife and Countryside Act 1981 (as amended).

4.1.13 All six native species of reptile are included as ‘species of principal importance’ for the purpose of conserving biodiversity under Section 41 (England) of the NERC Act 2006.

4.1.14 Current Natural England Guidelines for Developers states that ‘where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.’ Further the guidance states: ‘Normally prohibited

activities may not be illegal if ‘the act was the incidental result of a lawful operation and could not reasonably have been avoided’. Natural England ‘would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.’

4.1.15 The Natural England Guidelines for Developers state that ‘planning must incorporate two aims where reptiles are present:

- To protect reptiles from any harm that might arise during development work;
- To ensure that sufficient quality, quantity and connectivity of habitat is provided to accommodate the reptile population, either on-site or at an alternative site, with no net loss of local reptile conservation status.’

Breeding birds

4.1.16 Breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended), which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species such as woodlark (*Lullula arborea*), Dartford warbler (*Sylvia undata*), hobby (*Falco subbuteo*), hen harrier (*Circus cyaneus*) and merlin (*Falco columbarius*) listed on Schedule 1 of the Act, it is an offence to intentionally or recklessly disturb them while they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

4.1.17 The Conservation of Habitats and Species Regulations 2017 (as amended) places duties on competent authorities (including Local Authorities and National Park Authorities) in relation to wild bird habitat. These provisions relate back to Articles 1, 2 and 3 of the EC Directive on the conservation of wild birds (2009/147/EC, ‘Birds Directive’) (Regulation 10 (3)) requires that the objective is the ‘preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of Article 2 of the new Wild Birds Directive...’ Regulation 10 (7) states: ‘In considering which measures may be appropriate for the purpose of security or contributing to the objective in [Regulation 10 (3)] Paragraph 3, appropriate account must be taken of economic and recreational requirements’.

4.1.18 In relation to the duties placed on competent authorities under the 2017 Regulations (as amended), Regulation 10 (8) states: ‘So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or

deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).’

Badger

- 4.1.19 Badgers are protected under The Protection of Badgers Act (1992). This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.

Wild mammals in general

- 4.1.20 The Wild Mammals (Protection) Act 1996 (as amended) makes provision for the protection of wild mammals from certain cruel acts, making it an offence for any person to intentionally cause suffering to any wild mammal. In the context of development sites, for example, this may apply to rabbits in their burrows.

5 References

Anon (2017). *Conservation of Habitats and Species Regulations 2017*. HMSO, London.

Anon (1983). *Wildlife and Countryside Act 1981 (as amended)*. HMSO, London.

MHCLG (2023). *National Planning Policy Framework*. Ministry of Housing Communities and Local Government

Wiltshire Borough Council (2015). *Wiltshire Core Strategy Development Plan (Adopted January 2015)*.

UKHabs Habitat Report



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

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1 Executive Summary

Report purpose	This report provides details of all habitats located within the M4 Junction 16 site.
Date and methods of survey	A desk study was conducted in August 2022. An extended UKHabs habitat survey was conducted in August 2022 and updated in May 2023.
Key findings	The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, four hedgerows with trees and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.

2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins on behalf of Moto Hospitality Ltd to conduct habitat surveys to identify potential impacts of proposals for the construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710).

2.2 Site Description

- 2.2.1 The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.

2.3 Proposed Works

- 2.3.1 The proposals at the site are an outline planning application for Swindon Services (in line with Beech Design - M49_101 – proposed layout plan (illustrative) - rev G).

2.4 Aims of Report

- 2.4.1 This report is Technical Appendix 2 of the Ecology Chapter for Swindon Services, providing details of all habitats within the site.

3 Methods

3.1 Desk Study

- 3.1.1 A desk study was carried out to identify records of protected, priority or invasive plants within 2km of the site (central OS national grid reference SU1043582705). Records were returned from Wiltshire and Swindon Biological Records Centre (WSBRC) on 22nd August 2022.

3.2 Habitat Survey

- 3.2.1 A Preliminary Ecological Appraisal (PEA) was conducted on 26th August 2022 by Ecology by Design Ecologist Olyvia Hall BSc (hons) MSc QCIEEM and Kate Hale using standard techniques and methodologies (CIEEM, 2017).
- 3.2.2 The PEA includes a survey of the habitats utilising the standard UK Habitat Classification methodology Butcher *et al.*, 2020). Weather conditions during the survey were warm (25°C), calm (wind 1 on the Beaufort scale¹) and partially cloudy (cloud 4/8²). A habitat map is included in Appendix 2 (drawing: EBD_2511_DR001).
- 3.2.3 A habitat survey was undertaken of the biodiversity offset area (the field to the east of the site boundary) on the 31st May 2023 by Senior Ecologist Emily Bartlett BSc (Hons) and Ecologist Oliver Bulpitt BSc (Hons) MSc utilising the above outlined methodology.

¹ The Beaufort scale is an empirical measure from 0-12 which relates wind speed to observed conditions. 0- Calm, 1- Light air, 2- Light breeze, 3- Gentle breeze, 4- Moderate breeze, 5- Fresh breeze etc.

² Cloud cover is measured using the system called oktas. The visible sky is divided into eight and cloud presence is determined within each section. A value of one to eight is then assigned (1 okta being cloudless to 8 oktas being total cloud cover).

4 Results

4.1 Desk Study

4.1.1 62 records of 26 flowering plant species were returned by the desk study. The closest of these records was recorded on site, however the resolution is relatively low, and the description marks the record as being made outside of the site boundaries to the west.

4.1.2 Records returned are primarily of county importance such as barberry (*Berberis vulgaris*), spotted medick (*Medicago arabica*) and great burnet (*Sanguisorba officinalis*), with some rarities including sainfoin (*Onobrychis viciifolia*) and green-winged orchid (*Anacamptis morio*). There is negligible opportunity for the species returned by the desk study to occur within the site due to the habitats present and their management.

4.2 Habitat Survey

4.2.1 At the time of the survey (August 2022, May 2023 respectively) the following habitats were recorded on site. They are described in Table 1 below, indicative Photographs are included in Appendix 1, a referenced habitat map is included in Drawing EBD_2511_DR001 (Appendix 2) and a detailed species list is provided at Appendix 3; the latter should be referred to for detailed species compositions.

Table 1: *Habitat types identified during the PEA and site walkover*

Habitat type	UKHabs code	Description
Modified grassland	g4	Modified grassland subject to frequent applications of fertiliser spans much of the site. In the west perennial ryegrass (<i>Lolium perenne</i>) is dominant with occasional cock's-foot (<i>Dactylis glomerata</i>), dandelion (<i>Taraxacum</i> sp.), broad-leaved dock (<i>Rumex obtusifolius</i>) and creeping buttercup (<i>Ranunculus repens</i>). Within the biodiversity enhancement area in the east, the grassland is dominated by perennial ryegrass, with rarely occurring Yorkshire fog (<i>Holcus lanatus</i>), soft brome (<i>Bromus hordeaceus</i>), meadow foxtail (<i>Alopecurus pratensis</i>), couch (<i>Elymus repens</i>), false oat grass (<i>Arrhenatherum elatius</i>), creeping bent (<i>Agrostis stolonifera</i>) and Italian ryegrass (<i>Lolium multiflorum</i>). Herbs are rarely occurring comprising wood dock (<i>Rumex sanguineus</i>) and creeping buttercup (<i>Ranunculus repens</i>). Both grassland areas are in poor condition.

Other neutral grassland- tall herb	g3c, 16	Along the northern and western boundaries and southwest corner of the site other neutral grassland is present, with tall herb species present throughout the sward. Species present include false oat grass (<i>Arrhenatherum elatius</i>), tufted hair grass (<i>Deschampsia caespitosa</i>), Italian rye grass (<i>Lolium multiflorum</i>), creeping thistle (<i>Cirsium arvense</i>), vetch (<i>Vicia</i> sp.), prickly sow thistle (<i>Sonchus asper</i>), bristly ox-tongue (<i>Helminthotheca echioides</i>), bittersweet (<i>Solanum dulcamara</i>), mugwort (<i>Artemisia vulgaris</i>), hogweed (<i>Heracleum sphondylium</i>), ragwort (<i>Jacobaea vulgaris</i>), spear thistle (<i>Cirsium vulgare</i>), wild carrot (<i>Daucus carota</i>), colt's-foot (<i>Tussilago farfara</i>), field bindweed (<i>Convolvulus arvensis</i>) and dove's-foot cranesbill (<i>Geranium molle</i>). In damper areas of grassland to the west of the site patches of locally dominant areas of rush (<i>Juncus</i> sp.) were present within a narrow drainage ditch.
Bramble scrub	h3d	An area of scrub, dominated by bramble (<i>Rubus fruticosus</i> agg.) is present to the north of the site. Other species throughout this scrub include tall herb species as present in the tall ruderal species outlined above.
Mixed scrub	h3h	Areas of mixed scrub on site are dominated by blackthorn, with other species present including bramble, mugwort and creeping thistle.
Hedgerow with trees	h2a	H1- Hedge 1 (the central hedge) is 0.234 km length and comprised of blackthorn (<i>Prunus spinosa</i>), hawthorn (<i>Crataegus monogyna</i>), hazel (<i>Corylus avellana</i>), apple (<i>Malus</i> sp.), elder (<i>Sambucus nigra</i>) and bramble (<i>Rubus fruticosus</i> sp.) Tree species present were dominated by elm (<i>Ulmus</i> sp.). The hedgerow is in moderate condition. H2- Hedge 2 (the western hedge) is 0.099 km length and comprised of blackthorn, hawthorn, field maple (<i>Acer campestre</i>), bramble and <i>Rosa</i> sp.. Tree species present include oak (<i>Quercus</i> sp.), crack willow (<i>Salix x fragilis</i>), and elm (<i>Ulmus</i> sp.). The hedgerow is in moderate condition. H3- Hedge 3 (the eastern hedge) is 0.059 km length and comprised of predominantly of blackthorn with cherry plum (<i>Prunus cerasifera</i>), hawthorn, bramble, and elm present. Ground floral species comprise false oat grass, nettle, creeping thistle, docks (<i>Rumex</i> sp.) and cow parsley (<i>Anthriscus sylvestris</i>). The hedgerow is in moderate condition. H4- Hedge 4 (the south-eastern hedge) is 0.065 km length and is of similar composition to H3 with mature oak (<i>Quercus</i> sp.) trees also present. The hedgerow is in good condition.
Hardstanding	u1b6	The B4005 and associated laybys are present to the south of the site boundary. The road is to be retained unaffected as part of the proposals.
Grassland	g4 (assumed modified)	A strip of grassland is present to the north of the B3005, which was not surveyed (being originally outside of the redline boundary). A small area of this grassland is to be lost to accommodate access in to the site.
Woodland (other broadleaved woodland types)	w1g7	To the south of the B4005 a block of woodland is present. This woodland was not surveyed but is being retained unaffected as part of the proposals.

5 References

Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020). *UK Habitat Classification– Habitat Definitions V1.1*. at <http://ukhab.org>.

CIEEM (2017). *Guidelines for preliminary ecological appraisal, 2nd edition*. Chartered institute of Ecology and Environmental management, Winchester.

Appendix 1- Photographs

Photograph 1: Modified grassland



Photograph 2: Other neutral grassland



Photograph 3: Hedgerow with trees



Photograph 4: Bramble scrub



Photograph 5: Tree 1 (T1)

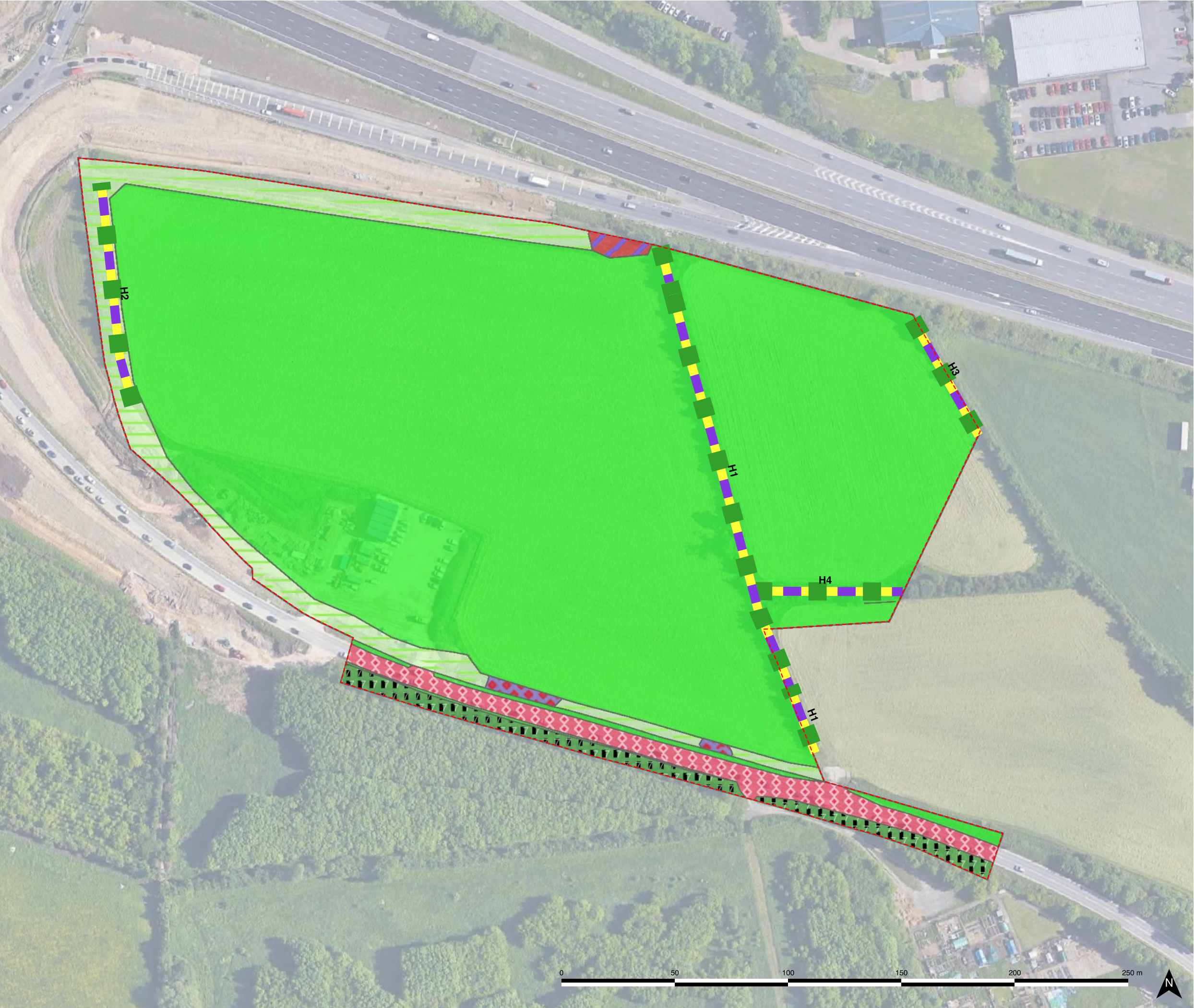


Photograph 6: Tree 2 (T2)



Appendix 2- Figures

Figure 1: Baseline habitats



LEGEND

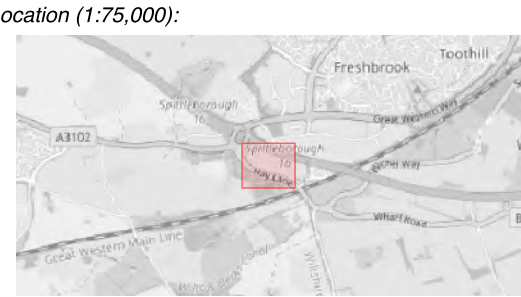
Site boundary (7.33 ha)

Hedgerows

- h2a - Hedgerow (priority habitat) - with trees (0.46 km)

Habitats

- g3c - other neutral grassland (0.57 ha)
- g4 - modified grassland (6.3 ha)
- h3d - bramble scrub (0.02 ha)
- h3h - mixed scrub (0.02 ha)
- u1b6 - hardstanding (0.25 ha)
- w1g7 - other broadleaved woodland types (0.17 ha)



Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Baseline Habitats

Drawing No.:	Scale (@A3):
EBD_2511_DR001	1:1,600
Central Eastings, Northings:	Date Drawn:
410511, 182657	11/09/2023
Drawn by:	Approved by:
OH	BG

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Appendix 3- Plant Species List

Common Name	Latin
Field maple	<i>Acer campestre</i>
False oat grass	<i>Arrhenatherum elatius</i>
Mugwort	<i>Artemisia vulgaris</i>
Creeping thistle	<i>Cirsium arvense</i>
Spear thistle	<i>Cirsium vulgare</i>
Field bindweed	<i>Convolvulus arvensis</i>
Hazel	<i>Corylus avellana</i>
Hawthorn	<i>Crataegus monogyna</i>
Cock's-foot	<i>Dactylis glomerata</i>
Wild carrot	<i>Daucus carota</i>
Tufted hair grass	<i>Deschampsia caespitosa</i>
Willowherb	<i>Epilobium</i> sp.
Dove's-foot cranesbill	<i>Geranium m</i>
Ivy	<i>Hedera helix</i>
Bristly ox-tongue	<i>Helminthotheca echioides</i>
Hogweed	<i>Heracleum sphondylium</i>
Ragwort	<i>Jacobaea vulgaris</i>
Rush	<i>Juncus</i> sp.
Italian rye grass	<i>Lolium multiflorum</i>
Perennial ryegrass	<i>Lolium perenne</i>
Apple	<i>Malus</i> sp.
Blackthorn	<i>Prunus spinosa</i>
Oak	<i>Quercus</i> sp.
Creeping buttercup	<i>Ranunculus repens</i>
Rose	<i>Rosa</i> sp.
Bramble	<i>Rubus fruticosus</i> agg
Broadleaved dock	<i>Rumex obtusifolius</i>
Crack willow	<i>Salix x fragilis</i>
Elder	<i>Sambucus nigra</i>
Bittersweet	<i>Solanum dulcamara</i>
Prickly sow thistle	<i>Sonchus asper</i>
Dandelion	<i>Taraxacum</i> sp.
Colt's-foot	<i>Tussilago farfara</i>
Elm	<i>Ulmus</i> sp.
Vetch	<i>Vicia</i> sp.

Bats



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

Ecology by Design Ltd,
Hampden House, Monument Park, Chalgrove, Oxon OX44 7RW.

Tel 01865 893346 www.ecologybydesign.co.uk

Project Code	Title	Date of Issue
EBD02511	Swindon Services – A3 Bats	12 September 2023

	Name	Date
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Quality Control	Laura Grant BSc (Hons), MCIEEM	18 August 2023
Updated	Laura Grant BSc (Hons), MCIEEM	11 September 2023

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1 Executive Summary

Report purpose	This report provides details of bat surveys conducted to inform potential impacts of the proposed Swindon Services at Junction 16 of the M4.
Date and methods of survey	A desk study was conducted in August 2022 and August 2023. Bat surveys (a walked transect and monitoring using two automated detectors) was conducted once per season in 2023 to identify the value of the site to foraging and commuting bats. A ground level tree assessment was also conducted to assess the potential value of the site to roosting bats.
Key findings	127 records of nine bat species have been recorded within 2km of the site including common pipistrelle, soprano pipistrelle, brown long-eared, lesser horseshoe, noctule, Natterer's, Daubenton's and serotine bats. Low level bat activity was noted during both transects completed during late May and early July. During the May transect no passes were recorded within the central portion of either the central field or the eastern field. Common species were noted largely passing along H1 and H4. During the July transect activity was noted within the eastern field (particularly comprising noctule), and along the southern boundary of the site as well as around the balancing pond. Bats also were noted foraging around the streetlights in the vicinity of the balancing pond. Species recorded on the automated detectors comprised largely common and widespread species consisting of predominantly common and soprano pipistrelle with some activity recorded of Myotis sp., and noctule, serotine or Leisler's bat species; activity levels were considered to be of low-moderate level. Two lesser horseshoe commuting passes were noted along H3 in June only, with no registrations of the species at either hedgerow in July. The site is within the core sustenance zones, zones where bats are likely to forage from a known roost, of all bats recorded. The habitat is considered to be of significance to bats at the Site level. Two trees within the site have suitability for roosting bats; T1, an oak with low suitability and T2 and elm with high suitability, both of which are in central hedgerow H1.

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2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins on behalf of Moto Hospitality Ltd to conduct bat surveys to identify potential impacts of proposals for the construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710).

2.2 Site Description

- 2.2.1 The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.

2.3 Proposed Works

- 2.3.1 The proposals at the site are an outline planning application for Swindon Services (in line with Beech Design - M49_101 – proposed layout plan (illustrative) - rev G).

2.4 Aims of Report

- 2.4.1 This report is Technical Appendix 1 of the Ecology Chapter for Swindon Services, providing details of bat activity surveys and fixed-point automated detector surveys completed at the site.

3 Methods

3.1 Desk Study

3.1.1 A desk study was carried out to identify records of bats within 2km of the site (central OS national grid reference SU1043582705). Records were returned from Wiltshire and Swindon Biological Records Centre (WSBRC) on 22nd August 2022. MAGIC (www.magic.gov.uk) was also used to identify European Protected Species Mitigation licences granted for bats within the local area (last viewed 14 August 2023).

3.2 Bat Activity Walked Transects

3.2.1 Assessments of suitability of the site for commuting and foraging bats were conducted by Ecologist Olyvia Hall and Seasonal Ecologist Kate Hale during an initial site walkover in August 2022. The site is considered to have low suitability for commuting and foraging bats.

3.2.2 In accordance with industry standard guidance (Collins, 2016) one transect per season is required i.e. one transect in spring (May/June), summer (July/August) and autumn (September/October).

3.2.3 Walked transects were undertaken by Ecology by Design in May 2023 and July 2023, with a final survey to be completed in September 2023.

3.2.4 A pair of surveyors slowly walked a pre-determined transect route stopping at regular intervals to observe and record bat activity (using an Elekon Batlogger M) for 4 minutes before walking to the next stop (of which there were 12). The transect was walked once per survey. Transects started at sunset and continued for at least two hours after sunset. Flight paths were mapped, and notes were made on the behaviours observed (e.g. foraging / commuting / social interactions). See Figure 1 for a map of the transect route.

Table 3.1: *Dates, surveyors and weather conditions of each walked transect survey*

Date and time	Surveyors	Weather Conditions
31/05/2023 21:20 – 23:20	Oliver Bulpitt and Evan Lohse	14-13°C, cloud 8/8, wind BF5-4, no rain
03/07/2023 21:27 – 23:20	Oliver Bulpitt and Emily Bartlett*	17°C-12°C-, cloud 5/7, wind BF1-2, no rain
19/09/2023	To be completed	To be completed

* Natural England Level 1 Licence Number 2019-43526-CLS-CLS

3.3 Fixed Point Automated Detector Surveys

3.3.1 Automated detectors were used to remotely record bat activity in spring (May/June), summer (July/August) and autumn (September/October). An AnaBat Express bat detector was deployed at the central hedge (H1) (facing west) and the eastern hedge (H3) (also facing west) (see locations on Figure 1) collecting five consecutive nights of data per season. The detectors were set to record from 1-5 June 2023, 5-9 July 2023 and 19-23 September 2023.

3.3.2 The detectors were set to record from 30 minutes before sunset until 30 minutes after sunrise.

Table 3.2: Automated detector monitoring

Month	H1	H3
June 2023	1 st -5 th June (5 nights)	1 st -5 th June (5 nights)
July 2023	5 th -9 th July (5 nights)	5 th -9 th July (5 nights)
September 2023	19 th -23 rd September (5 nights)	19 th -23 rd September (5 nights)

3.4 Bat Call Analysis

3.4.1 Data was analysed using automated bat sonogram analysis software: Anabat Insight on default settings. The 'Accepted Species' (the species for which Anabat returns an ID with the highest likelihood) was taken at face value for common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*). Any registrations labelled as anything other than common pipistrelle or soprano pipistrelle were also assessed manually as per the methodology below using Anabat Insights sonogram viewer and manual classifiers. Registrations that were identified as a 'Leaning Species' (a likely species decision as per 'Accepted Species' but which trigger an indicator of potential misclassification) other than common pipistrelle or soprano pipistrelle were also analysed manually to see if that species was indeed present, in which case they were added to the dataset. Additionally, any sonograms labelled to potentially contain pulses of either horseshoe bat (*Rhinolophus* sp.) or barbastelle (*Barbastella barbastellus*) were manually assessed to see if that species was indeed present, in which case they were added to the dataset; this is because these species are particularly vulnerable to under-recording and, if present, are particularly noteworthy and have especially stringent mitigation requirements. See the Limitations and Constraints section below for commentary on the validity of using automated ID software.

3.4.2 Sonogram analysis was undertaken by a suitably experienced ecologist with reference to known sonogram parameters for each species (Russ, 2012; Middleton, *et al.* 2014; Barataud,

2015) and a record kept of original and verified identifications. Within each file, each species of bat identified was considered to represent one registration of that species.

- 3.4.3 Where recordings could not be reliably attributed to species (such as *Myotis* species or NSL sp. i.e. Noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*) or Leisler's bat (*Nyctalus leisleri*)) or where overlaps in sonogram parameters between otherwise distinguishable species occur (such as in *Pipistrellus* species with a peak frequency of around 40 kHz or 50 kHz), registrations were identified to genus level. However, professional judgement was made where possible to refine identification to species level using factors such as associated habitats and geographical location as well as other records throughout the survey period/season and desk study data.
- 3.4.4 The data were exported into a spreadsheet in order to interpret the recordings. The timing of passes after sunset and before sunrise was calculated in order to interpret any patterns in bat activity. For the purpose of this report a bat pass is the minimum number of bats of a certain species recorded within a single sound file.
- 3.4.5 The data has also been analysed to show bat passes per hour for each location to show the relative levels of bat activity.

3.5 Ground Level Tree Assessment

- 3.5.1 A ground level tree assessment was conducted during the PEA of trees likely to be impacted by the. The surveyors used a high-power torch (LEDLenser Lamp) and 10x50 mm binoculars to identify features of interest.
- 3.5.2 Where possible, each aspect of the trees within the site were inspected to identify features with potential to support roosting bats such as woodpecker holes, rot holes, splits, cracks, flaking bark and/or ivy cover. Where any evidence of use by bats such as droppings, staining or scratches around such features were present this was noted.
- 3.5.3 Each tree was identified as having high, medium, low or negligible suitability for roosting bats. Collins (2016) categorizes the suitability of trees for roosting bats as follows:
- Negligible = Negligible habitat features likely to be used by roosting bats.
 - Low = A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features seen with only very limited roosting suitability.
 - Medium = A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.

- High = A structure or tree 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 and surrounding habitat.

3.6 Limitations / Constraints

- 3.6.1 The September 2023 surveys are yet to be completed but will be included within the final report.

4 Results

4.1 Desk Study

4.1.1 127 records of nine bat species have been recorded within 2 km of the site including common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*), brown long-eared (*Plecotus auratus*), lesser horseshoe (*Rhinolophus hipposideros*), noctule (*Nyctalus noctula*), Natterer's (*Myotis nattereri*) and Daubenton's (*Myotis daubentonii*) and serotine (*Eptesicus serotinus*) bats.

4.1.2 The closest of these records was a roost recorded 0.19 km N from the site, in 2004. MAGIC showed no European protected species licence applications within 2 km of the site.

4.2 Bat Activity Walked Transects

Transect 31st May 2023

4.2.1 There was generally low activity on the site with only 31 passes recorded in total of which 100% were common pipistrelle. The first bat recorded was a common pipistrelle at 21:58 and the last bat heard was also a common pipistrelle at 22:25. Common pipistrelle were noted between stopping points 6-5, 7-6 and 8-7 as well as points 9 and 12. Overall, activity comprised passes along H1 and H4 with no passes within the central portion of either the central field or the eastern field.

Transect 3rd July 2023

4.2.2 There was generally low-moderate activity on the site with 231 passes recorded throughout the survey of which 76% were NSL, 20.4% soprano pipistrelle and 3.6% common pipistrelle. The first bat recorded was a soprano pipistrelle at 21:35 and the last bat heard was a NSL at 23:25. During the survey activity was noted within the eastern field (particularly comprising noctule), and along the southern boundary of the site as well as around the balancing pond. NSL were noted foraging around the streetlights consistently around stopping points 1-2 between ~23:00-23:20.

4.3 Fixed Point Automated Detector Surveys

4.3.1 All data represents the number of bat passes (n) rather than the number of bats. One bat could pass the detector hundreds of times during the night; therefore, the numbers are an indication of activity level rather than numbers of bats.

Detector location H1 – May-June 2023

- 4.3.2 Overall activity levels recorded within the grassland area during early June was moderate, with 2042 passes recorded in total during the five nights of recording (equating to 47.42 passes per hour). Across the sampling period, Pipistrelle sp. comprised 93.2% of all bat passes, of which 85.6% comprise common pipistrelle (n = 1748), and 7.6% comprise soprano pipistrelle (n = 155). 6.12% were attributed to *Myotis* sp. (n = 125) and the final 0.7% comprise NSL species (n = 14).

Detector location H3 – May-June 2023

- 4.3.3 Overall activity levels recorded within the grassland area during early June was low, with 1,117 passes recorded in total during the five nights of recording (equating to 25.94 passes per hour). Across the sampling period, Pipistrelle sp., comprised 96.3% of all bat passes, of which 92.4% comprise common pipistrelle (n = 1032), and 3.9% comprise soprano pipistrelle (n = 44). 1.79% comprise *Myotis* sp. (n = 20), 1.7% of passes comprise NSL species (n= 19), and 0.18% of passes comprise lesser horseshoe (n=2).
- 4.3.4 The lesser horseshoe bat passes were recorded in the middle of the night (4hrs 34 minutes after sunset and 3hrs before sunrise) on the eastern boundary of the biodiversity enhancement area. There were 72 seconds between the first and second pass therefore it is considered likely to have been an individual bat foraging within the site. The location is not optimal for foraging horseshoe bats due to the poor connectivity within the local landscape and the M4 which is well-lit and likely to be a barrier to movement north of the site. It is noted that the closest place bats could safely pass over or under the M4 is 620m east of the site along the Great Western Main Line.

Detector location H1 – July 2023

- 4.3.5 Overall activity levels recorded within the grassland area during July was low, with only 1171 passes recorded in total during the five nights of recording (equating to 27.35 passes per hour). Across the sampling period, Pipistrelle sp., comprised 57.0% of all bat passes, of which 52.8% comprise common pipistrelle (n = 618), and 4.27% comprise soprano pipistrelle (n = 50). 16.9% comprise NSL species (n = 198) and the final 26.0% comprise *Myotis* sp. (n = 304).

Detector location H3 – July 2023

- 4.3.6 Overall activity levels recorded in the vicinity of H3 was notably very low in July, with only 225 passes recorded in total during the five nights of recording (equating to 5.25 passes per hour). Across the sampling period, Pipistrelle sp., comprised 62.7% of all bat passes, of which 45.3%

comprise common pipistrelle (n = 102), and 17.3% comprise soprano pipistrelle (n = 39). 33.3% comprise NSL species (n = 75) and the final 4% comprise *Myotis* sp. (n = 9) .

- 4.3.7 The bat passes (registrations) per hour for each detector location during the sampling periods is outline in Table 4.1.

Table 4.1: Bat passes per hour throughout the site at different locations in June and July 2023

Species	H1	H3	June Average	H1	H3	July Average	Total B/h
Soprano pipistrelle	3.60	1.02	2.31	1.14	0.91	1.03	1.67
Soprano / Common pipistrelle				0.02		0.01	0.01
Common pipistrelle	40.59	23.97	32.28	14.43	2.38	8.41	20.38
Common / Nathusius' pipistrelle				0.02		0.01	0.01
Noctule / Leisler's / Serotine	0.19	0.37	0.28	2.41	1.03	1.72	1.00
Noctule	0.12	0.05	0.08	2.22	0.70	1.46	0.77
Leisler's / Serotine	0.02	0.02	0.02		0.02	0.01	0.02
Myotis sp.	2.90	0.46	1.68	7.10	0.21	3.65	2.67
Lesser horseshoe		0.05	0.02				0.01

4.4 Ground Level Trees Assessment (GLTA)

- 4.4.1 Two trees were identified with suitability to support roosting bats, one of which had high suitability and the other had low suitability. Both are within central hedgerow H1. These are detailed in Table 4.2 below. The remainder of trees within the site are identified as being of negligible suitability for roosting bats.

Table 4.2. Ground level tree assessment results

Tree No.	Species	Description	Bat Suitability
T1	Oak (<i>Quercus</i> sp.)	Large, semi-mature tree. Very leafy and hard to see features clearly.	Low
T2	Elm (<i>Ulmus</i> sp.)	Several features were noted on this tree including lifted bark, a crack in stem, several woodpecker holes on western elevation and a dead limb.	High

5 References

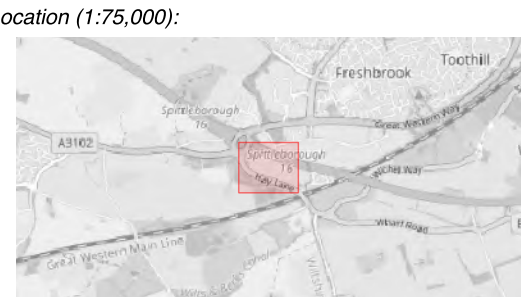
- Barataud, M. (2015). *Acoustic Ecology of European Bats. Species Identification, Study of their Habitats and Foraging Behaviour*. Paris, Publications Scientifiques du Muséum.
- BCT & ILP (2023). *Guidance Note GN08/23 Bats and artificial lighting at night*. Bats and the Built Environment series
- CIEEM (2019). *Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.1 Updated September 2019*. Chartered Institute of Ecology and Environmental Management, Winchester
- Collins, J. (ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.
- Gov.uk (2015). *Guidance. Bats: surveys and mitigation for development projects*. Natural England and Department for Environment, Food & Rural Affairs, Worcester.
- Middleton, N., Froud, A. and French, K. (2014). *Social Calls of the Bats of Britain and Ireland*. Exeter, Pelagic Publishing.
- Russ, J. (2012). *British Bat Calls. A Guide to Species Identification*. Pelagic Publishing.

Appendix 1: Figures

Figure 1: Bat surveys



- LEGEND
- Site boundary (7.33 ha)
 - Target Notes
 - Static Detector Location
 - Transect Stopping Point
 - Transect Route



Project:
Junction 16, M4 Swindon

Client:
Moto Hospitality Ltd

Drawing Title:
Bat Surveys

Drawing No.: EBD_2511_A3_DR004	Scale (@A3): 1:1,800
Central Eastings, Northings: 410495, 182693	Date Drawn: 12/09/2023
Drawn by: ASp	Approved by: BG

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Great Crested Newt



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

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Project Code	Title	Date of Issue
EBD02511	Swindon Services t A4 Great Crested Newt	12 September 2023

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Quality Control	Laura Grant BSc (Hons), MCIEEM	18 August 2023
Updated	Laura Grant BSc (Hons), MCIEEM	11 September 2023

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1 Executive Summary

Report purpose	This report provides details of surveys in relation to great crested newt pertaining to the M4 Junction 16 site.
Date and methods of survey	On 26th August 2022 a Habitat Suitability Index survey was conducted of ponds within 250m of the site unaffected by significant barriers. On 24th May 2023 eDNA surveys were conducted of ponds and ditches holding water within 250m of the site.
Key findings	A positive eDNA result was returned for Pond 2 indicating presence of GCN within this pond. Negative results were returned for Ditch 1, Ditch 4, and Pond 4, indicating likely absence of the species in these waterbodies. Inconclusive eDNA results were returned for Ditch 2 and Pond 1 such that it is not possible to ascertain likely absence/presence of the species; however, it is assumed that GCN are likely present in Pond 1 due to the proximity of this pond to Pond 2.

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2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins on behalf of Moto Hospitality Ltd to conduct great crested newt surveys to identify potential impacts of proposals for the construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710).

2.2 Site Description

- 2.2.1 The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.
- 2.2.2 Seven ponds are located within 500m of the site boundary, three of which are both south of the M4 and are present within 250m of the site boundary (see Figure 1, Appendix 1).

2.3 Proposed Works

- 2.3.1 The proposals at the site are an outline planning application for Swindon Services (in line with Beech Design - M49_101 t proposed layout plan (illustrative) - rev G).

2.4 Aims of Report

- 2.4.1 This report is Technical Appendix 4 of surveys in relation to great crested newt pertaining to the Swindon Services site at Junction 16 of the M4.

3 Methods

3.1 Habitat Suitability Index Assessment

3.1.1 On 26th August 2022 a Habitat Suitability Index (HSI) survey was conducted by Ecology by Design Assistant Ecologist Olyvia Hall BSc (hons) MSc QCIEEM and Kate Hale of pond 1 (P1) and pond 2 (P2) to assess their suitability for great crested newts (*Triturus cristatus*). Natural England recommends calculation of HSI scores for ponds as a tool to assess habitat quality in a repeatable, objective manner (Natural England, 2020). In particular, the HSI allows individual factors that influence newt presence to be easily identified. Natural England suggests that ecological consultants apply the adapted HSI methods used by the National Amphibian and Reptile Recording Scheme (Herpetological Conservation Trust, 2008) in order to determine the HSI value of each waterbody. This adapted method simplifies the way in which terrestrial habitat is evaluated.

3.1.2 The suitability index is calculated by allocating scores to features associated with each waterbody; these include features such as size, quality of surrounding habitat and presence of fish. These scores are then used to calculate the overall HSI for each waterbody as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each waterbody to be placed in one of five pre-defined categories defining its suitability for great crested newts as follows:

- <0.5 = poor
- 0.5 to 0.59 = below average
- 0.6 to 0.69 = average
- 0.7 to 0.79 = good
- >0.8 = excellent

3.1.3 The Rapid Risk Assessment in the Natural England Method Statement considers an offence unlikely with impacts to less than 5 hectares of suitable habitat over 250m from breeding ponds. The works are small scale and will not cause a barrier to dispersal for great crested newts. Therefore, the works are unlikely to impact ponds further than 250m of the route, and therefore only ponds within 250m are considered.

3.2 eDNA

3.2.1 eDNA samples were undertaken of three ponds (Pond 1, Pond 2, and Pond 4) as well as three ditches (Ditch 1, Ditch 2, and Ditch 4).

- 3.2.2 Water samples were collected from the pool liner on 24th May 2023 by Senior Ecologist Emily Power (Level 1 2017-30086-CLS-CLS) and Ecologist Anna Kogioni (Level 1 2022-10818-CL08-GCN) and sent to Applied Genomics for analysis.
- 3.2.3 The survey was based on the guidance for field and laboratory sampling of great crested newt environmental DNA (eDNA) (Biggs *et al*, 2014). The sampling procedure was as follows:
- 20 water samples of 30ml were collected and mixed from a waterbody;
 - Samples were spread out as much as possible and targeted at both open areas and vegetated areas likely to be utilised by great crested newt;
 - Prior to collecting the sample, the water column was agitated with care taken to avoid disturbing the sediment layer;
 - Six sub-samples of 15ml each were taken from the large sample above and preserved in 35ml of ethanol; and
 - Samples were stored at 2-4°C until couriered to the laboratory within 48 hours for analysis.

4 Results

4.1 Habitat Suitability Index Assessment

- 4.1.1 Seven ponds were identified from OS maps as being present within 500m of the site boundary; however, of these, only three ponds were present both within 250m of the site boundary and south of the M4 (see pond map in Appendix 1). A Habitat Suitability Index (HSI) assessment was undertaken of pond 1(P1) and pond 2 (P2), located 190m and 250m from the site boundary respectively.
- 4.1.2 P1 and P2 were both dry during the August site visit, as such it was not possible to undertake Habitat Suitability Index (HSI). Notably, weather conditions during and preceding the survey were unusually hot and dry for the time of year. It is therefore likely these ponds hold water during the breeding season and are of some suitability for breeding great crested newt if they do not dry annually. Pond 3 (P3) was not assessed during the survey.
- 4.1.3 Immediately adjacent to the east of the site an area of damp grassland was present which is understood to be known colloquially as 'the pond'. This area was not assessed during the survey, however *Typha* sp. was noted; therefore, a pond may be present during the breeding season of some suitability for great crested newt.

4.2 eDNA

- 4.2.1 A positive eDNA result was returned for Pond 2 indicating presence of GCN within this pond. Negative results were returned for Ditch 1, Ditch 4, and Pond 4, indicating likely absence of the species in these waterbodies. Inconclusive eDNA results were returned for Ditch 2 and Pond 1 such that it is not possible to ascertain likely absence/presence of the species; however, it is assumed that GCN are likely present in Pond 1 due to the proximity of this pond to Pond 2.

5 References

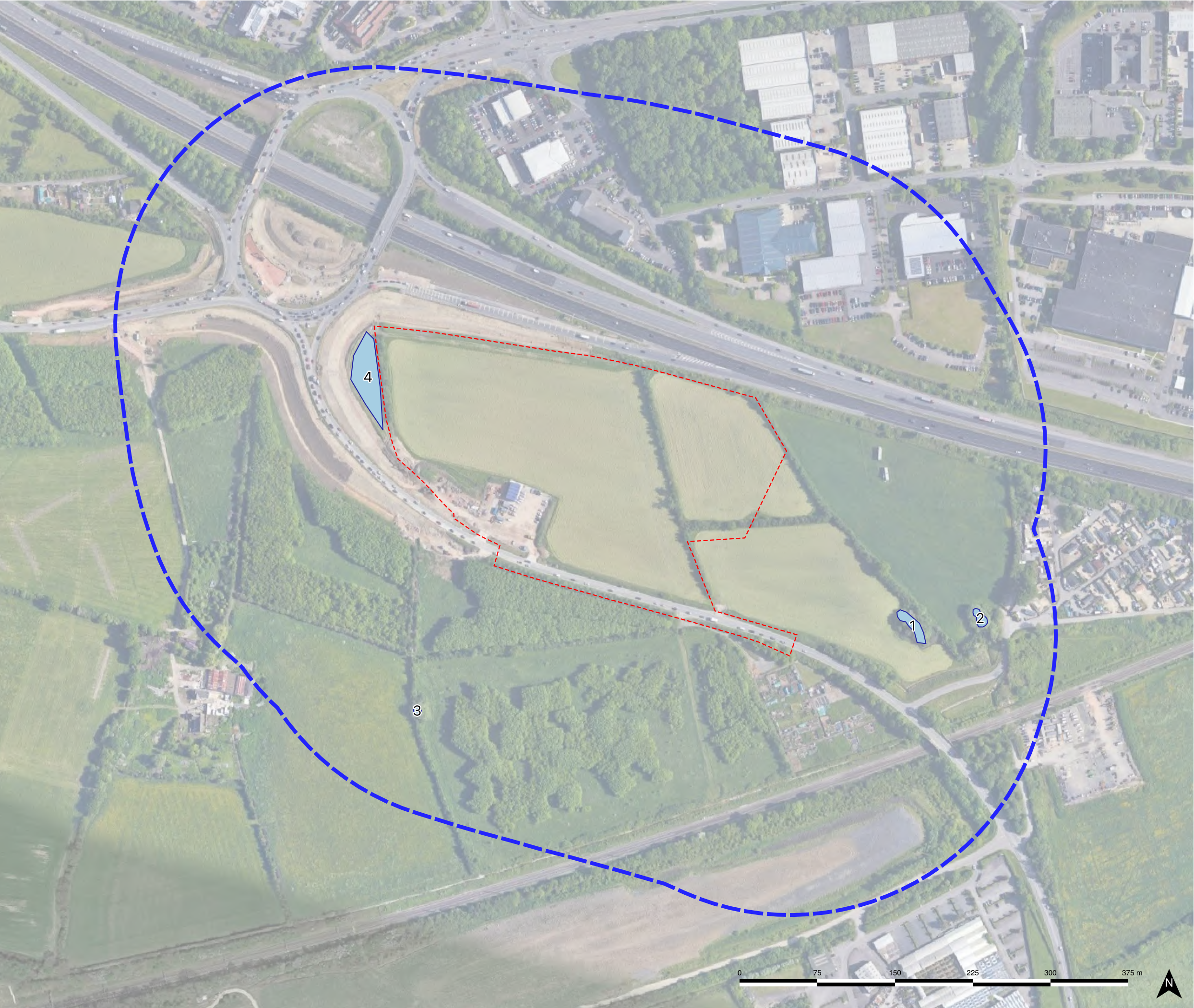
Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, RA., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Freshwater Habitats Trust, Oxford.

Herpetological Conservation Trust (2008). *Habitat Suitability Index – Guidance Notes. National Amphibian and Reptile Recording Scheme*. HCT.

Natural England (2020). *GCN Method Statement WML-A14-2 (Version April 2020) the Conservation of Habitats and Species Regulations 2017 (as amended) Method Statement to support application for licence under Regulation 55(2)(e) in respect of great crested newts Triturus cristatus*. Natural England, Worcester.

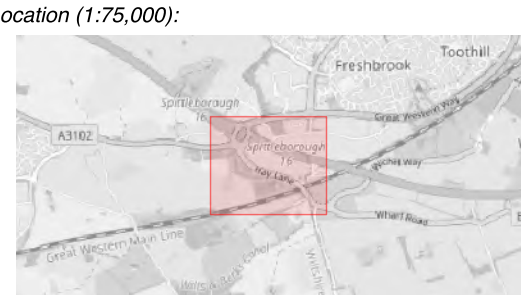
Appendix 1: Figures

Figure 1: Pond plan



LEGEND

- Site boundary (7.33 ha)
- 250m Site Buffer
- Ponds



Project:
Swindon Services

Client:
Moto Hospitality Ltd

Drawing Title:
Pond Plan

Drawing No.:	Scale (@A3):
EBD_2511_DR005	1:3,500
Central Eastings, Northings:	Date Drawn:
410497, 182638	12/09/2023
Drawn by:	Approved by:
ASp	BG

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Birds



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

Project Code	Title	Date of Issue
EBD02511	Swindon Services – A5 Birds	12 September 2023

	Name	Date
Prepared by	Emily Power BSc (Hons) MSc ACIEEM Olyvia Hall BSc (Hons), MSc QCIEEM	17 August 2023
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Updated	Laura Grant BSc (Hons), MCIEEM	11 September 2023

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1 Executive Summary

Report purpose	This report provides details of wintering and breeding bird surveys completed at M4 Junction 16 site.
Date and methods of survey	Wintering bird surveys were conducted between December 2022 and March 2023, with one survey visit per month. Breeding bird surveys were conducted between March 2023 and May 2023, with one survey visit per month.
Key findings	624 records of 42 bird species were returned by the desk study, comprising a mix of species typical of urban, arable, wetland and woodland habitat. 23 species were recorded within the site during wintering bird surveys, 11 of which are notable: • Fieldfare, redwing and red kite are Schedule 1 species recorded within the site. • Dunnock, reed bunting and song thrush are Section 41 species recorded within the site. • Meadow pipit, common snipe, sparrowhawk, woodpigeon and wren are amber listed species recorded within the site. 27 bird species were recorded within the site during breeding bird surveys. Of these, none were confirmed breeding, 17 were probable breeders, six possible breeders and five were non-breeding species: • None of the species recorded are Schedule 1 species. Six species are listed on Section 41 of the NERC Act (2006), three are on the Birds of Conservation Concern (BOCC) red list and 11 are on the BOCC amber list. • Of these, bullfinch, common whitethroat, dunnock, reed bunting, skylark, song thrush, woodpigeon and wren were considered 'probable breeders' due to observed behaviours including pairs, territorial behaviour, and males observed singing in the same location on more than one survey. • Notable 'possible breeders' included meadow pipit, mistle thrush and willow warbler.

2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins on behalf of Moto Hospitality Ltd to conduct breeding and wintering bird surveys to identify potential impacts of proposals for the construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710).

2.2 Site Description

- 2.2.1 The 7.3 ha site is comprised of modified grassland, other neutral grassland, bramble scrub, mixed scrub, hardstanding, and woodland. The site is bordered by the M4 motorway to the north, and the B4005 borders the southern and southwestern edges of the site. Agricultural fields are present bordering the east of the site; woodland stands are present to the south of the B4005. The wider surroundings include the village of Blagrove to the north of the M4, with predominantly agricultural and pastureland to the south of the M4.

2.3 Proposed Works

- 2.3.1 The proposals at the site are an outline planning application for Swindon Services (in line with Beech Design - M49_101 – proposed layout plan (illustrative) - rev G).

2.4 Aims of Report

- 2.4.1 This report is Technical Appendix 5 of the Ecology Chapter for Swindon Services, providing details of wintering and breeding bird surveys completed at the site.

3 Methods

3.1 Desk Study

- 3.1.1 A desk study was carried out to identify records of birds within 2km of the site (central OS national grid reference SU1043582705). Records were returned from Wiltshire and Swindon Biological Records Centre (WSBRC) on 22nd August 2022.

3.2 Wintering Birds

- 3.2.1 A wintering bird survey was conducted between December 2022 and March 2023, with experienced ornithologists Oliver Bulpitt and Emily Power leading one survey visit per month conducted at dawn and dusk. Table 3.1 sets out the dates and weather conditions for each visit.
- 3.2.2 The methodology was adapted from the English Wintering Bird Survey methods (BTO, 2018), whereby all habitats were included in the transect rather than splitting the site into two 1km transects. Bird registrations were recorded on a map rather than using distance bands.
- 3.2.3 During each visit, a transect was walked at a slow pace to enable birds to be detected, identified and located by sight and sound, using 10 x 40mm binoculars and a 15-45 x 60mm spotting scope. Frequent stops were made to scan suitable habitats and listen for singing and calling birds. All areas of suitable breeding habitat within and adjacent to the site boundary were approached to within 50m (see survey area and transect routes in Figure 1, Appendix 3).
- 3.2.4 The location and activity of each bird detected was recorded and mapped using standard two-letter BTO species codes combined with activity symbols (see Figure 2, Appendix 3).

Table 3.1: *Wintering bird survey dates and survey conditions*

Visit No.	Date	Start Time	End Time	Surveyors	Weather Conditions
1	09/12/2022	09:00	11:00	OB & LH*	Start: -1°C, cloud 1/8, wind Bf 1, with no rain, good visibility and frozen ground End: 1°C, 1/8 cloud, wind Bf 1
2	26/01/2023	10:00	11:30	OB & AK	Start: 3°C, cloud 6/8, wind Bf 2, no rain End: 5°C, 6/8 cloud, wind Bf 1
3	14/03/2023	15:45	17:45	EP & LH	Start: 16°C, cloud 2/8, wind Bf 1, no rain End: 12°C, 1/8 cloud, wind Bf 1, no rain
4	21/03/2023	07:00	08:30	EP & AK	Start: 10°C, cloud 8/8, wind Bf 4 End: 10°C, 7/8 cloud, wind Bf 4

*Where LH = Lyvy Hall, OB = Oliver Bulpitt, AK = Anna Kogioni, EP = Emily Power

- 3.2.5 The assessment of the importance of the site for wintering birds takes in to account the abundance of species on site, the quality of habitat present and the geographical range of the bird species based on national and regional accounts. The Wiltshire List produced by the Wiltshire Ornithological Society was used to determine the value of the species present on site at a county level.

3.3 Breeding Birds

- 3.3.1 A breeding bird survey was conducted in spring 2023, with experienced ornithologist Emily Power leading three visits between March and May at dawn. Table 3.2 sets out the dates and weather conditions for each visit.
- 3.3.2 The methodology was based on the Common Standards Monitoring Guidance (JNCC, 2004), Bird Census Techniques (Bibby *et al.*, 2000) and the Bird Survey Guidelines (Bird Survey & Assessment Steering Group, 2023).
- 3.3.3 During each visit, a transect was walked at a slow pace to enable birds to be detected, identified and located by sight and sound, using 10 x 40mm binoculars and a 15-45 x 60mm spotting scope. Frequent stops were made to scan suitable habitats and listen for singing and calling birds. All areas of suitable breeding habitat within and adjacent to the site boundary were approached to within 50m (see survey area and transect routes in Figure 1, Appendix 2).
- 3.3.4 The location and activity of each bird detected was recorded and mapped using standard two-letter BTO species codes combined with activity symbols (see Figure 3, Appendix 2). Territories were inferred from registrations of birds made in the same location on more than one occasion.
- 3.3.5 Birds exhibiting breeding behaviour were assigned to one of four categories: confirmed breeding, probable breeder, possible breeder or not breeding, based on the BTO Breeding Status Codes (see Table at Appendix 4). Where territories were not identified, due to the species not holding territories or being highly mobile, but the species was seen in pairs, the number of pairs has been estimated from sightings across the three visits.

Table 3.2: *Breeding bird survey dates and survey conditions*

Visit No.	Date	Start Time	End Time	Sunrise	Surveyors	Weather Conditions
1	29/03/2023	06:20	08:00	06:50	EP & AK*	Start: 9°C, cloud 8/8, wind Bf 1 End: 10°C, 8/8 cloud, wind Bf 1, slight drizzle

2	24/04/2023	05:55	05:53	08:25	EP & AK	Start: 5°C, cloud 2/8, wind Bf 2 End: 7°C, 2/8 cloud, wind Bf 2
3	19/05/2023	05:10	05:10	07:10	EP	Start: 11°C, cloud 8/8, wind Bf 2 End: 13°C, 5/8 cloud, wind Bf 2

**Where EP = Emily Power and AK = Anna Kogioni*

- 3.3.6 The assessment of the importance of the site for breeding birds takes in to account the numbers of potential territories for each species, the abundance of the species on site, the quality of habitat present and the geographical range of the bird species based on national and regional accounts. The Wiltshire List produced by the Wiltshire Ornithological Society was used to determine the value of the species present on site at a county level.

3.4 Limitations

- 3.4.1 Three breeding bird survey visits were conducted between March and May. The Bird Survey Guidelines suggest that six visits should be undertaken, however this is intended to address the decreased detectability of birds in woodland habitats. The woodland habitat in the south of the site is not due to be impacted by the proposals therefore three visits were considered proportionate to gain a sufficient understanding of the breeding bird assemblage present.

4 Results and Interpretation

4.1 Desk Study

- 4.1.1 624 records of 42 bird species were returned by the desk study, comprising a mix of species typical of urban, arable, wetland and woodland habitat. Notably, records of several species were returned within the site boundary.
- 4.1.2 Records of schedule 1 red kite (*Milvus milvus*) were returned within the site boundary (most recently in 2017), as well as a record of schedule 1 barn owl (*Tyto alba*) bordering the southeast of the site (dates 2015). Importantly, in 2006, lapwing (*Vanellus Vanellus*) were noted on site; 98 individuals were recorded in December of that year. In January 2007, 100+ individuals of the species were noted at the site, including a 'dozen' pairs.

4.2 Wintering Birds

Species assemblage

- 4.2.1 A total of 23 species were recorded within the survey area across the four survey visits. Of these, 11 are notable species, given in Table 4.1 below. The full survey results are given in Table A2.1 in Appendix 2. The locations of the bird registrations are given in Figures DR005_01 – DR005_04 in Appendix 3.
- 4.2.2 Three of the species recorded are on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Three species are listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), two are on the Birds of Conservation Concern (BOCC) red list and seven are on the BOCC amber list, as detailed in Table 4.1.
- 4.2.3 Fieldfare (*Turdus pilaris*), redwing (*Turdus iliacus*) and red kite (*Milvus milvus*) are Schedule 1 species. Fieldfare and red kite were observed as individuals on one visit only, however redwing were observed on each visit, either singly or in flocks of up to 20 individuals, foraging in the central field and both east and west hedgerows (H1 and H2).
- 4.2.4 Dunnock (*Prunella modularis*), reed bunting (*Emberiza schoeniclus*) and song thrush (*Turdus philomelos*) are Section 41 species. Dunnock and song thrush were observed in small numbers while reed bunting were observed on three visits, often associated with the SUDs basin in the west, with a peak count of four singing males during the February visit. This is the only species recorded that is decreasing in Wiltshire.
- 4.2.5 Meadow pipit (*Anthus pratensis*) was observed in flocks of up to 20, foraging within the central field and in the hedgerows to the east off-site. Common snipe (*Gallinago gallinago*) was flushed from the central field once, sparrowhawk (*Accipiter nisus*) was observed once, and woodpigeon

(*Columba palumbus*) and wren (*Troglodytes troglodytes*) were observed in relatively small numbers. These species are amber listed as a result of national declines; however, all of these species are common in Wiltshire.

- 4.2.6 Due to the declining status of reed bunting in Wiltshire and the presence of singing males, and the flocks of redwing and meadow pipit, the on-site populations of these species are considered to be of District value in a geographic context. All other species identified are common and widespread species or were identified in such low numbers as to be of negligible value in a geographic context.

Habitat Use

- 4.2.7 Within the red line boundary, the area of greatest importance to birds is the hedgerow on the western boundary next to the SUDS basin, where dunnoek, redwing, reed bunting, song thrush, sparrowhawk and wren were recorded. This hedgerow offers shelter for birds foraging in the SUDs basin, which is relatively dry and comprises weed species which offer a foraging resource in the form of seeds, akin to winter stubble, and is therefore of moderate value for wintering birds. The centre of the site was used for foraging by flocks of meadow pipit and redwing, and a single snipe. Generally, the central field was waterlogged during the surveys however no wildfowl were observed foraging and only one wader (snipe) was observed on one occasion. The field is therefore considered to be of low value to wintering birds. The eastern hedgerow was utilised by flocks of redwing, and individual woodpigeon and wren, therefore overall, it is considered to be of low value to wintering birds.
- 4.2.8 The north and south boundaries of the site are lacking in boundary features that could be used by foraging birds.
- 4.2.9 Off-site, the area of most value to wintering birds is the hedgerows and scrub around Pond 1. This location supports flocks of redwing, as well as dunnoek, reed bunting, song thrush, woodpigeon and wren, and is therefore of moderate value.

Table 4.1: Wintering Bird Survey Results – Notable Species

Species	Latin	Observed behaviours	Protection / Priority Status	County Status	Value of Site Population
Dunnoek	<i>Prunella modularis</i>	Two individuals singing in Mar	S41 ¹ , Amber ²	Common and widespread resident	Negligible
Fieldfare	<i>Turdus pilaris</i>	One flying over	WCA ³ , Red	Common winter/passage	Negligible
Meadow pipit	<i>Anthus pratensis</i>	Foraging in groups of 3 - 20	Amber	Common resident and passage/winter	District
Red kite	<i>Milvus milvus</i>	One foraging in Jan	WCA	Increasing resident breeder and wanderer	Negligible
Redwing	<i>Turdus iliacus</i>	Individuals and small groups in Dec and Jan, flocking in groups up to 20 in Feb and Mar	WCA, Amber	Common winter/passage	District
Reed bunting	<i>Emberiza schoeniclus</i>	Individuals and pairs observed, peak count 4 singing males in Feb	S41, Amber	Seriously decreasing resident, passage/winter influx	District
Common snipe	<i>Gallinago gallinago</i>	One flushed from central field in Dec	Amber	Winter visitor	Negligible
Song thrush	<i>Turdus philomelos</i>	Individuals foraging	S41, Red	Common resident	Negligible
Sparrowhawk	<i>Accipiter nisus</i>	One male foraging in Jan	Amber	Common and widespread resident	Negligible
Woodpigeon	<i>Columba palumbus</i>	Individuals foraging	Amber	Widespread common resident	Negligible
Wren	<i>Troglodytes troglodytes</i>	Individuals foraging and singing, peak count 5 singing males in Mar	Amber	Common resident	Negligible

¹ S41 = Species of Principal Importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

² BOCC = Red and amber list: Birds of Conservation Concern 5

³ WCA = Scheduled 1 of the Wildlife and Countryside Act 1981 (as amended)

Wintering birds evaluation

- 4.2.10 The western hedgerow (H1) is of greatest importance to wintering birds due to its proximity to the off-site SUDs basin. The central field offers some foraging opportunities for redwing and meadow pipit, however this is also provided by the fields to the east, particularly around Pond 1 in the south-east. Overall, the wintering populations of meadow pipit, redwing and reed bunting are considered to be of District importance.

4.3 Breeding Birds

Species Assemblage

- 4.3.1 A total of 27 species were recorded within the survey area across the three survey visits. Of these, none were confirmed breeding, 17 were probable breeders, six possible breeders and five were non-breeding species. The notable species are given in Table 4.2 below, with full results in Table A2.2 in Appendix 2. The locations of the bird registrations are given in Figures DR006_01 – DR006_03 in Appendix 3.
- 4.3.2 None of the species recorded are Schedule 1 species. Six species are listed on Section 41 of the NERC Act (2006), three are on the Birds of Conservation Concern (BOCC) red list and 11 are on the BOCC amber list, as detailed on Table 4.2.
- 4.3.3 Of these, bullfinch (*Pyrrhula pyrrhula*), common whitethroat (*Sylvia communis*), dunnock, reed bunting, skylark (*Alauda arvensis*), song thrush (*Turdus philomelos*), woodpigeon and wren were considered 'probable breeders' due to observed behaviours including pairs, territorial behaviour, and males observed singing in the same location on more than one survey. The estimated number of territories for each species is low, comprising nine wren territories, three dunnock, two skylark (and a third partially off-site), and one for each of the remaining notable species (see Appendix 3). The higher number for wren may be due to the fact that wren is a common species and has a high detectability rate, and therefore is more likely to be recorded.
- 4.3.4 Notable 'possible breeders' included meadow pipit, mistle thrush and willow warbler. Meadow pipit was observed in small groups in the March survey only and these are considered likely to be residual over-wintering groups. Mistle thrush and willow warbler were individuals observed singing on one occasion only, and therefore may not have bred successfully on site.
- 4.3.5 Notable species observed that were considered not breeding includes sedge warbler (*Acrocephalus schoenobaenus*) and grasshopper warbler (*Locustella naevia*) which were sighted in April only and are considered likely to be still on migration. One notable species that was observed flying over the site was mallard (*Anas platyrhynchos*). As there are no waterbodies on site it is considered unsuitable for the species to breed.

4.3.6 Of the species recorded on site and within the zone of influence of the site, four are associated with farmland habitats. These are:

- common whitethroat (*Sylvia communis*);
- goldfinch (*Carduelis carduelis*);
- skylark (*Alauda arvensis*); and
- woodpigeon (*Columba palumbus*).

4.3.7 Only one of these had territories within the site boundary (skylark) and therefore the site is not considered to support a typical farmland bird assemblage but rather supports an assemblage of common bird species.

Habitat Use

4.3.8 Within the red line boundary, the area of greatest importance to breeding birds is the central field which supports two skylark territories. An additional skylark territory overlaps the site but is considered likely that any nests are located south of the road. One reed bunting territory is located by the western hedgerow, however any nests are likely to be within the SUDs basin rather than the hedgerow itself. The remainder of the site supports one dunnock and five wren territories.

4.3.9 Off-site, the far south-east corner supports the greatest variety of territories, including one territory each of bullfinch, goldfinch, song thrush and woodpigeon, two dunnock territories and three wren territories. Territories of non-notable species have not been mapped, but this area also supports territories of blackcap, chaffinch and chiffchaff.

4.3.10 There is a notable absence of breeding bird behaviour along the northern boundary of the site, due to the M4 acting as a noise deterrent in locations with suitable nesting habitat, with territories almost exclusively by wren, which has a loud song. The north and south of the central field has a lack of suitable nesting habitat and therefore lacks breeding birds.

4.3.11 A summary of the species observed, breeding behaviours and territories is given in Table 4.2 below.

Table 4.2: Breeding Bird Survey Results

Species	Latin	Breeding Evidence	Estimated No. of Pairs / Territories	Protection / Priority Status	County Status	Value of Site Population
Probable breeder						
Bullfinch	<i>Pyrrhula pyrrhula</i>	P	Pairs: 1	S41 ⁴ , Amber ⁵	Moderately common resident	Negligible
Common white-throat	<i>Sylvia communis</i>	P, T	Pairs: 1	Amber	Common summer visitor and passage migrant	Negligible
Duncock	<i>Prunella modularis</i>	T	Territories: 3	S41, Amber	Common and widespread resident	Negligible
Goldfinch	<i>Carduelis carduelis</i>	T	Territories: 1	None (farmland indicator)	Common resident/ passage	Negligible
Reed bunting	<i>Emberiza schoeniclus</i>	P	Pairs: 1	S41, Amber	Seriously decreasing resident, passage/ winter influx	District
Skylark	<i>Alauda arvensis</i>	P, T	Territories: 2	S41, Red	Locally common resident/ passage/ winter visitor	Negligible
Song thrush	<i>Turdus philomelos</i>	P, T	Territories: 1	S41, Amber	Common resident	Negligible
Wood-pigeon	<i>Columba palumbus</i>	P	Pairs: 1	Amber	Widespread common resident	Negligible
Wren	<i>Troglodytes troglodytes</i>	T	Territories: 9	Amber	Common resident	Negligible
Possible breeder						
Meadow pipit	<i>Anthus pratensis</i>	H	-	Amber	Common resident and passage/ winter	Negligible

⁴ S41 = Species of Principal Importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

⁵ BOCC = Red and amber list: Birds of Conservation Concern 5

Mistle thrush	<i>Turdus viscivorus</i>	H	-	Red	Common resident	Negligible
Willow warbler	<i>Phylloscopus trochilus</i>	H	-	Amber	Common summer visitor decreasing	Negligible
Non-breeding						
Mallard	<i>Anas platyrhynchos</i>	F	-	Amber	Common resident and winter visitor	Negligible
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	M	-	Amber	Common summer visitor	Negligible
Grass-hopper warbler	<i>Locustella naevia</i>	M	-	S41, Red	Local and decreasing summer visitor	Negligible

Breeding bird evaluation

- 4.3.12 The site supports one reed bunting territory which is of District importance in a geographic context due to the 'seriously decreasing' status of the species in Wiltshire.
- 4.3.13 The site supports two skylark territories, however, the species is common in Wiltshire (being present in 809 of 915 tetrads and breeding in 602) and there is suitable habitat in the adjacent landscape for the species, where skylark were heard singing. The on-site population is therefore not considered to be of significance, being of Local value in a geographic context.
- 4.3.14 All other species were identified in such low numbers as to be of negligible value in a geographic context.
- 4.3.15 Notable bird territories located outside the site but within the zone of influence also include bullfinch, common whitethroat, song thrush and woodpigeon, which would benefit from landscaping enhancements within the site.

References

Bibby, D.J., Burgess, N.D., Hill, D.A. & Mustoe, S.H. (2000): *Bird Census Techniques*, 2nd edition. Academic Press, London

Bird Survey & Assessment Steering Group (2023). *Bird Survey Guidelines for assessing ecological impacts*. Online resource (accessed online 15th August 2023 at <https://birdsurveyguidelines.org>)

British Trust for Ornithology (2018). *BTO/Natural England English Wintering Bird Survey Instructions*. Thetford, Norfolk (accessed online 15th August 2023 at <https://www.bto.org/our-science/projects/english-winter-bird-survey/ewbs-survey-resources>)

Appendix 1: BTO Breeding Evidence Codes

Breeding Code	Description
Non-breeding	
F	Flying over
M	Species observed but suspected to be still on migration
U	Species observed but suspected to be summering non-breeder
Possible breeder	
H	Species observed in breeding season in suitable nesting habitat
S	Singing male present (or breeding calls heard) in breeding season in suitable breeding habitat
Probable breeding	
P	Pair observed in suitable nesting habitat in breeding season
T	Permanent territory presumed through registration of territorial behaviour (song etc) on at least two different days a week or more apart at the same place or many individuals on one day
D	Courtship and display (judged to be in or near potential breeding habitat; be cautious with wildfowl)
N	Visiting probable nest site
A	Agitated behaviour or anxiety calls from adults, suggesting probable presence of nest or young nearby
I	Brood patch on adult examined in the hand, suggesting Incubation
B	Nest building or excavating nest-hole
Confirmed breeding	
DD	Distraction-display or injury feigning
UN	Used nest or eggshells found (occupied or laid within period of survey)
FL	Recently fledged young (nidicolous species) or downy young (nidifugous species). Careful consideration should be given to the likely provenance of any fledged juvenile capable of significant geographical movement. Evidence of dependency on adults (e.g. feeding) is helpful. Be cautious, even if the record comes from suitable habitat.
ON	Adults entering or leaving nest-site in circumstances indicating Occupied Nest (including high nests or nest holes, the contents of which can not be seen) or adults seen incubating

FF	Adult carrying faecal sac or food for young
NE	Nest containing eggs
NY	Nest with young seen or heard

Appendix 2: Full Bird Survey Results

Table A2.1: Wintering Bird Survey Results

Species	Latin	Observed behaviours	Protection / Priority Status	County Status	Value of Site Population
Blackbird	<i>Turdus merula</i>	Foraging by individuals	-	Common resident	Negligible
Blue tit	<i>Cyanistes caeruleus</i>	Individuals and pairs alarm calling	-	Abundant resident	Negligible
Buzzard	<i>Buteo buteo</i>	Individuals perched	-	Widespread and increasing resident	Negligible
Carrion crow	<i>Corvus corone</i>	Individuals and small groups foraging	-	Common and increasing resident	Negligible
Chaffinch	<i>Fringilla coelebs</i>	Contact calls by individuals in Mar only	-	Common resident / winter visitor	Negligible
Dunnock	<i>Prunella modularis</i>	Two individuals singing in Mar	S41 ⁶ , Amber ⁷	Common and widespread resident	Negligible
Chiffchaff	<i>Phylloscopus collybita</i>	One singing in Mar (likely new arrival)	-	Common in summer, scarce in winter	Negligible
Fieldfare	<i>Turdus pilaris</i>	One flying over	WCA ⁸ , Red	Common winter/passage	Negligible
Goldfinch	<i>Carduelis carduelis</i>	Foraging by individuals and small groups	-	Common resident/passage	Negligible
Great tit	<i>Parus major</i>	Individuals and pairs foraging	-	Common resident	Negligible
Long-tailed tit	<i>Aegithalos caudatus</i>	Group of 7 in Dec only	-	Common resident	Negligible
Magpie	<i>Pica pica</i>	Foraging by individuals and small groups	-	Common and increasing resident	Negligible
Meadow pipit	<i>Anthus pratensis</i>	Foraging in groups of 3 - 20	Amber	Common resident and passage/winter	District
Red kite	<i>Milvus milvus</i>	One foraging in Jan	WCA	Increasing resident breeder and wanderer	Negligible

⁶ S41 = Species of Principal Importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

⁷ BOCC = Red and amber list: Birds of Conservation Concern 5

⁸ WCA = Scheduled 1 of the Wildlife and Countryside Act 1981 (as amended)

Redwing	<i>Turdus iliacus</i>	Individuals and small groups in Dec and Jan, flocking in groups up to 20 in Feb and Mar	WCA, Amber	Common winter/passage	District
Reed bunting	<i>Emberiza schoeniclus</i>	Individuals and pairs observed, peak count 4 singing males in Feb	S41, Amber	Seriously decreasing resident, passage/winter influx	District
Robin	<i>Erithacus rubecula</i>	Individuals foraging and singing	-	Abundant resident	Negligible
Common snipe	<i>Gallinago gallinago</i>	One flushed from central field in Dec	Amber	Winter visitor	Negligible
Song thrush	<i>Turdus philomelos</i>	Individuals foraging	S41, Red	Common resident	Negligible
Sparrowhawk	<i>Accipiter nisus</i>	One male foraging in Jan	Amber	Common and widespread resident	Negligible
Stonechat	<i>Saxicola rubicola</i>	Pairs and individuals observed	-	Local resident, widespread passage/winter	Negligible
Woodpigeon	<i>Columba palumbus</i>	Individuals foraging	Amber	Widespread common resident	Negligible
Wren	<i>Troglodytes troglodytes</i>	Individuals foraging and singing, peak count 5 singing males in Mar	Amber	Common resident	Negligible

Table A2.2: Breeding Bird Survey Results

Species	Latin	Breeding Evidence	Estimated No. of Pairs / Territories	Protection / Priority Status	County Status	Value of Site Population
Probable breeder						
Blackbird	<i>Turdus merula</i>	T	Territories: 4	-	Common resident	Negligible
Blackcap	<i>Sylvia atricapilla</i>	T	Territories: 3	-	Common summer visitor	Negligible
Blue tit	<i>Cyanistes caeruleus</i>	P, A	Pairs: 5	-	Abundant resident	Negligible

Bullfinch	<i>Pyrrhula pyrrhula</i>	P	Pairs: 1	S41 ⁹ , Amber ¹⁰	Moderately common resident	Negligible
Chaffinch	<i>Fringilla coelebs</i>	P, T	Territories: 2	-	Common resident / winter visitor	Negligible
Chiffchaff	<i>Phylloscopus collybita</i>	T	Territories: 3	-	Common in summer, scarce in winter	Negligible
Common whitethroat	<i>Sylvia communis</i>	P, T	Pairs: 1	Amber	Common summer visitor and passage migrant	Negligible
Dunnock	<i>Prunella modularis</i>	T	Territories: 3	S41, Amber	Common and widespread resident	Negligible
Goldfinch	<i>Carduelis carduelis</i>	T	Territories: 1	-	Common resident/ passage	Negligible
Great tit	<i>Parus major</i>	P, T	Pairs: 4	-	Common resident	Negligible
Magpie	<i>Pica pica</i>	P	Pairs: 1	-	Common and increasing resident	Negligible
Reed bunting	<i>Emberiza schoeniclus</i>	P	Pairs: 1	S41, Amber	Seriously decreasing resident, passage/ winter influx	Negligible
Robin	<i>Erithacus rubecula</i>	T	Territories: 5	-	Abundant resident	Negligible
Skylark	<i>Alauda arvensis</i>	P, T	Territories: 2	S41, Red	Locally common resident/ passage/ winter visitor	Local
Song thrush	<i>Turdus philomelos</i>	P, T	Territories: 1	S41, Amber	Common resident	Negligible
Woodpigeon	<i>Columba palumbus</i>	P	Pairs: 1	Amber	Widespread common resident	Negligible
Wren	<i>Troglodytes troglodytes</i>	T	Territories: 8	Amber	Common resident	Negligible

⁹ S41 = Species of Principal Importance on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006

¹⁰ BOCC = Red and amber list: Birds of Conservation Concern 5

Possible breeder						
Carrion crow	<i>Corvus corone</i>	H	-	-	Common and increasing resident	Negligible
Long-tailed tit	<i>Aegithalos caudatus</i>	H	-	-	Common resident	Negligible
Meadow pipit	<i>Anthus pratensis</i>	H	-	Amber	Common resident and passage/winter	Negligible
Mistle thrush	<i>Turdus viscivorus</i>	H	-	Red	Common resident	Negligible
Pheasant	<i>Phasianus colchicus</i>	H	-	-	Common naturalised resident	Negligible
Willow warbler	<i>Phylloscopus trochilus</i>	H	-	Amber	Common summer visitor decreasing	Negligible
Non-breeding						
Buzzard	<i>Buteo buteo</i>	F	-	-	Widespread and increasing resident	Negligible
Mallard	<i>Anas platyrhynchos</i>	F	-	Amber	Common resident and winter visitor	Negligible
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	M	-	Amber	Common summer visitor	Negligible
Swallow	<i>Hirundo rustica</i>	F	-	-	Common summer visitor/passage migrant	Negligible
Grass-hopper warbler	<i>Locustella naevia</i>	M	-	S41, Red	Local and decreasing summer visitor	Negligible

Appendix 3: Figures

Figure 1: Survey area and transect route

Figure 2: Wintering bird survey results

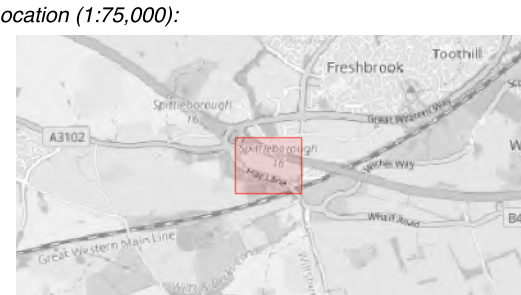
Figure 3: Breeding bird survey results



LEGEND

Site boundary (7.33 ha)

Bird Transect Route



Project:
Swindon Services

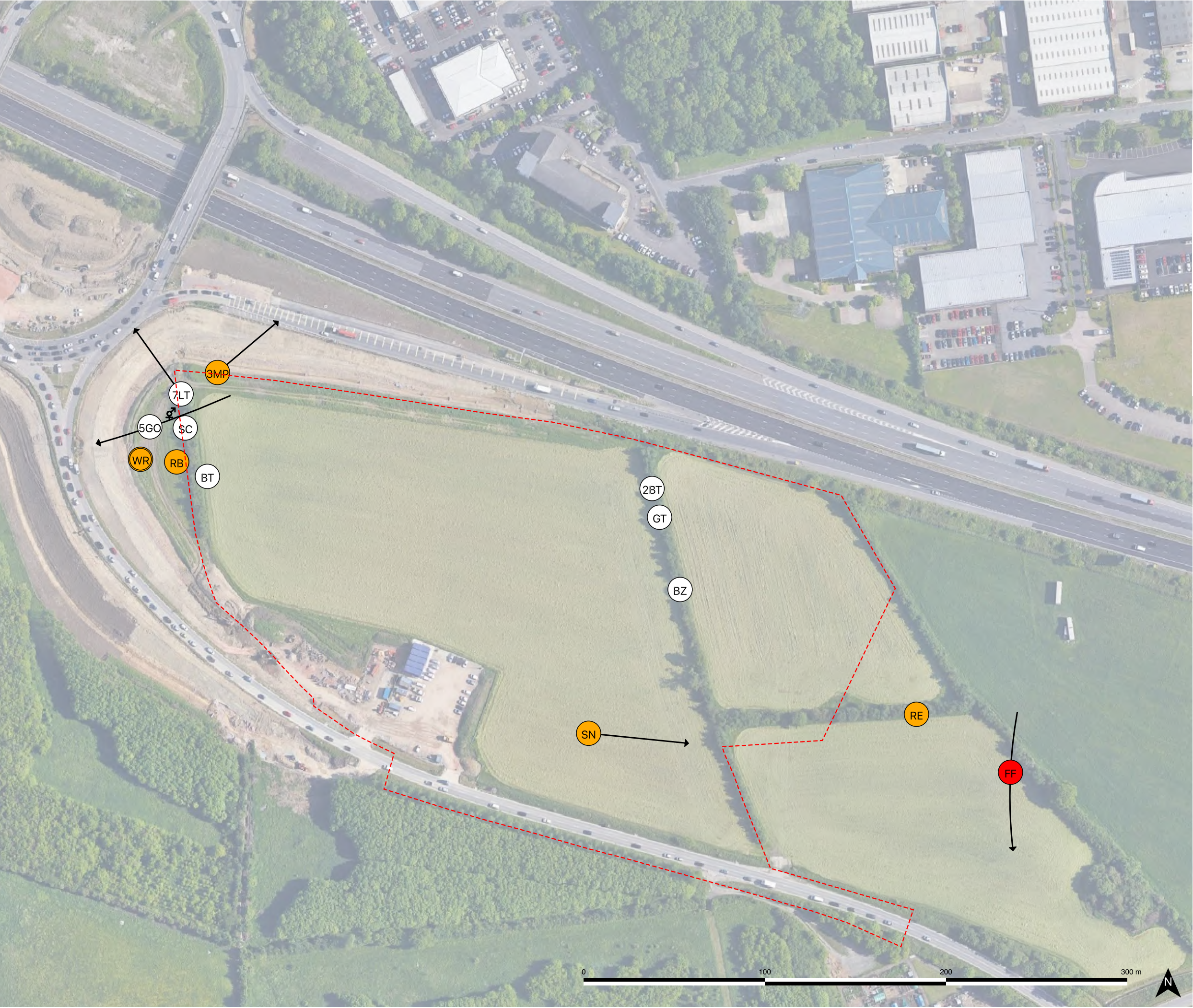
Client:
Smith Jenkins Ltd

Drawing Title:
Bird Transects Route

Drawing No.:	Scale (@A3):
EBD_2511_DR006	1:2,000
Central Eastings, Northings:	Date Drawn:
410577, 182658	12/09/2023
Drawn by:	Approved by:
ASp	BG

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LEGEND

BBS Species Status

Green Listed

Amber Listed

Red Listed

Bird Behaviour

Male bird

Female bird

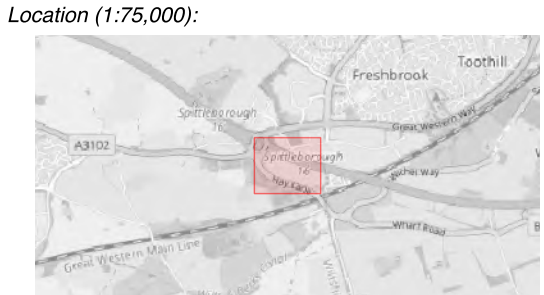
Bird singing

Bird at nest

Bird calling

Bird alarm calling

BTO Code	Species
BT	Blue Tit
BZ	Buzzard
FF	Fieldfare*
GO	Goldfinch
GT	Great Tit
LT	Long-tailed Tit
MP	Meadow Pipit
RE	Redwing*
RB	Reed Bunting
SN	Snipe
SC	Stonechat
WR	Wren



Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Wintering Birds December Survey

Drawing No.:	Scale (@A3):
EBD_2511_DR007_01	1:2,000
Central Eastings, Northings:	Date Drawn:
410515, 182736	12/09/2023
Drawn by:	Approved by:
ASp	BG

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LEGEND

BBS Species Status

Green Lsited

Amber Listed

Red Listed

Bird Behaviour

Male bird

Female bird

Bird singing

*

Bird at nest

Bird calling

=

Bird alarm calling

BTO Code

Species

B

Blackbird

BT

Blue Tit

BZ

Buzzard

C

Carrion Crow

D

Dunnock

GO

Goldfinch

MG

Magpie

MP

Meadow Pipit

KT

Red Kite*

RE

Redwing*

R

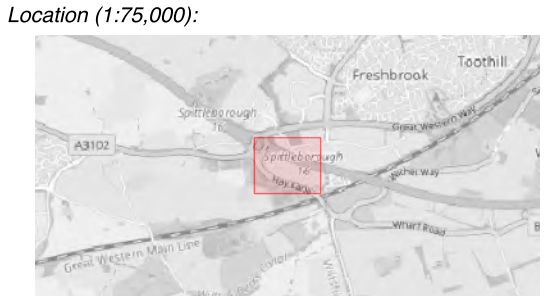
Robin

ST

Song Thrush

SH

Sparrowhawk



Project:

Swindon Services

Client:

Smith Jenkins Ltd

Drawing Title:

Wintering Birds January Survey

Drawing No.:

EBD_2511_DR007

Scale (@A3):

1:2,000

Central Eastings, Northings:

410515, 182736

Date Drawn:

12/09/2023

Drawn by:

ASp

Approved by:

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LEGEND

BBS Species Status

Green Listed

Amber Listed

Red Listed

Bird Behaviour

Male bird

Female bird

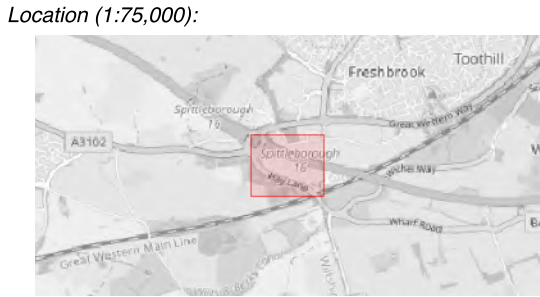
Bird singing

Bird at nest

Bird calling

Bird alarm calling

BTO Code	Species
B	Blackbird
BT	Blue Tit
BZ	Buzzard
C	Carrion Crow
GO	Goldfinch
RE	Redwing*
RB	Reed Bunting
ST	Song Thrush



Project:

Swindon Services

Client:

Smith Jenkins Ltd

Drawing Title:

Wintering Birds February Survey

Drawing No.:

EBD_2511_DR007_03

Scale (@A3):

1:2,200

Central Eastings, Northings:

410515, 182736

Date Drawn:

12/09/2023

Drawn by:

AK

Approved by:

BG

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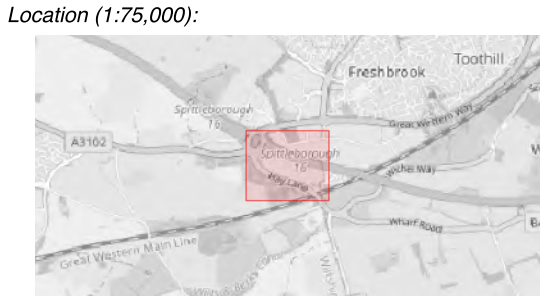
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LEGEND	
BBS Species Status	Bird Behaviour
Green Listed	♂ Male bird
Amber Listed	♀ Female bird
Red Listed	🗣️ Bird singing
	👤 Bird at nest
	🗣️ Bird calling
	🚨 Bird alarm calling
BTO Code	Species
B	Blackbird
BT	Blue Tit
C	Carrion Crow
CH	Chaffinch
D	Dunnock
GO	Goldfinch
GT	Great Tit
MG	Magpie
MP	Meadow Pipit
RE	Redwing*
RB	Reed Bunting
R	Robin
ST	Song Thrush



Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Wintering Birds March Survey

Drawing No.:
EBD_2511_DR007_04

Scale (@A3):
1:2,500

Central Eastings, Northings:
410515, 182736

Date Drawn:
12/09/2023

Drawn by:
AK

Approved by:
BG

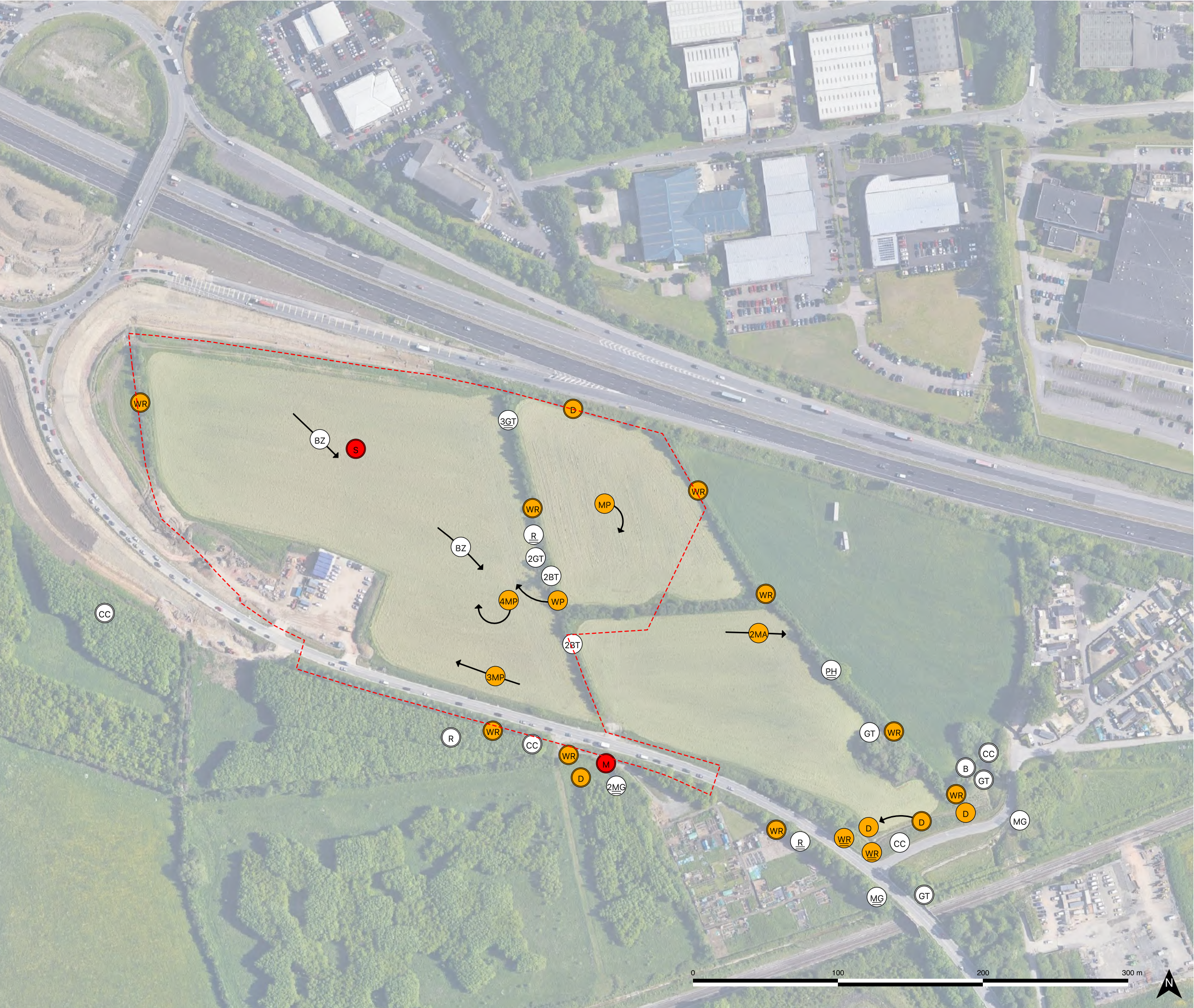
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LEGEND

BBS Species Status

Green Listed

Amber Listed

Red Listed

Bird Behaviour

Male bird

BTO Code

Species

B

Blackbird

BT

Blue Tit

BZ

Buzzard

CC

Chiffchaff

D

Dunnock

GT

Great Tit

MG

Magpie

MA

Mallard

MP

Meadow Pipit

M

Mistle Thrush

PH

Pheasant

R

Robin

S

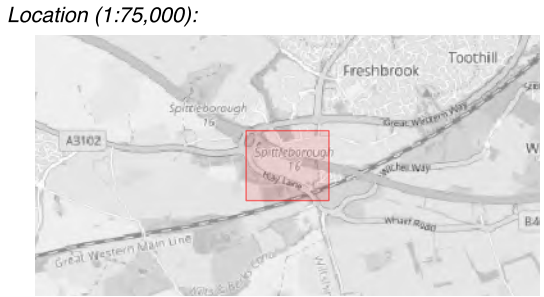
Skylark

WP

Woodpigeon

WR

Wren



Project:

Swindon Service

Client:

Smith Jenkins Ltd

Drawing Title:

Breeding Birds March Survey

Drawing No.:

EBD_2511_DR008_01

Scale (@A3):

1:2,500

Central Eastings, Northings:

410605, 182692

Date Drawn:

12/09/2023

Drawn by:

AK

Approved by:

BG

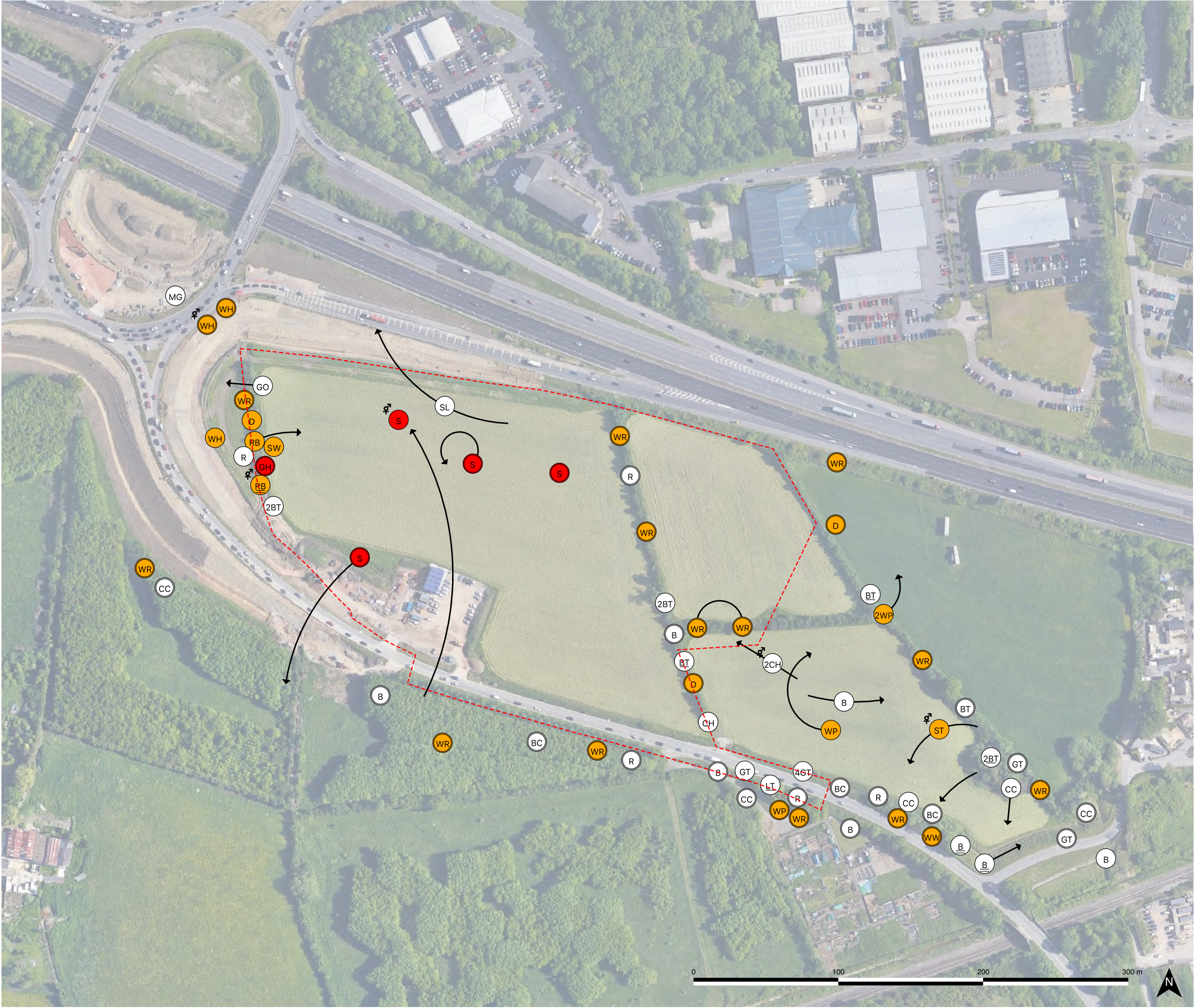
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LEGEND

BBS Species Status

- Green Listed
- Amber Listed
- Red Listed

Bird Behaviour

- Male bird
- Female bird
- Bird singing
- Bird at nest
- Bird calling
- Bird alarm calling

BTO Code Species

B	Blackbird
BC	Blackcap
BT	Blue Tit
CH	Chaffinch
CC	Chiffchaff
D	Dunnock
GO	Goldfinch
GH	Grasshopper Warbler
GT	Great Tit
LT	Long-tailed Tit
MG	Magpie
RB	Reed Bunting
R	Robin
SW	Sedge Warbler
S	Skylark
ST	Song Thrush
SL	Swallow
WH	Whitethroat
WW	Willow Warbler
WP	Woodpigeon
WR	Wren

Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Breeding Birds April Survey

Drawing No.:
EBD_2511_DR008_02

Central Eastings, Northings:
410605, 182692

Drawn by:
AK

Scale (@A3):
1:2,500

Date Drawn:
12/09/2023

Approved by:
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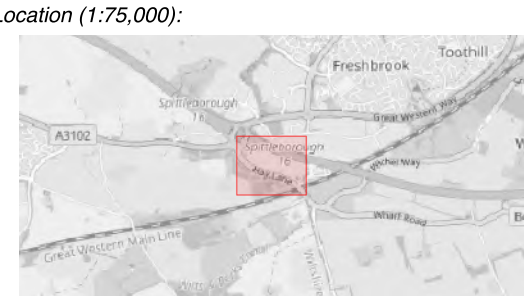
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- LEGEND
- Site boundary (7.33 ha)
 - Bullfinch
 - Dunnock
 - Goldfinch
 - Reed bunting
 - Skylark
 - Song thrush
 - Whitethroat
 - Woodpigeon
 - Wren



Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Breeding Bird Territories

Drawing No.: EBD_2511_DR009	Scale (@A3): 1:2,100
Central Eastings, Northings: 410547, 182641	Date Drawn: 12/09/2023
Drawn by: EP	Approved by: BG

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