

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)

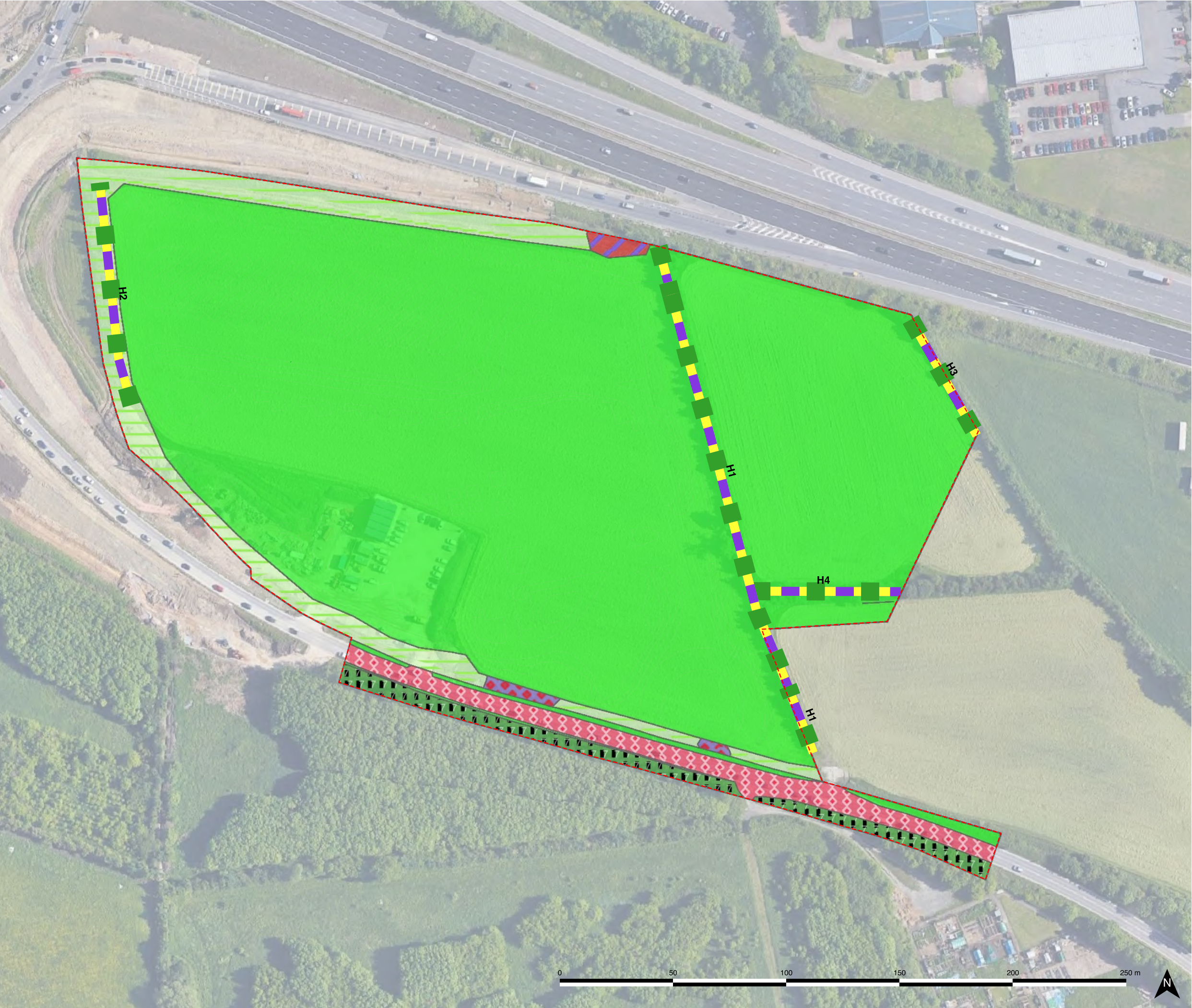


Photograph 6: Tree 2 (T2)



Appendix 2- Figures

Figure 1: Baseline habitats



LEGEND

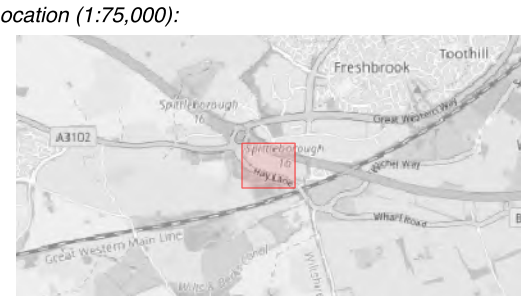
Site boundary (7.33 ha)

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 echinoides</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

June 2024

Ecology by Design Ltd,

Hampden House, Monument Park, Chalgrove, Oxon OX44 7RW.

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Project Code	Title	Date of Issue
EBD02511	Swindon Services – A3 Bats (Version 3)	19 June 2024

	Name	Date
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Updated	Laura Grant BSc (Hons), MCIEEM	11 September 2023
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Updated	Laura Grant BSc (Hons), MCIEEM	19 June 2024

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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 and Potential Roost Feature (PRF) aerial inspection was also conducted to assess the potential value of the site to roosting bats. Emergence surveys of T13 were conducted in May and June 2024 and an automated detector was left in situ at the base of the tree for three weeks.
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 each transect completed during late May, early July and September. 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. During the September survey noctule were recorded foraging at height throughout the survey and common pipistrelle were recorded foraging in the south and north-east of the site as well as soprano pipistrelle in the north-east. Species recorded on the automated detectors comprised largely common and widespread species consisting of predominantly common and soprano pipistrelle (54.1% and 33.5% of all passes respectively) with some activity recorded of Myotis sp. (6.7% of passes), and noctule, serotine or Leisler's bat species (5.6% combined); 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 or September. 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. The timing and quantity of soprano pipistrelle passes indicates that a transitional roost was present in or in close proximity to the east of the site in September. During ground level tree assessments two trees within the site were identified as being suitable for roosting bats; T12, an oak with low suitability and T13 a willow with high suitability, both of which are in central hedgerow H1. Aerial assessments of these trees downgraded T12 to being negligible suitability and T13 was identified as supporting a cavity suitable for a maternity roost of bats and two features suitable for individual bats. A tawny owl nest was present in March 2024 which restricted survey of the tree and is likely to increase risk of predation of any potential roosts. The emergence surveys of T13 in May and June recorded no evidence of roosting bats, and the tawny owl nest appeared inactive. A low level of common and soprano pipistrelle foraging activity was recorded along hedgerow H1 in May and June with addition of noctule in June. In June the woodpecker hole had a heat signature present throughout the survey, indicating potential occupancy by nest birds or grey squirrel. The automated detector data was not indicative of a roost within the tree.

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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. In addition a detector was deployed at the base of T13 for three weeks between May and June 2024 to identify activity indicative of roosting bats.

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)
May-June 2024	23 rd May-13 June (3 weeks; 22 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 Potential Roost Feature Aerial Assessment

- 3.6.1 Two mature trees (oak T12 and willow T13 (numbering as per Tree Survey Report (Patrick Stileman Ltd, 2023)) were subject to a detailed aerial inspection on 20 March 2024 by qualified tree climber and licensed bat ecologist Steve Allen (NE licence 2015-11941-CLS-CLS) with an assistant (see trees in Photograph 1). The surveyors conducted endoscope inspections of the potential roost features identified during the ground level tree assessment and any other features which were present. Notes on the characteristics of the features were made and any evidence of roosting bats was recorded.

3.7 Night Time Roost Surveys

- 3.7.1 Night time roost surveys were conducted of T13 which has suitability for roosting bats to confirm presence or likely absence of roosting bats, and where present, enable characterisation of the roost(s). The surveys undertaken within the site are detailed in Table 3.3.
- 3.7.2 The surveys were based on the guidance included in the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2023). Bat detectors utilized included Elekon Batlogger M detectors to record any bats emerging from or re-entering the buildings.
- 3.7.3 Thermal imaging cameras and infra-red video cameras were used to observe and records bats during emergence surveys of the tunnels as follows:
- TrackIR pro 19mm thermal imaging monoscopes were used, recording at 1280x960 HD display and 50Hz frame rate.
- 3.7.4 The emergence surveys commenced approximately 15 minutes before sunset and lasted until 1.5 hours after sunset.
- 3.7.5 Surveyors were located east and west of the tree, focused on features identified during the aerial assessment as being suitable for roosting bats. During the surveys emergence and/or re-entry points were mapped, species were identified (where possible) and flight lines were noted.

Table 3.3: Details of night time roost surveys conducted in 2024

Date, survey period and sunset time	Tree ID(s)	Surveyors, equipment and weather
23 May 2024; 20:45-22:35 (sunset 21:05)	T13	Laura Grant (Natural England Level 2 licence: 2015-10871-CLS-CLS) and Jack Bailey; Track IR x 2 and Batlogger x 2; 11-10°C, 8-6/8 cloud, Beaufort 2 and no rain.
18 June 2024; 21:12-22:57 (sunset 21:27)	T13	Oliver Bulpitt (Natural England Level 1 licence: 2023-11568-CL17-BAT) and Jack Bailey; Track IR x 2 and Batlogger x 2; 13-11°C, 1-8/8 cloud, Beaufort 2-3 and no rain.

3.8 Limitations / Constraints

- 3.8.1 The aerial assessment conducted on 20 March 2024 confirmed features within willow T13 as having suitability for a maternity colony of roosting bats. It contained an active tawny owl (*Strix aluco*) nest which were considered likely to fledge in late May but young may not disperse from the nest site until late June. It was therefore not possible to conduct additional aerial inspections in accordance with industry standard guidance (Collins, 2023) until the risk of disturbance of the birds and injury of surveyors had passed. Emergence surveys of the tree using two surveyors were completed in May and June to appropriately assess the tree and confirm presence or likely absence of roosting bats.

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.

Transect 21st September 2023

4.2.3 Bat activity within the site was very low with eight passes recorded. Of these, five were noctule (recorded foraging at height), two were common pipistrelle (one on the southern and one on the north-eastern boundary) and one was soprano pipistrelle (on the north-eastern boundary). The earliest pass was noctule recorded 29 minutes after sunset at 19:38.

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.

4.3.2 Overall, at least six species have been recorded within the site. Activity was dominated by common and widespread species consisting of predominantly common pipistrelle (54% of passes), with a moderate level of soprano pipistrelle (33.5%), and low level of *Myotis* sp. (6.7%) and noctule / serotine / Leisler's bat species (5.6%). Two lesser horseshoe passes were recorded at H3 (the eastern boundary of the biodiversity enhancement area) in June, with no registrations of the species within the site in May, July or September.

Detector location H1 (central hedge) – May-June 2023

4.3.3 Overall activity levels recorded during early June was moderate, with 2,042 passes recorded in total during the five nights of recording. Across the sampling period, Pipistrelle sp. comprised 93.2% of all bat passes, of which 85.6% comprise common pipistrelle (n = 1,748), 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 (eastern hedge) – May-June 2023

4.3.4 Overall activity levels recorded 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).

4.3.5 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 (central hedge) – July 2023

- 4.3.6 Overall activity levels recorded during July was low, with only 1,171 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 (eastern hedge) – July 2023

- 4.3.7 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).

Detector location H1 (central hedge) – September 2023

- 4.3.8 Overall activity levels recorded in the vicinity of H1 were very low in July, with 260 passes recorded in total during the five nights of recording (equating to 4.05 passes per hour). Across the sampling period, *Pipistrelle* sp., comprised 88.8% of all bat passes, of which 67.7% comprise common pipistrelle (n = 176), and 21.2% comprise soprano pipistrelle (n = 55). 10.8% comprise NSL species (n = 28) and the final 0.4% comprise *Myotis* sp. (n = 1). Serotine activity included 23 passes.

Detector location H3 (eastern hedge) – September 2023

- 4.3.9 Overall activity levels recorded during early September was moderate, with 2,031 passes recorded in total during the five nights of recording. Across the sampling period, *Pipistrelle* sp. comprised 97.6% of all bat passes, of which 96.1% comprise soprano pipistrelle (n = 1,951), and 1.5% comprise common pipistrelle (n = 31). 0.02% were attributed to *Myotis* sp. (n = 1) and the final 2.4% comprise NSL species (n = 49). Serotine activity included 34 passes.

Detector location H1 (central hedge) – May-June 2024

- 4.3.10 Overall activity levels recorded during were low, with 2,186 passes recorded in total during the three weeks of recording. Across the sampling period, *Pipistrelle* sp. comprised 90.8% of all bat passes, of which 45.8% comprise soprano pipistrelle (n = 1,001), and 45% comprise common pipistrelle (n = 984). 1.3% were attributed to *Myotis* sp. (n = 28) and the final 7.9% comprise NSL species (n = 173).

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

Timing of activity

- 4.3.12 Tables 4.2-4.5 indicate the timing of bat passes throughout the night. In 2023, three soprano pipistrelle passes were recorded 1 minute before sunset in September on the eastern hedge. 95 of the 97 passes within 20 minutes of sunset were in September as well as all passes within 20 minutes of sunrise at the eastern hedge. This timing alongside the peak of bat activity for the species in September indicates the presence of a transitional bat roost within or in close proximity to the proposed biodiversity enhancement area of the site.
- 4.3.13 In 2023 noctule was also recorded within the typical emergence and re-entry period for the species in low numbers, however, the low-frequency calls are recorded up to 100m from the detector and given they are fast flying, they may have covered some distance before arriving on site, therefore there is not an increased likelihood of the species roosting within or in close proximity to the site.
- 4.3.14 In 2023 the remainder of species were recorded outside their typical emergence and/or re-entry periods, indicating that roosts are unlikely to be present within or in close proximity to the site.
- 4.3.15 In 2024 one common and one soprano pipistrelle pass were recorded prior to sunset along with four noctule passes. A low level of activity of each species was also recorded within 20 minutes of sunset. Activity of Myotis species was infrequently recorded over an hour after sunset and over an hour before sunrise. In 2024 the timing and frequency of passes was not indicative of a roost nearby for any species.

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

Species	H1	H3	June Average	H1	H3	July Average	H1	H3	September Average	Average B/h
Soprano pipistrelle	3.60	1.02	2.31	1.14	0.91	1.03	0.86	30.39	15.63	7.16
Soprano / Common pipistrelle				0.02		0.01				<0.01
Common pipistrelle	40.59	23.97	32.28	14.43	2.38	8.41	2.74	0.48	1.61	11.58
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				0.53
Noctule	0.12	0.05	0.08	2.22	0.70	1.46	0.08	0.23	0.16	0.47
Leisler's / Serotine	0.02	0.02	0.02		0.02	0.01				0.02
Serotine							0.36	0.53	0.44	0.18
Myotis sp.	2.90	0.46	1.68	7.10	0.21	3.65	0.02		0.01	1.43
Lesser horseshoe		0.05	0.02							0.01

Table 4.2: Bat activity (passes) throughout the night throughout the site in June, July and September 2023

Species	30-0 minutes before sunset	1-120 minutes after sunset						Middle of night	120-1 minute after sunset						0-30 minutes after sunrise
		1-20	21-40	41-60	61-80	81-100	101-120		120-101	100-81	80-61	60-41	40-21	20-1	
Soprano pipistrelle	3	97	98	157	138	120	104	1,334	33	56	45	23	40	43	2
Soprano / Common pipistrelle				1											
Common pipistrelle			86	444	344	191	138	1,147	159	359	447	356	36		
Common / Nathusius' pipistrelle				1											
Noctule / Leisler's / Serotine		15	35	17	12	2	10	50	1	2	4	20	3		
Noctule	1	22	67	4	9	9		19		1	1	15	3	1	
Leisler's / Serotine				2			1								
Serotine			3	9	8	5	2	27	1	1	1				
Myotis sp.		1			1	18	21	418							
Lesser horseshoe								2							
Grand Total	4	134	288	634	512	345	276	2,997	194	419	498	414	82	44	2

Table 4.3: Bat activity (passes per hour) throughout the night throughout the site in June, July and September 2023

Species	30-0 minutes before sunset	1-120 minutes after sunset						Middle of night	120-1 minute after sunset						0-30 minutes after sunrise
		1-20	21-40	41-60	61-80	81-100	101-120		120-101	100-81	80-61	60-41	40-21	20-1	
Soprano pipistrelle	0.20	9.80	9.90	15.86	13.94	12.12	10.51	6.63	3.33	5.66	4.55	2.32	4.04	4.34	0.13
Soprano / Common pipistrelle				0.10											
Common pipistrelle			8.69	44.85	34.75	19.29	13.94	5.70	16.06	36.26	45.15	35.96	3.64		

Common / Nathusius' pipistrelle				0.10											
Noctule / Leisler's / Serotine		1.52	3.54	1.72	1.21	0.20	1.01	0.25	0.10	0.20	0.40	2.02	0.30		
Noctule	0.07	2.22	6.77	0.40	0.91	0.91		0.09		0.10	0.10	1.52	0.30	0.10	
Leisler's / Serotine				0.20			0.10								
Serotine			0.30	0.91	0.81	0.51	0.20	0.13	0.10	0.10	0.10				
Myotis sp.		0.10			0.10	1.82	2.12	2.08							
Lesser horseshoe								0.01							
Grand Total	0.27	13.64	29.19	64.14	51.72	34.85	27.88	14.89	19.60	42.32	50.30	41.82	8.28	4.44	0.13

Table 4.4: Bat activity (passes) throughout the night at H1 beneath T13 between May and June 2024

Species	30-0 minutes before sunset	1-120 minutes after sunset						Middle of night	120-1 minute after sunset						0-30 minutes after sunrise
		1-20	21-40	41-60	61-80	81-100	101-120		120-101	100-81	80-61	60-41	40-21	20-1	
Soprano pipistrelle	1	17	75	123	127	60	27	247	15	24	70	174	40	1	
Common pipistrelle	1	10	24	140	99	45	45	384	37	56	55	63	24		1
Noctule / Leisler's / Serotine	4	25	56	23	4		1	6	4		13	18	18	1	
Myotis sp.					1		4	22		1					
Grand Total	6	52	155	286	231	105	77	659	56	81	138	255	82	2	1

Table 4.5: Bat activity (passes per hour) throughout the night at H1 beneath T13 between May and June 2024

Species	30-0 minutes before sunset	1-120 minutes after sunset						Middle of night	120-1 minute after sunset						0-30 minutes after sunrise
		1-20	21-40	41-60	61-80	81-100	101-120		120-101	100-81	80-61	60-41	40-21	20-1	

Soprano pipistrelle	0.09	2.34	10.33	16.94	17.49	8.26	3.72	3.07	2.07	3.31	9.64	23.97	5.51	0.14	
Common pipistrelle	0.09	1.38	3.31	19.28	13.64	6.20	6.20	4.77	5.10	7.71	7.58	8.68	3.31		0.09
Noctule / Leisler's / Serotine	0.36	3.44	7.71	3.17	0.55		0.14	0.07	0.55		1.79	2.48	2.48	0.14	
Myotis sp.					0.14		0.55	0.27		0.14					
Grand Total	0.55	7.16	21.35	39.39	31.82	14.46	10.61	8.18	7.71	11.16	19.01	35.12	11.29	0.28	0.09

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 4.6 below. The remainder of trees within the site are identified as being of negligible suitability for roosting bats.

Table 4.6. *Ground level tree assessment results*

Tree No.	Species	Description	Bat Suitability
T12	Oak (<i>Quercus</i> sp.)	Large, semi-mature tree. Very leafy and hard to see features clearly.	Low
T13	Elm (<i>Ulmus</i> sp.) Willow (<i>Salix</i> sp.)	Several features were noted on this tree including lifted bark, a crack in stem, several knot holes on western elevation and a dead limb.	High

4.5 Potential Roost Feature Aerial Inspection Results

- 4.5.1 T12 is an oak with twin stems that twist around each other with some fusing of bark where the main stems touch at 4m. No suitable cavities or other features with potential for use by roosting bats were noted during the climb. The Low suitability identified during the ground level tree assessment has been downgraded to negligible bat potential.
- 4.5.2 T13 is a willow with multiple areas of dead wood. A Tawny Owl (*Strix aluco*) flew from the tree at the start of the inspection. There is a large cavity in the main stem at 3m where the owl flew from which had two eggs on nesting material at the base of the cavity (see Photograph 3), both were warm. The most prominent features on the tree were quickly checked to minimise disturbance to the owl. There is a shear crack just above this cavity which was deemed to be suitable for use by a maternity roost (PRF-M). The entrance is a vertical slot 30cm x 5cm wide (see Photograph 4), with signs of damage around the entrance, leading to a vertical cavity approximately 10cm in height. The internal substrate is dry but rough. An area of lifted bark is present at 4m and knot hole on the stem at 2.5m, both deemed to be suitable for individual bats (PRF-I). Due to the nesting tawny owl, any bats using the available features in the tree would be at an increased risk of predation.
- 4.5.3 Photographs are included in Appendix 2.

4.6 Bat Night Time Roost Surveys

- 4.6.1 The emergence survey of T13 on 23 May 2024 and 18 June 2024 recorded no evidence of roosting bats, and the tawny owl nest appeared inactive.

- 4.6.2 In May a low level of common and soprano pipistrelle foraging activity was recorded along hedgerow H1, with the first bat activity recorded 58 minutes after sunset (outside the typical emergence period for the species). A tawny owl was heard calling from the north of the site at 22:29 (1hr 24mins after sunset).
- 4.6.3 In June a low level of noctule, common and soprano pipistrelle foraging activity was recorded along hedgerow H1. There was a heat signature within the woodpecker hole on the western aspect of T13 which remained warm throughout the survey, indicating potential occupancy by nesting birds or a grey squirrel (*Sciurus carolinensis*).

5 References

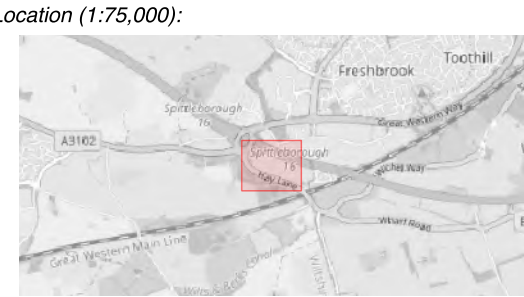
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Appendix 1: Figures

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:
Smith Jenkins 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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Appendix 2: Photographs

Photograph 1: Trees subject to aerial assessment; T12 and T13



Photograph 2: Stem fusing of oak T12



Photograph 3: Tawny owl eggs in T13



Photograph 4: T13 cavity





Great Crested Newt



Swindon Services

On behalf of Moto Hospitality Ltd

September 2023

Ecology by Design Ltd,

Hampden House, Monument Park, Chalgrove, Oxon OX44 7RW.

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

	Name	Date
Prepared by	Olyvia Hall BSc (Hons), MSc QCIEEM	17 August 2023
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'. No standing water was observed at the time of 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

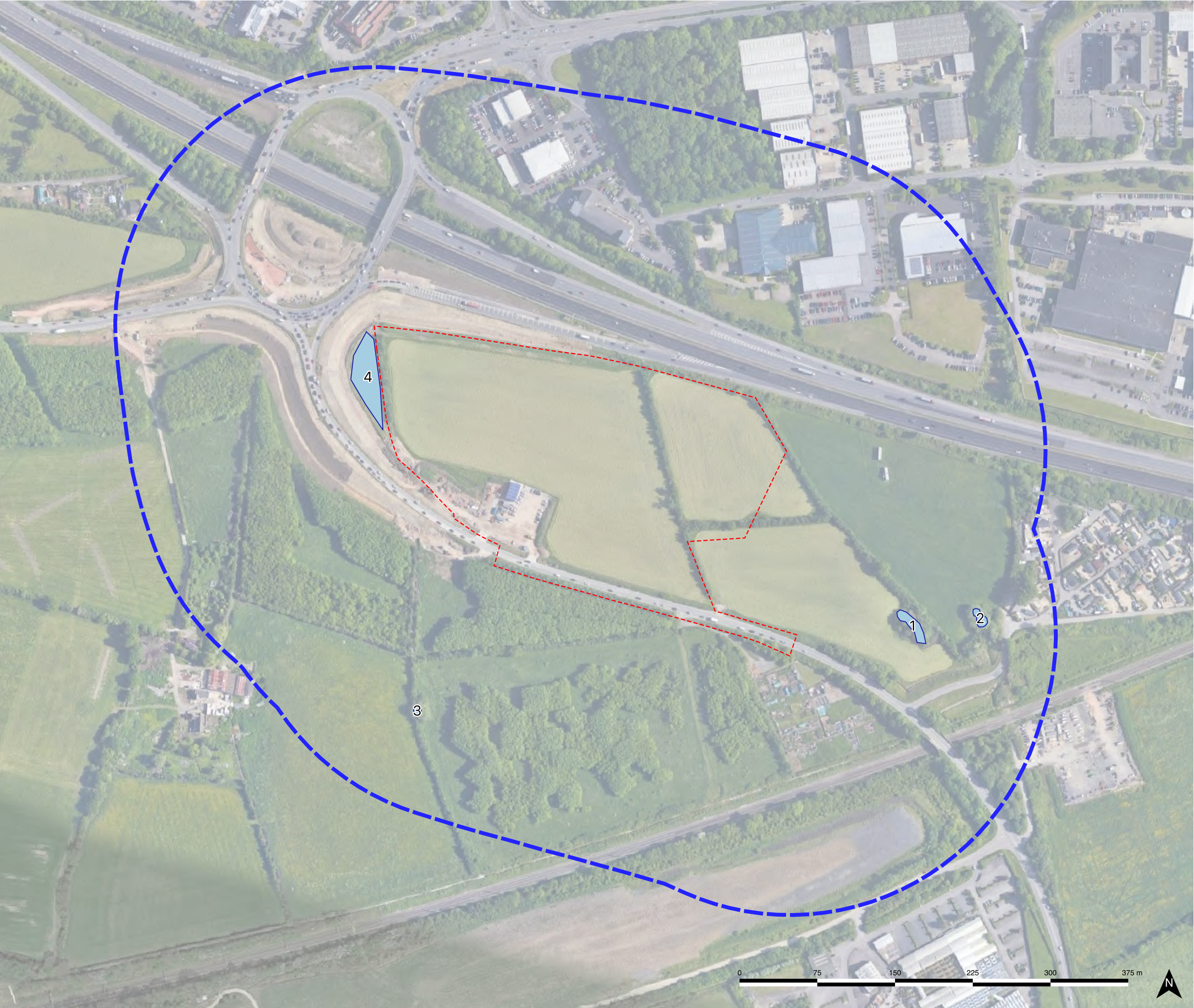
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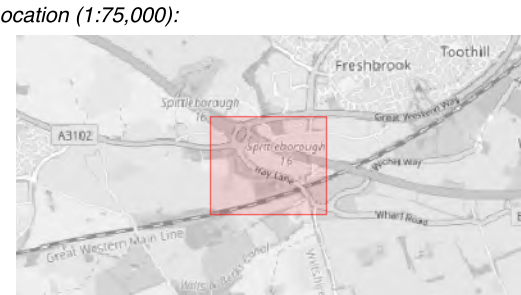
Appendix 1: Figures

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
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 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

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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
Dunnoch	<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

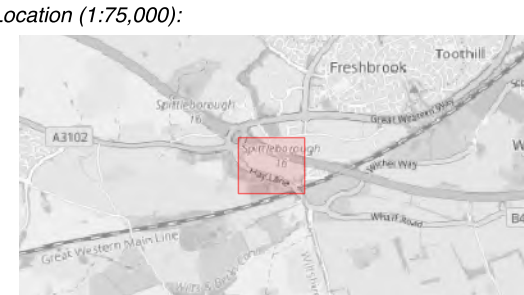
Figure 3: Breeding bird survey results



LEGEND

Site boundary (7.33 ha)

Bird Transect Route



Project:
Swindon Services

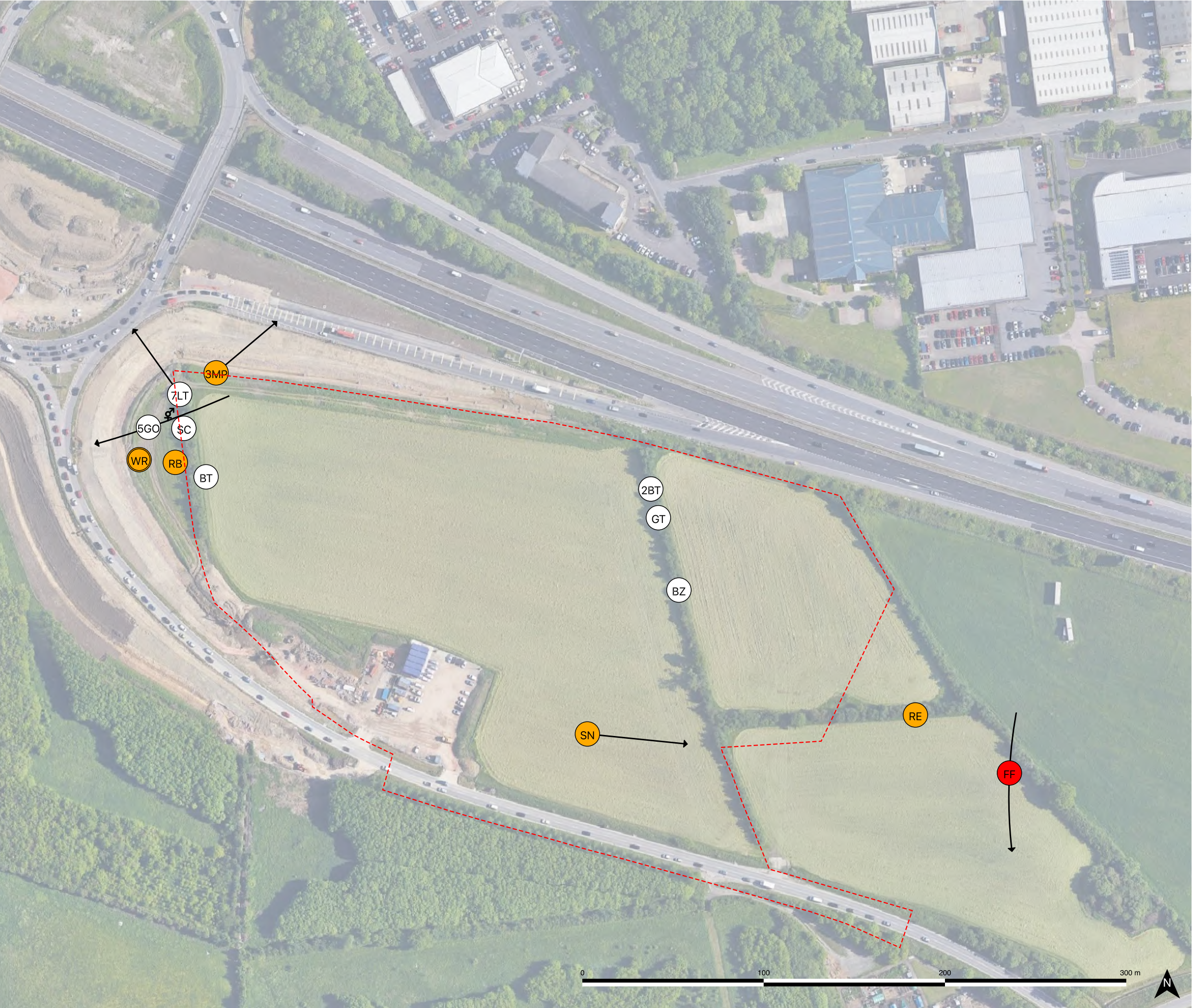
Client:
Smith Jenkins Ltd

Drawing Title:
Bird Transects Route

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

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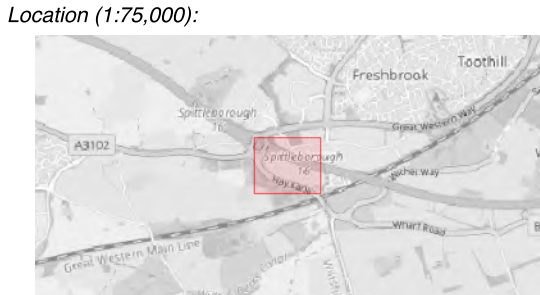
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LEGEND

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
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.:
EBD_2511_DR007_01

Scale (@A3):
1:2,000

Central Eastings, Northings:
410515, 182736

Date Drawn:
12/09/2023

Drawn by:
ASp

Approved by:
BG

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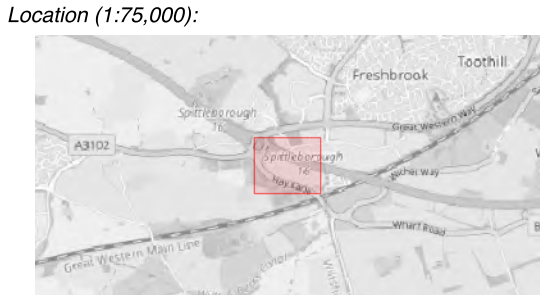
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OX44 7RW

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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
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

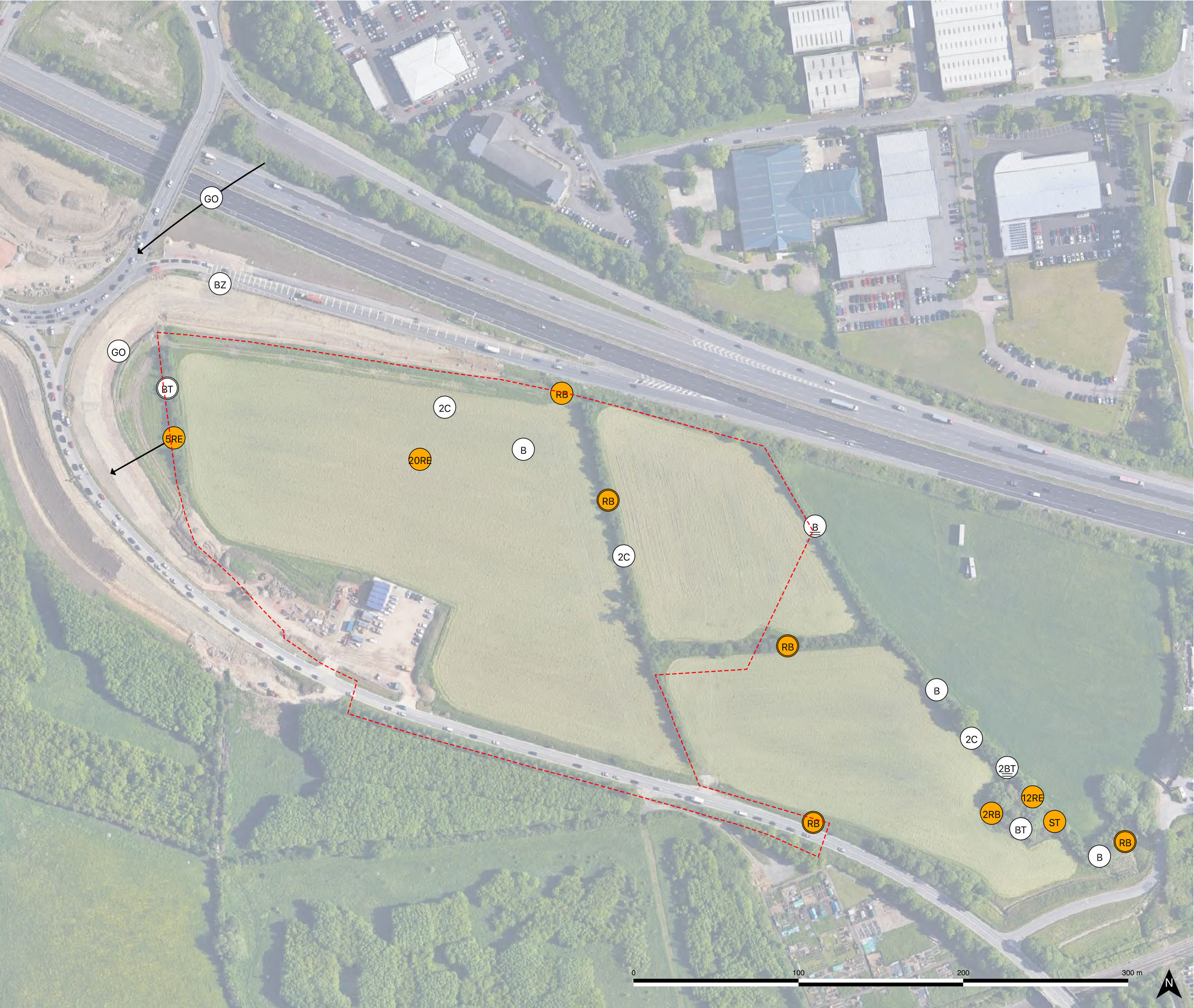
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Drawn by: ASp	Approved by: BG

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LEGEND

BBS Species Status

Green Listed

Amber Listed

Red Listed

Bird Behaviour

Male bird

Female bird

Bird singing

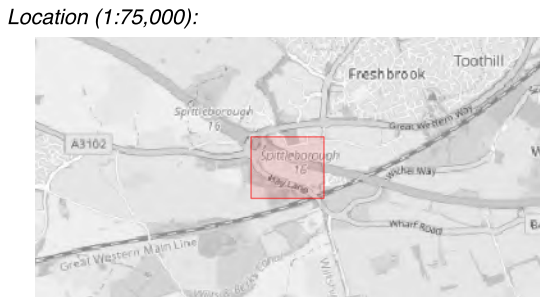
*

Bird at nest

Bird calling

Bird alarm calling

BTO Code	Species
B	Blackbird
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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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

C

Carrion Crow

CH

Chaffinch

D

Dunnock

GO

Goldfinch

GT

Great Tit

MG

Magpie

MP

Meadow Pipit

RE

Redwing*

RB

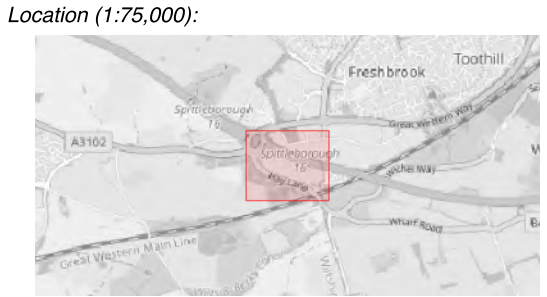
Reed Bunting

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

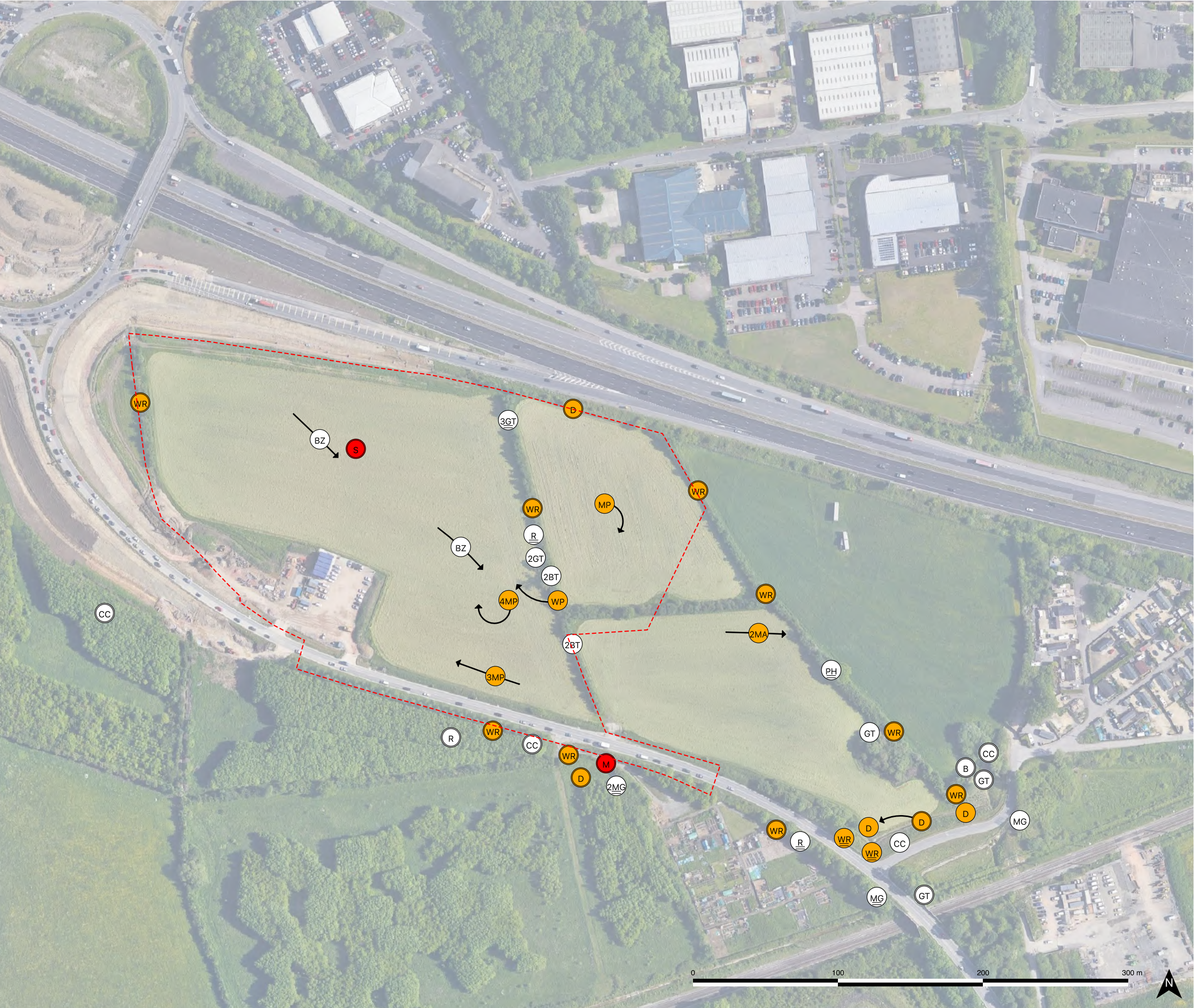
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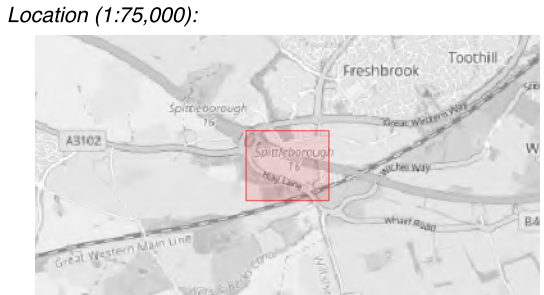
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LEGEND	
BBS Species Status	
○	Green Listed
○	Amber Listed
○	Red Listed
Bird Behaviour	
♂	Male bird
♀	Female bird
○	Bird singing
○	Bird at nest
○	Bird calling
○	Bird alarm calling
BTO Code	Species
B	Blackbird
BT	Blue Tit
BZ	Buzzard
CC	Chiffchaff
D	Dunnock
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

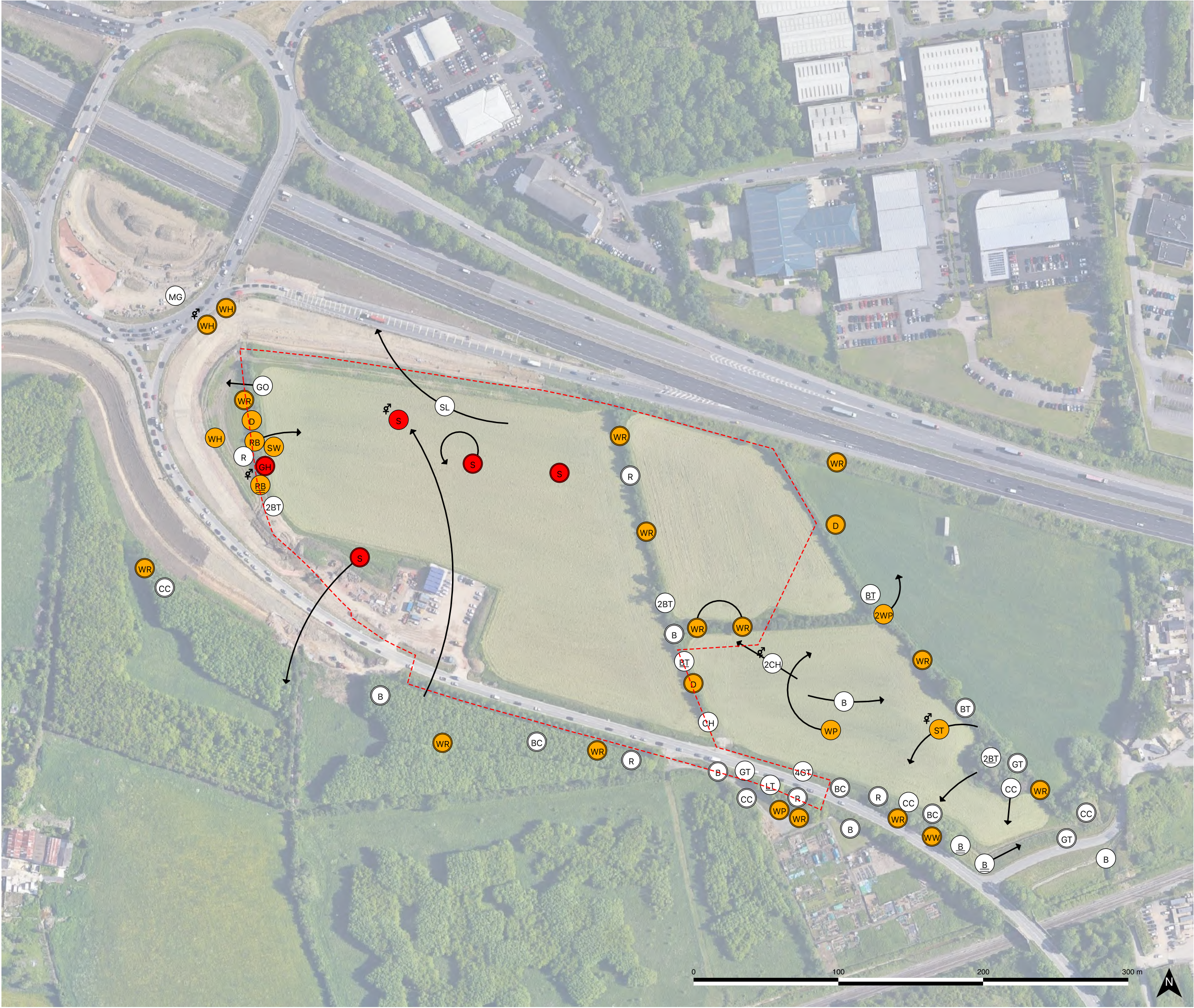
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LEGEND

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

Scale (@A3):
1:2,500

Central Eastings, Northings:
410605, 182692

Date Drawn:
12/09/2023

Drawn by:
AK

Approved by:
BG

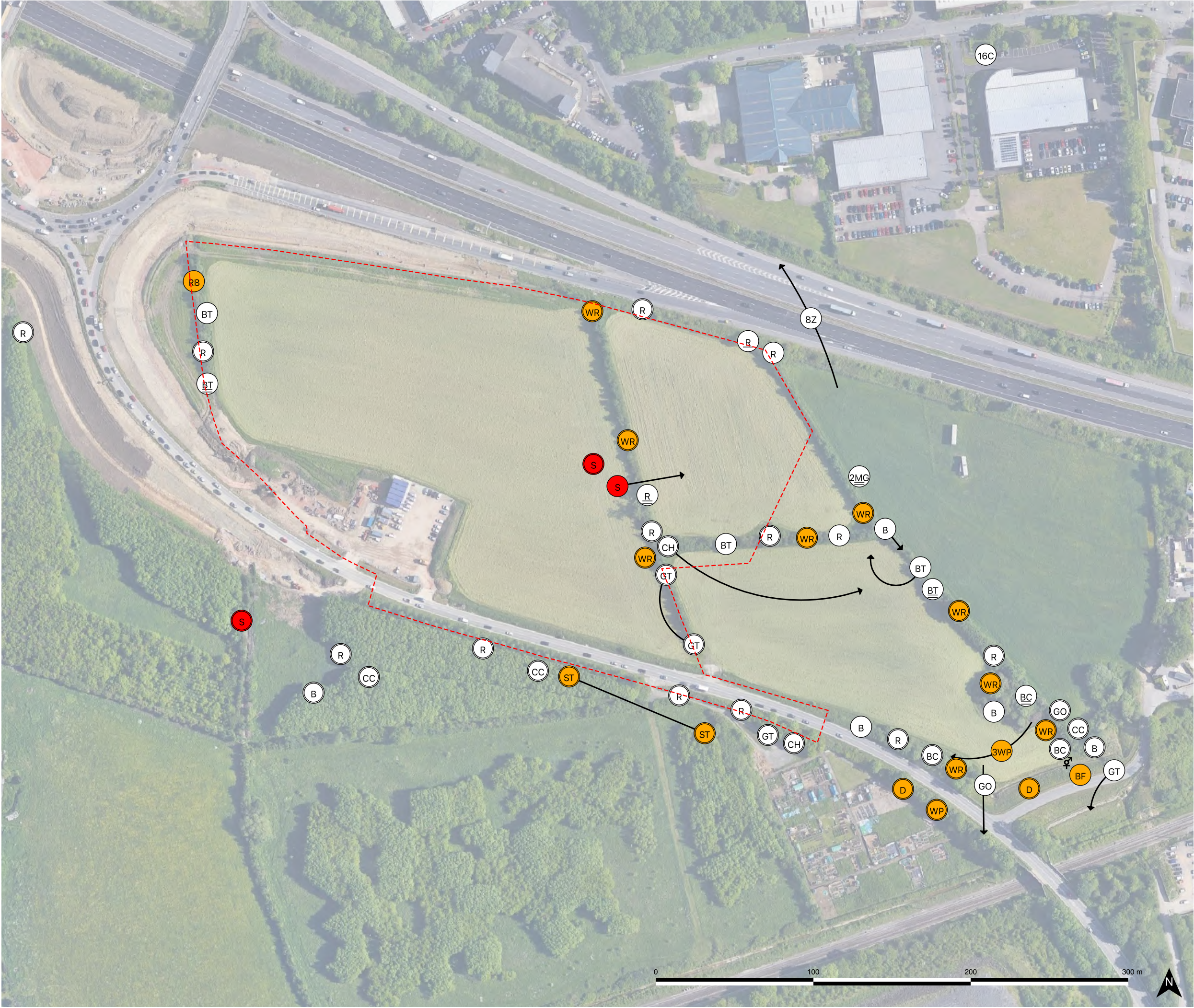
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LEGEND

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
BF	Bullfinch
BZ	Buzzard
C	Carrion Crow
CH	Chaffinch
CC	Chiffchaff
D	Dunnock
GO	Goldfinch
GT	Great Tit
MG	Magpie
RB	Reed Bunting
R	Robin
S	Skylark
ST	Song Thrush
WP	Woodpigeon
WR	Wren

Location (1:75,000):

Project:
Swindon Services

Client:
Moto

Drawing Title:
Breeding Birds May Survey

Drawing No.:
EBD_2511_DR008_03

Central Eastings, Northings:
410605, 182692

Drawn by:
AK

Scale (@A3):
1:2,300

Date Drawn:
12/09/2023

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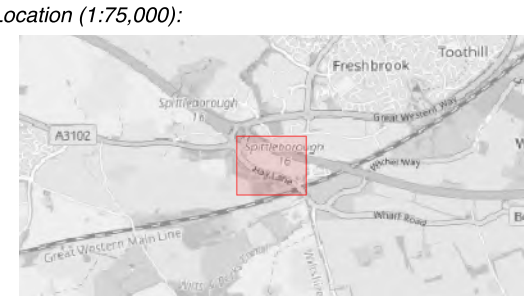
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- LEGEND
- Site boundary (7.33 ha)
 - Bullfinch
 - Dunnock
 - Goldfinch
 - Reed bunting
 - Skylark
 - Song thrush
 - Whitethroat
 - Woodpigeon
 - Wren



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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Biodiversity Impact Assessment



Swindon Services

On behalf of Moto Hospitality Ltd

May 2024

Ecology by Design Ltd,

Hampden House, Monument Park, Chalgrove, Oxon OX44 7RW.

Tel 01865 893346 www.ecologybydesign.co.uk

Registered in England and Wales No. 9318075.

Project Code	Title	Date of Issue
EBD2511	Swindon Services BIA (Version 4)	24 May 2024

	Name	Date
Prepared by	Olyvia Hall BSc (Hons) MSc QCIEEM	17 August 2023
Checked by	Ben Gardner BSc (Hons) MCIEEM CEnv	22 May 2024
Updated by	Laura Grant BSc (Hons) MCIEEM	11 September 2023
Updated by	Laura Grant BSc (Hons) MCIEEM	08 December 2023
Updated by	Laura Grant BSc (Hons) MCIEEM	24 May 2024

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1 Executive Summary

Report purpose	This report identifies the results of a quantitative Biodiversity Impact Assessment undertaken of proposals for construction of Swindon Services at M4 Junction 16, SN5 8UD (approx. central grid reference SU 10435 82710). A Biodiversity Impact Assessment (BIA) is required in accordance with Core Policy 50 from the Wiltshire Core Strategy Development Plan Document (adopted January 2015). This report functions to satisfy the requirements of the following part of that policy: <i>“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.”</i>
Date and methods of survey and assessment	A baseline habitat condition assessment of the site was undertaken in August 2022 and May 2023 and the results used to populate the DEFRA 4.0 Biodiversity Metric based on planting plans provided by Beech Design Ltd (drawing reference Swindon MRA - M49-101 - site layout - rev D). Ecological advice for maximising biodiversity gain potential within the layout was provided during the detailed design stage and incorporated within the plans. The mitigation hierarchy and all other best practice principles for biodiversity net gain were followed during the design process.
Key findings	The 7.3 ha site has a baseline biodiversity value of 16.58 habitat units, 5.18 hedgerow units and no river units. The Biodiversity Metric Calculator identifies a net gain of +2.89 habitat units, equivalent to a change of 16.58% will be achieved, alongside a net gain of +0.69 hedgerow units, equivalent to 13.29% change. Condition assessments were made on a precautionary basis for robustness. The actual biodiversity net gain potentially achievable at the site may exceed the values above. Assumptions on composition and condition of proposed habitats are explained; broad creation/management specifications, timeframes and monitoring requirements are provided by this report that would be required to meet these assumptions. The metric also indicates that rules relating to ‘trading down’ have been satisfied. Features such as bird boxes and bat boxes are not considered within the biodiversity metric calculation but will be incorporated within the site which will further enhance the site for wildlife, as detailed within the Ecology Chapter (Ecology by Design, 2023). This assessment has robustly demonstrated that the proposals will result in a biodiversity net gain, satisfying Core Policy 50 from the Wiltshire Core Strategy Development Plan Document and ensuring a biodiversity gain will be achieved as part of the proposals. No guidance for a specific percentage gain is specified, however, a net gain in excess of 10% biodiversity gain will be achieved as part of the proposals. Post-consent, this report should be used to inform a detailed Biodiversity Net Gain Management and Monitoring Plan (BMMP). A BMMP will be required to ensure the long-term delivery of the habitats contributing to the quantitative net gain calculated by this report.

2 Introduction

2.1 Background

- 2.1.1 Ecology by Design were commissioned by Smith Jenkins on behalf of Moto Hospitality Ltd to undertake a Biodiversity Impact Assessment (BIA) 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. 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.

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 Relevant Policy and Legislation

- 2.4.1 Core Policy 50 from the Wiltshire Core Strategy Development Plan Document (adopted 2015) states:
- 2.4.2 *“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.”*
- 2.4.3 No guidance for a specific percentage gain is specified, as such a specific percentage gain beyond no net loss may not need to be achieved. As outlined within the Environment Act, a 10% Biodiversity Net Gain (BNG) above baseline conditions for all developments in England will be required from January 2024.
- 2.4.4 The National Planning Policy Framework (NPPF) (MHCLG, 2021) states that development proposals should seek opportunities for securing measurable net gains for biodiversity. It also outlines that development proposals should follow a ‘mitigation hierarchy’ by which loss of

biodiversity should preferably be avoided as a first course of action, mitigated as a second, or compensated for as a last resort.

2.5 Aims of Report

- 2.5.1 This report is a Biodiversity Impact Assessment (BIA) of the proposals at the site. It has been produced following a site visit to evaluate the baseline habitats present and a review of the proposed habitats in accordance with the guidance provided alongside the DEFRA 4.0 BIA metric (Natural England, 2023b) and industry standard guidance (CIEEM *et al.*, 2019; BSI, 2021).
- 2.5.2 This report is intended to satisfy the requirements of the Wiltshire Core Strategy Development Plan Document, ensuring a net gain in biodiversity (in line within Core Policy 50) read in conjunction with the detailed landscape proposals Beech Design drawing reference: Swindon MRA - M49-101 - site layout - rev D.pdf).
- 2.5.3 This report will be submitted to Wiltshire Council alongside a completed copy of the DEFRA Biodiversity Metric 4.0 Calculation Tool (Natural England, 2023a) to inform the outline planning application. GIS shapefiles will be available on request.
- 2.5.4 This report addresses a quantitative biodiversity net gain assessment only, it should be read in conjunction with the Ecology Chapter (Ecology by Design, 2023) which addresses all other ecological considerations such as designated sites and protected species.

2.6 Personnel

- 2.6.1 The site visit, mapping and completion of the DEFRA 4.0 metric (Natural England, 2023a) was undertaken by Ecology by Design Ecologist Olyvia Hall BSc(Hons) MSc QCIEEM who has more than two years' experience carrying out habitat surveys. The report, metric and associated figures were reviewed by Associate Ecologist Laura Grant BSc (Hons) MCIEEM who has 15 years' experience as an ecologist.
- 2.6.2 Olyvia and Laura have both received specific training in the use of the DEFRA 4.0 metric and are suitably qualified and accomplished in habitat evaluation and use of GIS to complete a biodiversity impact assessment metric on a site of this nature.

3 Methods

3.1 Desk Study

- 3.1.1 The Ecology Chapter (Ecology by Design, 2023) includes a detailed desk study to inform the application which is not discussed further within this report.

3.2 Biodiversity Impact Assessment

Compliance with Best Practice

- 3.2.1 A biodiversity impact assessment was undertaken using the DEFRA 4.0 metric (Natural England, 2023a) in accordance with all relevant best practice guidelines (CIEEM *et al.*, 2019; BSI, 2021). The 10 'Principles of Biodiversity Net Gain (CIEEM, *et al.*, 2019) were followed:

- Principle 1 – Apply the mitigation hierarchy
- Principle 2 – Avoid losing biodiversity that cannot be offset by gains elsewhere
- Principle 3 – Be inclusive and equitable
- Principle 4 – Address risks
- Principle 5 – Make a measurable net gain
- Principle 6 – Achieve the best outcomes for biodiversity
- Principle 7 – Be additional
- Principle 8 – Create a net gain legacy
- Principle 9 – Optimise sustainability
- Principle 10 – Be transparent

Methodology

- 3.2.2 To calculate the net impact on biodiversity as a result of the proposals, the DEFRA Biodiversity Metric 4.0 (Natural England, 2023a) was completed in accordance with the accompanying user guide and technical supplements (Natural England, 2023b). The Metric calculation was completed with baseline data from a PEA and site and proposals data from the proposed landscape scheme.
- 3.2.3 A site visit was undertaken to collect baseline data on the existing habitats and their condition within the site. In accordance with the Biodiversity Metric 4.0 user guide (Natural England, 2023b) no specific minimum mappable unit was used; baseline data was collected on site on 26 August 2022 and during an update walkover on 31st May 2023 and digitised using Ordnance Survey mapping and google satellite imagery during July-August at a scale of 1:250 using

professional judgement, site notes and experience in cases where feature boundaries were not readily apparent.

- 3.2.4 Proposed habitats were manually digitised using an image file of Landscape Strategy – planting Typologies 17/05/24 Revision D_ 1:1250 @ A3 (Appendix 1) georeferenced using QGIS version 3.34 ‘Georeferencer’ plugin; the georeferenced raster file is available on request in various formats. Full details of the habitat classifications are outlined within the biodiversity metrics submitted alongside this report and accompanying GIS shapefiles available on request in various formats.
- 3.2.5 In order to avoid rounding errors, area and length values were entered into the DEFRA 4.0 metric to the level of accuracy calculated by the QGIS 3.34 function \$area/\$length as a decimal (‘real’) number attribute.
- 3.2.6 Existing and proposed habitats were categorised based on the UK Habitats Classification Scheme (Butcher *et al.*, 2020) and conditions were assessed in accordance with the accompanying guidelines for the DEFRA 4.0 metric (Annex 1 to Natural England, 2023b).
- 3.2.7 The personnel were suitably qualified to conduct the assessment, as detailed in Section 2.6.

3.3 Limitations and Constraints

- 3.3.1 Industry standard principles were employed for the biodiversity impact assessment where appropriate to the current project. Any deviation from best practice was circumstantial and minor and did not have a significant impact on the conclusions made which are considered valid and robust. A full break down of the industry standard principles involved and any justifiable deviation is available on request if required.

4 Results and Interpretation

4.1.1 Baseline and proposed habitat condition assessments are recorded within the DEFRA 4.0 Metric submitted alongside this report and accompanying GIS shapefiles (available on request in various formats).

4.1 Habitats Baseline

4.1.1 The baseline habitats and their retention category (lost/retained/enhanced) are illustrated on Figures EBD_2511_DR001 - EBD_2511_DR002 at Appendix 2 and detailed within Table 4.1 below. Detailed condition assessment results are presented alongside justification in Appendix 4.

Table 4.1: *Habitat types identified during the baseline condition assessment*

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. The grassland is in poor condition.
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 in poor condition.
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 (off-site 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 (assumed modified)	g4	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. It is assumed to be in good condition.
Woodland	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. It is assumed to be in good condition.

4.1.2 Overall, the site has a baseline habitat value of:

- 17.45 habitat units;
- 5.18 hedgerow units; and

4.1.3 No river habitats are within or adjacent to the site so the metric does not include an assessment of river habitats.

4.2 Retained/Enhanced/Lost Habitats

4.2.1 The retention category of baseline habitats (retained/enhanced/lost) is illustrated on Drawing EBD_2511_DR002 at Appendix 2.

Retained/Lost

- 4.2.2 The B-Road to the south of the site is to be retained. The woodland present to the south of the site boundary was not surveyed and is not to be impacted by the proposals. For the calculations, it has been assumed that the woodland is currently in good condition and will be retained as such. It is possible the condition of the woodland is of poorer condition, however for the purposes of being risk adverse it has been assumed that the woodland is of good condition.
- 4.2.3 Furthermore, the areas of grassland on either side of the B-Road to the south of the site were not surveyed however it is assumed that the grassland is in good condition for the purpose of the calculation. A very small area of this grassland (<0.02ha) is to be lost to accommodate the new roundabout. It is possible the condition of the grassland is of poorer condition, however for the purposes of being risk adverse it has been assumed that the grassland is of good condition.
- 4.2.4 All of the modified grassland throughout the site in the main field and the eastern field are to be lost under the proposals. Notably, the grassland in the eastern field is to be lost for the creation of other neutral grassland (to be proposed in good condition).
- 4.2.5 In the south-east of the site 0.0542ha of modified grassland will be lost and utilised for surface water drainage works. It is likely this area will become vegetated, however this cannot be guaranteed therefore for the purpose of the metric it is identified as artificial, unvegetated unsealed surface.
- 4.2.6 All of the hedgerows within the site (H1, H2, H4) are to be retained under the proposals. A gap of 5m is to be created in the north of H1 and of 20m in the south of H1.

Enhanced

- 4.2.7 None of the habitats within the site boundary are to be enhanced.

4.3 Proposed Habitats

- 4.3.1 Site layout proposals used to inform the proposals are provided at Appendix 1; our interpretation of these habitats for input into the metric is illustrated on drawing EBD_2511_DR001 at Appendix 2. Detailed condition assessments for the proposed habitats are provided at Appendix 5 alongside justification.
- 4.3.2 To achieve the condition assessments and habitat classifications detailed below, implications to the necessary management regime have been agreed with Beech Design Ltd in conjunction with Smith Jenkins Ltd. These implications are included, where relevant, within the

recommendations in Section 5; these recommendations will need to inform the detailed Biodiversity Net Gain Management and Monitoring Plan (BMMP) for the site.

- 4.3.3 The habitats proposed within the site are detailed below.

Developed Land

- 4.3.4 Much of the site will comprise building and hardstanding covering approximately 3.79 ha for which no condition assessment is required.

Trees (moderate condition)

- 4.3.5 11 small trees are proposed to be planted throughout the western field within areas of other neutral grassland. The trees proposed will be native species, all of which will be immature (small in size) and are proposed oversailing areas of other neutral grassland. It is assumed that the trees will be pruned to maintain a manicured appearance. It is not considered that over the management period the trees will reach mature size, nor will the trees supports ecological niches such as deadwood or cavities.

Introduced shrub (condition N/A)

- 4.3.6 All areas marked as formal soft landscaping within the proposals have been considered to comprise 'introduced shrub'. This assumption has been agreed with the design team who have confirmed that the intention will be for these areas to be formal in appearance and management, likely comprising predominantly non-native species.

Mixed scrub (poor condition)

- 4.3.7 Mixed scrub in poor condition is proposed around the boundaries of the western field, as well as pockets of mixed scrub within the western field within the areas of hardstanding.
- 4.3.8 The scrub will comprise more than 80% native scrub , exceeding three native woody species. The scrub is not proposed to have clearings, glades or rides present. Whilst some margins of the scrub will have an edge habitat with a margin of grassland (particularly to the south of the site in line with the SuDs). It is assumed that a diversity of age structure (e.g. seedlings, saplings, young shrubs and mature shrubs), will not be supported, with the scrub to be managed to provide a clear edge barrier to the site.
- 4.3.9 The mixed scrub will be assumed to achieve only poor condition to be risk adverse, however it is possible that a condition of moderate could achieved if a diversity of age structure within the scrub is achieved.

SuDS (moderate condition)

- 4.3.10 Several SuDS ponds are proposed throughout the site (comprising 0.29ha of the site) with larger drainage features running through the middle of the site and along the southern edge of the western field. The species proposed will comprise native species, with no invasive plant species proposed and the habitat will be managed to prevent the establishment of the species. It is assumed that the vegetation structure will not be notably varied such that a manicured appearance will be favoured.

Hedge planting (good condition)

- 4.3.11 The proposals include the planting of a species rich native hedgerow with trees 0.112km in length in the north of the biodiversity enhancement area. It is considered that the hedgerow will achieve a condition of good given appropriate management. The hedgerow will be >1.5m in height and width along the whole length, the hedgerow will be managed to ensure the gap between the ground and base of the canopy is less than 0.5m (more 90%+ of the hedgerow length). No canopy gaps within the hedgerow are proposed.

Other neutral grassland (poor condition)

- 4.3.12 The proposed other neutral grassland surrounding the newly proposed SuDS is proposed to be other neutral grassland in poor condition.
- 4.3.13 The grassland will be managed to ensure non-native plant species will establish, and such that bracken and scrub will not encroach within the grassland. The grassland in this area is to have a more manicured appearance than the grassland within the eastern field, such that the sward height will not be managed to be variable and patches of bare ground are unlikely to be present. Whilst a species diverse grassland mix will be utilised, 10+ species/m² may not be achieved due to more intensive management, with the habitat type unlikely to be a good representation of the UKHab habitat type 'Other neutral grassland'. The grassland is proposed to achieve poor condition in order to be risk adverse.

Other neutral grassland (moderate condition)

- 4.3.14 An area of other neutral grassland in moderate condition is proposed in the north-east of the biodiversity enhancement area. Turf will be stripped from the southern section of the eastern field and roughly banded in the north within a 20m strip to create some dry ground to improve conditions for reptiles. This will be sown with a species-rich tussock-forming seed mix.
- 4.3.15 The grassland will be managed to ensure non-native plant species will establish, and such that bracken and scrub will not encroach within the grassland. The sward height will not be managed to be variable but patches of bare ground will be created to provide basking areas

for reptiles. The grassland will be a good representation of the UKHab habitat type 'Other neutral grassland'.

Other neutral grassland (good condition)

- 4.3.16 Other neutral grassland in good condition is to be created within the southern section of the eastern field, replacing the existing modified grassland. This field will be accessible for maintenance through a gap (<5m) to be created through hedgerow 1.
- 4.3.17 Turf-stripping will be beneficial in removing nutrients, improving the success of wildflower planting. The grassland will be managed to ensure non-native plant species will establish, and such that bracken and scrub will not encroach within the grassland. The grassland will be managed to ensure bare ground is achieved between 1-5%, and the grassland will be managed to ensure the sward height is variable (20% > 7cm, 20% < 7cm). The species within the planting proposals will be representative of those within the UKHabs description for 'Other neutral grassland', to achieve 10 species/m² are supported excluding invasives and undesirable species such as docks, nettles, plantains, and cow parsley.

Further Enhancements

- 4.3.18 Enhancement features such as bird boxes and bat boxes are not considered within the biodiversity metric calculation but will be incorporated within the site which will further enhance the site for wildlife, as detailed within the Ecological Chapter (Ecology by Design, 2023).

4.4 Metric Calculation Result

- 4.4.1 Completion of DEFRA's Biodiversity Metric 4.0: Calculation tool provides a baseline biodiversity value of 17.45 habitat units and a post development value of 20.34 habitat units indicating an increase of + 2.89 habitat units, or the equivalent to + 16.58% (see Figure 1). The site also has a baseline value of 5.18 hedgerow units and post development value of 5.87 hedgerow units indicating a gain of 0.69 units, equivalent to +13.29%. There are no river units within or adjacent to the site. The metric also indicates that rules relating to 'trading down' have been satisfied.

Figure 1: Biodiversity Metric Headline Calculator Summary

On-site baseline	Habitat units	17.45	
	Hedgerow units	5.18	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	20.34	
	Hedgerow units	5.87	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	2.89	16.58%
	Hedgerow units	0.69	13.29%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	2.89	
	Hedgerow units	0.69	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	2.89	
	Hedgerow units	0.69	
	Watercourse units	0.00	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	16.58%	
	Hedgerow units	13.29%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		

5 Recommendations

5.1 Biodiversity Net Gain Management and Monitoring Plan (BMMP)

5.1.1 In order for the anticipated net gain in biodiversity to be realised, a Biodiversity Net Gain Management and Monitoring Plan (BMMP) must be created and adopted prior to works commencing. A BMMP could be secured as a suitably worded pre-commencement condition and would need to be referenced by a legal agreement (S106, conservation covenant or similar) to secure the habitat creation/enhancement needed to achieve the net gain in biodiversity.

5.1.2 The BMMP must include the details outlined below:

Habitat Creation and Management

5.1.3 The BMMP must include details of individually referenceable parcels/habitats that are to be created and managed to contribute towards the net gain in biodiversity. The BMMP may make reference to a LEMP (or similar) or include detailed habitat creation and management prescriptions within its contents.

Timeframe

5.1.4 The BMMP must cover a period of at least 30 years.

5.1.5 The 'times to target condition' must accord with the details outlined in Appendix 5.

Scope

5.1.6 The BMMP will cover creation and management of any habitats contributing towards the biodiversity net gain result described above with the exception of the following habitat types which are better addressed within a separate Landscape and Ecology Management Plan (LEMP) or similar:

- Formal landscaping/introduced shrub; and
- Buildings and hardstanding.

5.1.7 Where habitat parcels are described within both a LEMP and a BMMP, the creation/management prescriptions must align precisely.

Responsible Bodies

5.1.8 The BMMP must outline necessary qualifications/experience for ecologists undertaking monitoring surveys, and must also name responsible bodies for:

- Creation and management of the habitats; and
- Review of monitoring reports.

Monitoring

- 5.1.9 The BMMP must include provision for independent ecological monitoring and progress reporting over the lifetime of the management period, with provision for rectification works if required. Ecological monitoring must take place yearly as a minimum for five years, with monitoring reports produced to document:
- Commissioned client, site name and purpose of report;
 - Background and timeline for project;
 - Project description, as built;
 - Aims/objectives/scope of monitoring survey;
 - Reference to original aims described within this report;
 - Survey methods;
 - Evidence of technical competence and experience;
 - Limitations;
 - Clear statements on whether biodiversity unit targets are being met; and
 - Details of any rectification works and implications necessary.
- 5.1.10 The frequency of monitoring will likely be decreased (e.g. to years 5, 10, 15, 25, 30) after five years at the monitoring ecologists' discretion if targets are being consistently met and risk of deviation is considered low.

Condition

- 5.1.11 The BMMP must make clear which condition criteria (e.g. DEFRA 4.0) are targeted for each individual habitat so that ecological monitoring reports have a benchmark against which to measure. It may be appropriate to update condition criteria assessment as new versions of the metric are made available; any deviation from the version used within this report should be highlighted and justified.

5.2 Broad Management Prescriptions

- 5.2.1 The BMMP should be based on the below broad management prescriptions which have been agreed with Beech Design Ltd in conjunction with Smith Jenkins Ltd during the design stage. Parcel references within the below refer to those on drawing EBD_2511_DR003 (proposed habitats) at Appendix 2.

Retained hedgerows, newly proposed mixed scrub (poor condition) and newly proposed hedgerow (good condition)

- 5.2.2 The hedgerows retained within the application site, the newly retained hedgerows and the newly proposed mixed scrub will require no specific management beyond periodic brush-cutting and replacement of dead/damaged areas to maintain their current extent.

SuDs (moderate condition)

- 5.2.3 The SuDS must be managed to ensure that the diversity of flowering species (to be proposed within the planting mix) are maintained. It will be ensured that no invasive species establish within the SuDS.

Newly planted scattered trees (small, moderate condition)

- 5.2.4 The proposed trees must be watered as required during the first year, and then will require minimal ongoing management with the exception of inspections, restorative pruning, and replacement of damaged/failed individuals

Newly created other neutral grassland (moderate and good condition)

- 5.2.5 It is assumed that all of the modified grassland within the eastern field is to be lost under the proposals.
- 5.2.6 The grassland on site will be removed such that 100% bare ground is created prior to establishment of other neutral grassland.
- 5.2.7 The turf strip from the southern section of the biodiversity enhancement area will be roughly banded within a 20m strip in the north to create a gently sloping south-facing bund. The bund will be sown with a species-rich tussock-forming grass mix to benefit reptiles. The northern section will be managed by strimming by hand rotationally (a third once every year on a three-year rotation) to a minimum of 150mm height, primarily to prevent scrub colonisation. Small patches (c. 1m square) will be hand pulled to create areas of bare ground suitable for basking.
- 5.2.8 Habitat creation and management in the southern section of the biodiversity enhancement area will entail :
- 1) sowing with an appropriate species-rich meadow mixture at an appropriate rate;
 - 2) the sward should then be mown once per month to 5mm height with arisings removed between August and October inclusive;
 - 3) mow once to 10mm height in early April and remove arisings;
 - 4) leave unmown to flower between mid-April and late July/early August;

- 5) take a hay cut to 15mm in late July/early August, leave arisings *in-situ* to dry, turning occasionally to shed seed and then removed after c. one week;
- 6) mow monthly to 5mm height and remove arisings August-October inclusive; and
- 7) repeat steps 3-6 yearly.

6 References

BSI (2021). *BS 8683:2021 Process for designing and implementing Biodiversity Net Gain – Specification*. The British Standards Institution Ltd., London.

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

CIEEM, CIRIA, IEMA (2019). *Biodiversity net gain. Good practice principles for development. A practical guide*. CIRIA C776a. London, 2019.

Ecology by Design (2023). *M4 Junction 16 – Environmental Statement Chapter 10: Biodiversity*. Ecology by Design, Chalgrove.

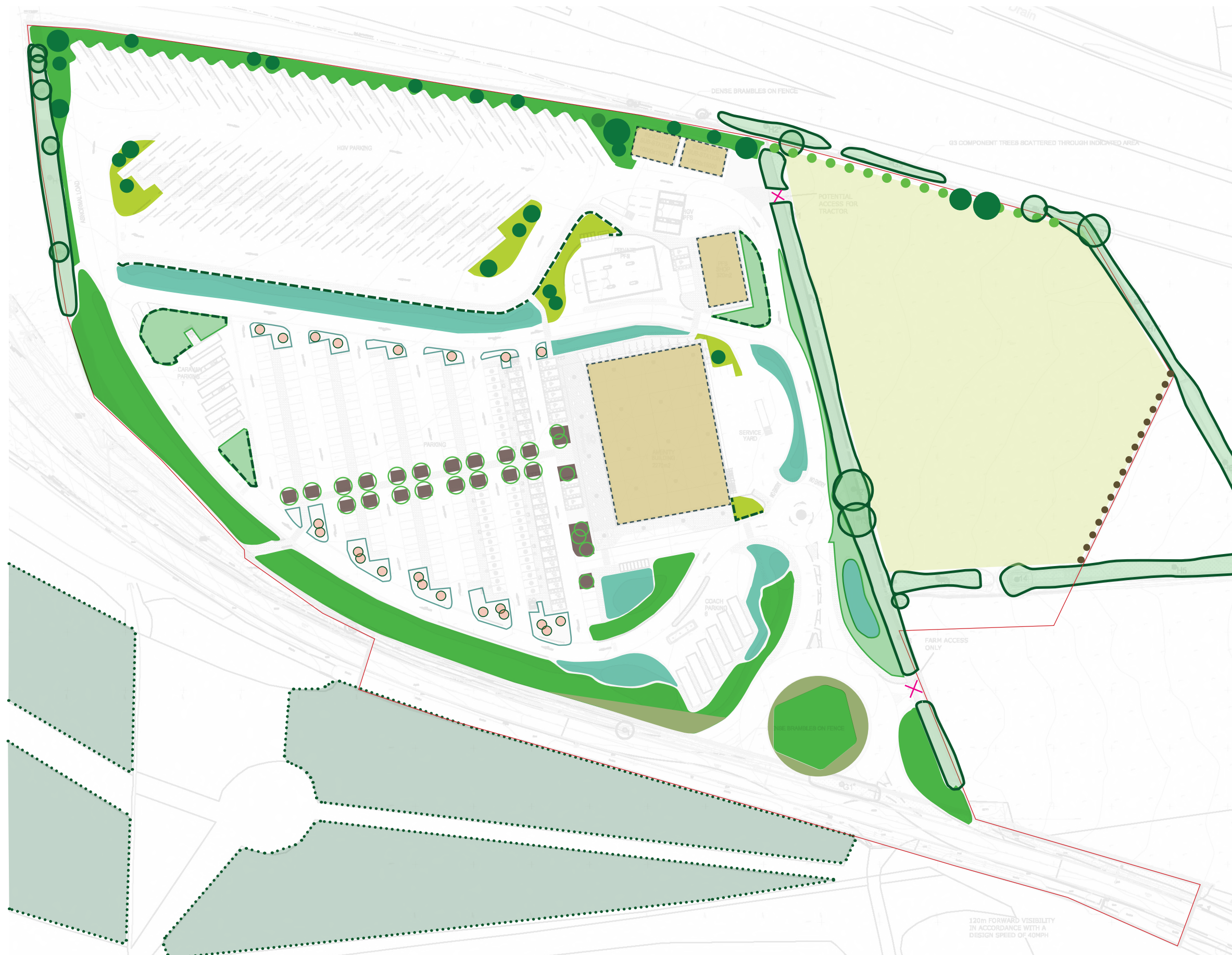
MHCLG (2021). *National Planning Policy Framework*. Ministry of Housing Communities and Local Government

Natural England (2023a). Biodiversity Metric 4.0: Calculation tool (spreadsheet). Natural England

Natural England and other parties (2023b). Biodiversity Metric 4.0 User Guide. Natural England Joint Publication JP039. Natural England.

Appendix 1 - Site Proposals

(overleaf)



Legend

-  Existing Trees / Hedgerows retained
-  Existing Plantation Woodland
-  Hedge Removal required to allow maintenance access
-  Native Woodland / Tree Planting ~ 6027 m²
-  Native Woodland Edge shrub planting ~ 523 m²
-  Species Rich Wildflower Meadow ~ 945 m²
-  Species Rich Wetland Meadow ~ 2,580m²
-  Native scrub ~ 3,285m²
-  Ornamental shrub ~ 275m²
-  Rain Garden ~ 940m²
-  Native mixed species maintained hedgerow ~ 370 l/m
-  Native mixed species field hedgerow ~ 105 l/m
-  Boundary demarcation field hedgerow (not part of BNG)
-  Native Trees ~ 26Nos
-  Native Shrubs ~ 22No
-  Ornamental Trees ~ 31No
-  Wildflower Meadow Green Roof ~ 28,95m²
-  Grassland and Ecology focused measures ~ 13,110m²

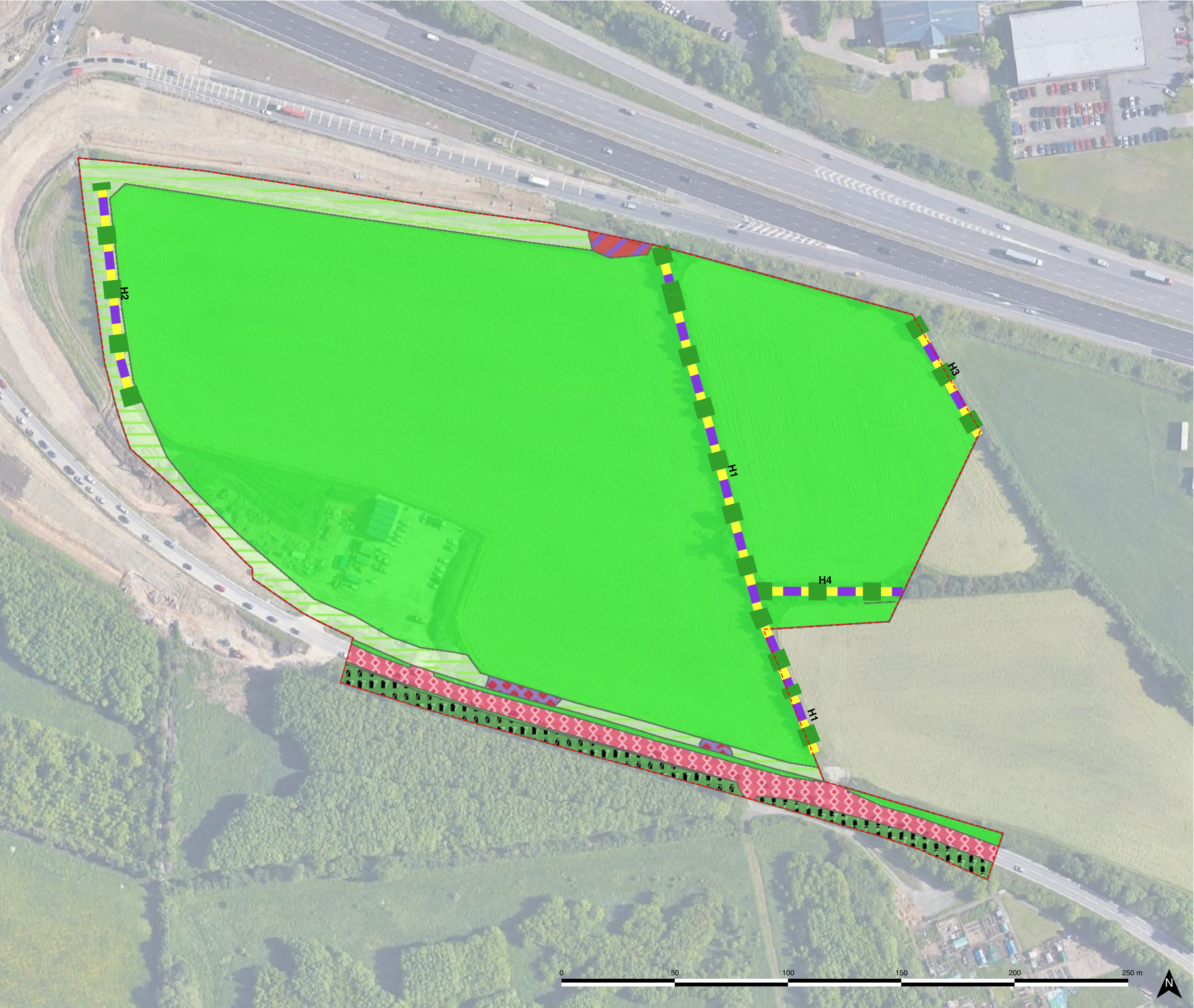


0m 20m 50m

Appendix 2 - Figures

- EBD_2511_1 – BIA Baseline Habitats
- EBD_2511_2 – BIA Impacts
- EBD_2511_3 – BIA Proposed Habitats

(overleaf)



LEGEND

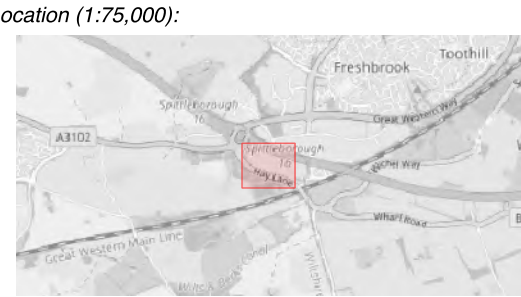
Site boundary (7.33 ha)

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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LEGEND

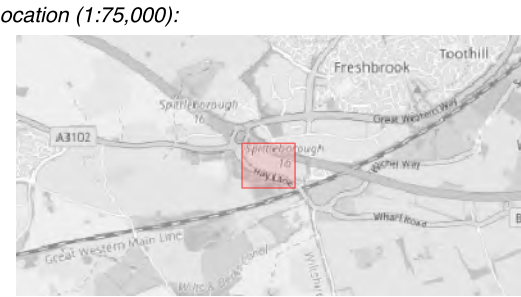
Site boundary (7.33 ha)

Hedgerows
Impacts - DEFRA 3.0 hedges

- Retained
- Native Hedgerow with trees (0.44 km)
- Lost
- Native Hedgerow with trees (0.02 km)

Habitats
Impacts - UKHabs Habs

- Retained
- g4 - modified grassland (0.07 ha)
- u1b6 - hardstanding (0.22 ha)
- w1g7 - other broadleaved woodland types (0.17 ha)
- Lost
- g3c - other neutral grassland (0.57 ha)
- g4 - modified grassland (6.23 ha)
- h3d - bramble scrub (0.02 ha)
- h3h - mixed scrub (0.02 ha)
- u1b6 - hardstanding (0.02 ha)



Project:
Swindon Services

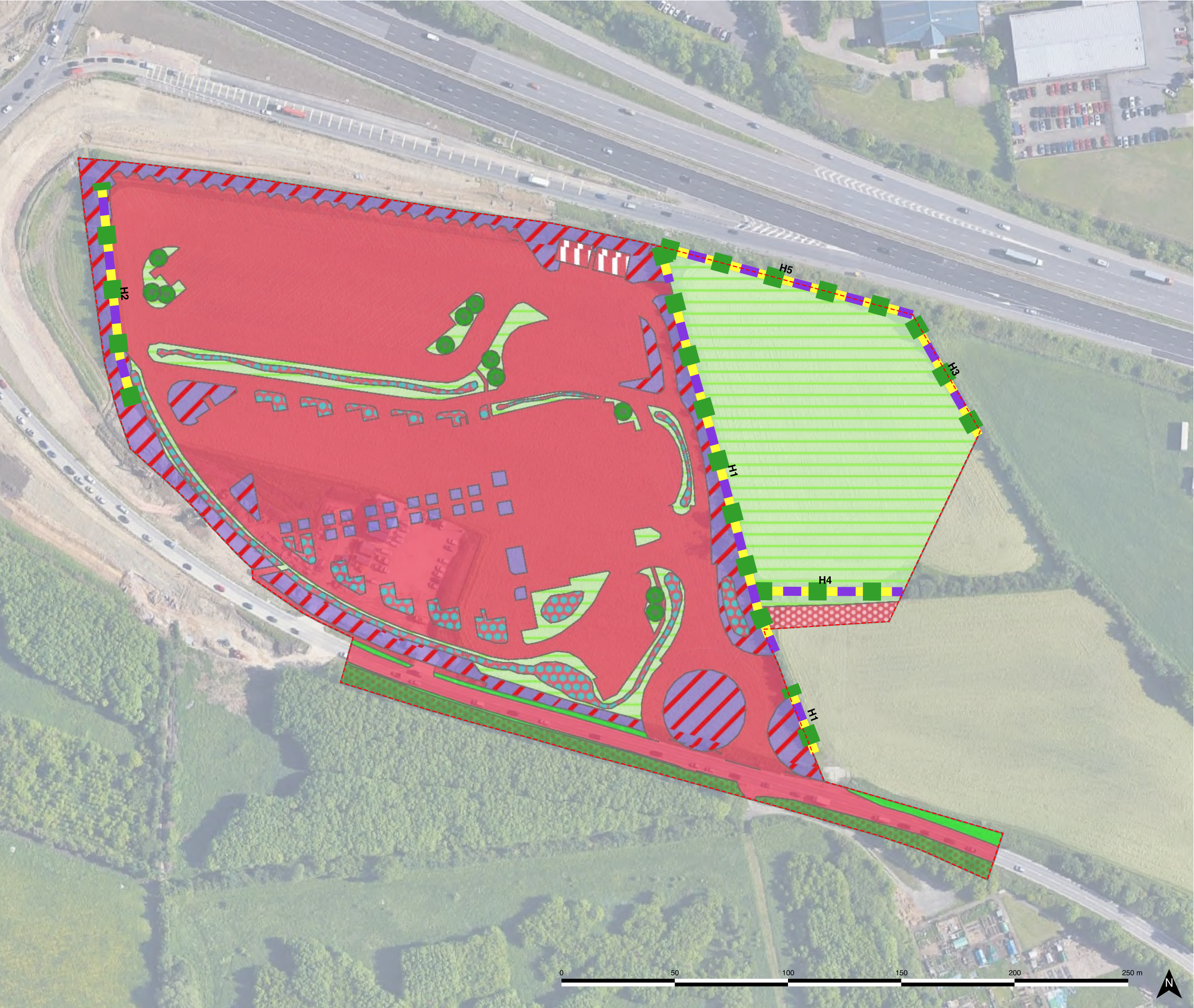
Client:
Smith Jenkins Ltd

Drawing Title:
Impacts

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

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LEGEND

Site boundary (7.33 ha)

Hedgerows

Native Hedgerow with trees (0.56 km)

Habitats

Artificial unvegetated, unsealed surface (0.05 ha)

Built linear features (4 ha)

Developed land; sealed surface (0.03 ha)

Introduced shrub (0.06 ha)

Mixed scrub (0.83 ha)

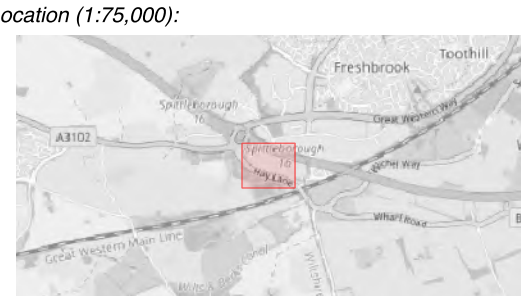
Modified grassland (0.07 ha)

Other neutral grassland (1.83 ha)

Other woodland; broadleaved (0.17 ha)

Sustainable urban drainage feature (0.29 ha)

Urban Tree
(illustrative purposes, not necessarily to scale)



Project:
Swindon Services

Client:
Smith Jenkins Ltd

Drawing Title:
Proposed Habitats

Drawing No.:	Scale (@A3):
EBD_2511_DR003	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 - 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 4 - Baseline Condition Assessment Tables

Overleaf

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Modified grassland			
Site name and location	Swindon Services	On-site or off-site	On-Site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	
Habitat Description			
Existing modified grassland			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m ² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m ² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please	N	Dominated by perennial ryegrass
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	N	All c. 40cm sward height
C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Y	
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Y	
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	N	Bare ground in excess of 10%
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	Y	
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	Y	
Essential criterion achieved (Yes or No)			N
Number of criteria passed			4
Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved x/□	
Passes 6 or 7 criteria including passing essential criterion A	Good (3)		
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)		
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	Y	
Suggested enhancement interventions to improve condition score			
Footnotes			
Footnote 1 – Creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.			

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Modified grassland			
Site name and location	Swindon Services	On-site or off-site	On-Site
Limitations (if applicable)	Not surveyed therefore assumed to be in good condition	Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Grassland on road verges
Habitat Description			
Existing modified grassland			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m ² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m ² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant	Y	Assumed to pass
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	Y	Assumed to pass
C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Y	Assumed to pass
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Y	Assumed to pass
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	Y	Assumed to pass
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	Y	Assumed to pass
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	Y	Assumed to pass
Essential criterion achieved (Yes or No)			Y
Number of criteria passed			7
Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved x/□	
Passes 6 or 7 criteria including passing essential criterion A	Good (3)	Y	
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)		
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)		
Suggested enhancement interventions to improve condition score			
Footnotes			
Footnote 1 – Creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . Footnote 2 – For example, this could include small, scattered areas of bare ground allowing establishment of new species, or localised patches where not exceeding 10% cover. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.			

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Lowland calcareous grassland Grassland - Lowland dry acid grassland Grassland - Lowland meadows Grassland - Other lowland acid grassland Grassland - Other neutral grassland Grassland - Tall herb communities (H6430) [Note Tall herb habitat that does not meet the Annex 1 definition should be recorded as 'Other neutral grassland'] [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.] Grassland - Upland acid grassland Grassland - Upland calcareous grassland Grassland - Upland hay meadows Sparsely vegetated land - Calaminarian grassland			
Site name and location	Swindon Services	On-site or off-site	On-Site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Western field boundary
Habitat Description			
Existing other neutral grassland in west of site			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	N	
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	N	
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	N	
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Y	
E	Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.	Y	
Additional Criterion - must be assessed for all non-acid grassland types			
F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	N	
All criteria for Good condition achieved (for non-acid grassland) (Yes or No)		N	
Number of criteria passed		2	
Condition Assessment Result	Condition Assessment Score	Score Achieved x/	
Acid Grassland Types (Result out of 5 criteria)			
Passes 5 criteria	Good (3)		
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)		
Non-acid grassland Types (Result out of 6 criteria)			
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)		
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)		

Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)	Y	
Suggested enhancement interventions to improve condition score			
Notes			
Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover. Footnote 2 - Species indicative of sub-optimal condition for this habitat type include:creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement. Footnote 4 – Wildlife and Countryside Act 1981 (as amended).			

Condition Sheet: SCRUB Habitat Type			
UK Habitat Classification (UKHab) Habitat Type			
Heathland and shrub - Blackthorn scrub Heathland and shrub - Gorse scrub Heathland and shrub - Hawthorn scrub Heathland and shrub - Hazel scrub Heathland and shrub - Mixed scrub Heathland and shrub - Dunes with sea buckthorn (H2160) Heathland and shrub - Willow scrub			
Habitat Description			
Existing mixed scrub			
For Dunes with sea buckthorn see:		Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)	
For other scrub types see:		ukhab – UK Habitat Classification	
Site name and location	Swindon Services	On-site or off-site	On-site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Southern boundary of field
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species¹, with no single species comprising more than 75% of the cover (except hazel <i>Corylus avellana</i>, common juniper <i>Juniperus communis</i>, sea buckthorn <i>Hippophae rhamnoides</i> or box <i>Buxus sempervirens</i>, which can be up to 100% cover).	N	
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran ²) shrubs are all present.	N	
C	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) and species indicative of sub-optimal condition ⁵ make up less than 5% of ground cover.	Y	
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	N	
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	N	
Number of criteria passed			1
Condition Assessment Result (out of 5 criteria)	Condition Assessment Score	Score Achieved ×/□	
Passes 5 criteria	Good (3)		
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)	Y	
Suggested enhancement interventions to improve condition score			
Footnotes			
Footnote 1 – Native woody species as defined and listed in the Hedgerow Survey Handbook: DEFRA (2007) <i>Hedgerow Survey Handbook: A standard procedure for local surveys in the UK</i>. 2nd ed. [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk). Footnote 2 - See gov.uk standing advice on ancient and veteran species. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)			

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Footnote 5 - Species indicative of sub-optimal condition for this habitat type may include: non-native conifers, tree-of-heaven *Alanthus altissima* , holm oak *Quercus ilex* , European turkey oak *Quercus cerris* , cherry laurel *Prunus laurocerasus* , snowberry *Symphoricarpos* spp., shallon *Gaultheria shallon* , American skunk cabbage *Lysichiton americanus* , buddleia *Buddleja* spp., cotoneaster *Cotoneaster* spp., Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana* . There may be additional relevant species local to the region and or site.

Condition Sheet: WOODLAND Habitat Type						
UK Habitat Classification (UKHab) Habitat Type(s)						
Woodland and forest - Lowland beech and yew woodland						
Habitat Description						
Other broadleaved woodland on southern boundary of site						
ukhab – UK Habitat Classification						
This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here: Woodland Wildlife Toolkit (sylva.org.uk)						
IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The						
Site name and location	Swindon Services	On-site or off-site	On-site			
Limitations (if applicable)	Not impacted by development and not surveyed therefore assumed to be in good condition	Survey reference (if relating to a wider survey)				
Grid reference		Habitat parcel reference	Southern boundary			
Condition Assessment Criteria						
Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes (such as justification)
A	Age distribution of trees	Three age-classes ¹ present.	Two age-classes ¹ present.	One age-class ¹ present.	3	
B	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland ² .	Evidence of significant browsing pressure is present in 40% or less of whole woodland ² .	Evidence of significant browsing pressure is present in 40% or more of whole woodland ² .	3	
C	Invasive plant species	No invasive species ³ present in woodland.	Rhododendron <i>Rhododendron ponticum</i> or cherry laurel <i>Prunus laurocerasus</i> not present, other invasive species ³ <10% cover.	Rhododendron or cherry laurel present, or other invasive species ³ >10% cover.	3	
D	Number of native tree species	Five or more native tree or shrub species ⁴ found across woodland parcel.	Three to four native tree or shrub species ⁴ found across woodland parcel.	Two or less native tree or shrub species ⁴ across woodland parcel.	3	
E	Cover of native tree and shrub species	>80% of canopy trees and >80% of understory shrubs are native ⁵ .	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native ⁵ .	<50% of canopy trees and <50% of understory shrubs are native ⁵ .	3	
F	Open space within woodland	10 - 20% of woodland has areas of temporary open space ⁶ . Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted ⁷ .	21 - 40% of woodland has areas of temporary open space ⁶ .	<10% or >40% of woodland has areas of temporary open space ⁶ . But if woodland <10ha has <10% temporary open space, please see Good category ⁷ .	3	
G	Woodland regeneration	All three classes present in woodland ⁸ ; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland ⁸ .	No classes or coppice regrowth present in woodland ⁸ .	3	
H	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback ⁹ .	11% to 25% mortality and/or crown dieback or low-risk pest or disease present ⁹ .	Greater than 25% tree mortality and or any high-risk pest or disease present ⁹ .	3	
I	Vegetation and ground flora	Recognisable NVC plant community ¹⁰ at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community ¹⁰ at ground layer present.	No recognisable woodland NVC plant community ¹⁰ at ground layer present.	3	
J	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland ¹¹ .	Two storeys across all survey plots ¹¹ .	One or less storey across all survey plots ¹¹ .	3	
K	Veteran trees	Two or more veteran trees ¹² per hectare.	One veteran tree ¹² per hectare.	No veteran trees ¹² present in woodland.	3	

Footnote 11 – This criterion looks at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer. There might be no storeys where the woodland has been felled. See EWBG INDICATOR 11 for more information.

Footnote 12 - See EWBG method INDICATOR 12 for more information. See gov.uk standing advice on ancient and veteran trees. Available from:

[Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/publications/keepers-of-time-ancient-and-native-woodland-and-trees-policy-in-england)

and:

[Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions)

Footnote 13 – See EWBG method INDICATOR 13 for more information. This includes logs, large dead branches on the forest floor and stumps (<1 m tall) >20 cm diameter at narrowest point and >50 cm long. Also includes standing dead trees (>1 m tall) and also deadwood on standing live trees. Diameter is measured at the narrowest point on the stem. Minimum diameter of 20 cm.

Footnote 14 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery, animal poaching or litter.

Appendix 5 - Proposed Condition Assessment Tables

Overleaf

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Lowland calcareous grassland Grassland - Lowland dry acid grassland Grassland - Lowland meadows Grassland - Other lowland acid grassland Grassland - Other neutral grassland Grassland - Tall herb communities (H6430) [Note Tall herb habitat that does not meet the Annex 1 definition should be recorded as 'Other neutral grassland'] [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.] Grassland - Upland acid grassland Grassland - Upland calcareous grassland Grassland - Upland hay meadows Sparsely vegetated land - Calaminarian grassland			
Site name and location	Swindon Services	On-site or off-site	On-site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Scattered parcels of other neutral grassland within Service Station area
Habitat Description			
Proposed other neutral grassland with Service Station verges			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	N	
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	N	
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	N	
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Y	
E	Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.	N	
Additional Criterion - must be assessed for all non-acid grassland types			
F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	N	
Essential criterion for Good condition achieved (for non-acid grassland) (Yes or No)		N	
Number of criteria passed		1	
Condition Assessment Result	Condition Assessment Score	Score Achieved x/	
Acid Grassland Types (Result out of 5 criteria)			
Passes 5 criteria	Good (3)		
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)		
Non-acid grassland Types (Result out of 6 criteria)			
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)		
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)		

Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)	Y	
Suggested enhancement interventions to improve condition score			
Notes			
Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover. Footnote 2 - Species indicative of sub-optimal condition for this habitat type include:creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement. Footnote 4 – Wildlife and Countryside Act 1981 (as amended).			

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Lowland calcareous grassland Grassland - Lowland dry acid grassland Grassland - Lowland meadows Grassland - Other lowland acid grassland Grassland - Other neutral grassland Grassland - Tall herb communities (H6430) [Note Tall herb habitat that does not meet the Annex 1 definition should be recorded as 'Other neutral grassland'] [Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.] Grassland - Upland acid grassland Grassland - Upland calcareous grassland Grassland - Upland hay meadows Sparsely vegetated land - Calaminarian grassland			
Site name and location	Swindon Services	On-site or off-site	On-site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Biodiversity enhancement area in north-east
Habitat Description			
Proposed other neutral grassland in biodiversity enhancement area in north-east			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Y	
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	Y	
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	N	
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Y	
E	Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.	Y	
Additional Criterion - must be assessed for all non-acid grassland types			
F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	Y	
Additional criterion for Good condition achieved (for non-acid grassland) (Yes or No)		Y	
Number of criteria passed		5	
Condition Assessment Result	Condition Assessment Score	Score Achieved x/	
Acid Grassland Types (Result out of 5 criteria)			
Passes 5 criteria	Good (3)		
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)		
Non-acid grassland Types (Result out of 6 criteria)			
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)	5	
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)		

Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)		
Suggested enhancement interventions to improve condition score			
Notes			
Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover. Footnote 2 - Species indicative of sub-optimal condition for this habitat type include:creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement. Footnote 4 – Wildlife and Countryside Act 1981 (as amended).			

Condition Sheet: GRASSLAND Habitat Type (medium, high and very high distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Lowland calcareous grassland			
Grassland - Lowland dry acid grassland			
Grassland - Lowland meadows			
Grassland - Other lowland acid grassland			
Grassland - Other neutral grassland			
Grassland - Tall herb communities (H6430) [Note Tall herb habitat that does not meet the Annex 1 definition should be recorded as 'Other neutral grassland']			
[Not to be confused with the Tall forbs secondary code – see UKHab guidance for details.]			
Grassland - Upland acid grassland			
Grassland - Upland calcareous grassland			
Grassland - Upland hay meadows			
Site name and location	Swindon Services	On-site or off-site	On-site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	Grassland as reptile receptor in north-east
Habitat Description			
Proposed other neutral grassland with Service Station verges			
ukhab – UK Habitat Classification			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The grassland is a good representation of the habitat type it has been identified as, based on its UKHab description - the appearance and composition of the vegetation closely matches the characteristics of the specific grassland habitat type. Indicator species listed by UKHab for the specific grassland habitat type are consistently present. Note - this criterion is essential for achieving Moderate or Good condition for non-acid grassland types only.	Y	
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for insects, birds and small mammals to live and breed.	N	
C	Cover of bare ground is between 1% and 5%, including localised areas, for example, rabbit warrens ¹ .	N	
D	Cover of bracken <i>Pteridium aquilinum</i> is less than 20% and cover of scrub (including bramble <i>Rubus fruticosus</i> agg.) is less than 5%.	Y	
E	Combined cover of species indicative of sub-optimal condition ² and physical damage (such as excessive poaching, damage from machinery use or storage, damaging levels of access, or any other damaging management activities) accounts for less than 5% of total area. If any invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) are present, this criterion is automatically failed.	Y	
Additional Criterion - must be assessed for all non-acid grassland types			
F	There are 10 or more vascular plant species per m ² present, including forbs that are characteristic of the habitat type (species referenced in Footnote 2 and 4 cannot contribute towards this count). Note - this criterion is essential for achieving Good condition for non-acid grassland types only.	N	
Essential criterion for Good condition achieved (for non-acid grassland) (Yes or No)		Y	
Number of criteria passed		3	
Condition Assessment Result	Condition Assessment Score	Score Achieved %/✓	
Acid Grassland Types (Result out of 5 criteria)			
Passes 5 criteria	Good (3)		
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)		
Non-acid grassland Types (Result out of 6 criteria)			
Passes 5 or 6 criteria, including essential criterion A and additional criterion F.	Good (3)		
Passes 3 - 5 criteria, including essential criterion A.	Moderate (2)	Y	
Passes 2 or fewer criteria; OR Passes 3 or 4 criteria excluding criterion A and F.	Poor (1)		
Suggested enhancement interventions to improve condition score			
Notes			
Footnote 1 – For example, this could include small, scattered areas of bare ground allowing for plant colonisation, or localised patches not exceeding 5% cover.			
Footnote 2 - Species indicative of sub-optimal condition for this habitat type include:creeping thistle <i>Cirsium arvense</i> , spear thistle <i>Cirsium vulgare</i> , curled dock <i>Rumex crispus</i> , broad-leaved dock <i>Rumex obtusifolius</i> , common nettle <i>Urtica dioica</i> , creeping buttercup <i>Ranunculus repens</i> , greater plantain <i>Plantago major</i> , white clover <i>Trifolium repens</i> and cow parsley <i>Anthriscus sylvestris</i> . There may be additional relevant species local to the region and or site.			
Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, by applying professional judgement.			
Footnote 4 – Wildlife and Countryside Act 1981 (as amended).			

Condition Sheet: SCRUB Habitat Type			
UK Habitat Classification (UKHab) Habitat Type			
Heathland and shrub - Blackthorn scrub Heathland and shrub - Gorse scrub Heathland and shrub - Hawthorn scrub Heathland and shrub - Hazel scrub Heathland and shrub - Mixed scrub Heathland and shrub - Dunes with sea buckthorn (H2160) Heathland and shrub - Willow scrub			
Habitat Description			
Proposed mixed scrub			
For Dunes with sea buckthorn see:		Dunes with sea-buckthorn (Dunes with Hippophae rhamnoides) - Special Areas of Conservation (jncc.gov.uk)	
For other scrub types see:		ukhab – UK Habitat Classification	
Site name and location		Swindon Services	On-site or off-site On-site
Limitations (if applicable)			Survey reference (if relating to a wider survey)
Grid reference			Habitat parcel reference Boundaries of Service Station
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The scrub is a good representation of the habitat type it has been identified as, based on its UKHab description (where in its natural range). The appearance and composition of the vegetation closely matches the characteristics of the specific scrub type. At least 80% of scrub is native, and there are at least three native woody species ¹ , with no single species comprising more than 75% of the cover (except hazel <i>Corylus avellana</i> , common juniper <i>Juniperus communis</i> , sea buckthorn <i>Hippophae rhamnoides</i> or box <i>Buxus sempervirens</i> , which can be up to 100% cover).	Y	
B	Seedlings, saplings, young shrubs and mature (or ancient or veteran ²) shrubs are all present.	N	
C	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴) and species indicative of sub-optimal condition ⁵ make up less than 5% of ground cover.	Y	
D	The scrub has a well-developed edge with scattered scrub and tall grassland and or forbs present between the scrub and adjacent habitat.	N	
E	There are clearings, glades or rides present within the scrub, providing sheltered edges.	N	
Number of criteria passed			2
Condition Assessment Result (out of 5 criteria)		Condition Assessment Score	Score Achieved ×/□
Passes 5 criteria		Good (3)	
Passes 3 or 4 criteria		Moderate (2)	
Passes 2 or fewer criteria		Poor (1)	Y
Suggested enhancement interventions to improve condition score			
Footnotes			
Footnote 1 – Native woody species as defined and listed in the Hedgerow Survey Handbook: DEFRA (2007) <i>Hedgerow Survey Handbook: A standard procedure for local surveys in the UK</i>. 2nd ed. [online]. Defra, London. PB1195. Available from: Hedgerow Survey Handbook (publishing.service.gov.uk). Footnote 2 - See gov.uk standing advice on ancient and veteran species. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)			

Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement.

Footnote 4 – Wildlife and Countryside Act 1981 (as amended).

Footnote 5 - Species indicative of sub-optimal condition for this habitat type may include: non-native conifers, tree-of-heaven *Alnus altissima* , holm oak *Quercus ilex* , European turkey oak *Quercus cerris* , cherry laurel *Prunus laurocerasus* , snowberry *Symphoricarpos* spp., shallon *Gaultheria shallon* , American skunk cabbage *Lysichiton americanus* , buddleia *Buddleja* spp., cotoneaster *Cotoneaster* spp., Spanish bluebell *Hyacinthoides hispanica* and hybrid bluebells *Hyacinthoides x massartiana* . There may be additional relevant species local to the region and or site.

Condition Sheet: URBAN Habitat Type			
Habitat Type			
Where a parcel contains areas of higher distinctiveness habitats within it, then the area of higher distinctiveness habitat must be separated and recorded and assessed as such. Sparsely vegetated land - Ruderal/Ephemeral Sparsely vegetated land – Tall forbs Urban – Allotments Urban – Biodiverse green roof Urban - Bioswale Urban - Cemeteries and churchyards Urban - Facade-bound green wall Urban - Ground based green wall Urban - Intensive green roof Urban - Open mosaic habitats on previously developed land Urban - Rain garden Urban - Sustainable drainage system (SuDS) Urban - Vacant or derelict land Urban – Bare ground			
Habitat Description			
SUDS feratures			
See Biodiversity Metric 4.0 User Guide for green roofs and UK Habitat Classification (UKHab) for other			
Site name and location	Swindon Services	On-site or off-site	On-site
Limitations (if applicable)		Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	SUDS features within the Service Station
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
Core Criteria - must be assessed for all urban habitat types :			
A	vegetation structure is varied, providing opportunities for vertebrates and invertebrates to live, eat and breed. A single structural habitat component or vegetation type does not account for more than 80% of the total habitat area.	Y	
B	The habitat parcel contains different plant species that are beneficial for wildlife, for example flowering species providing nectar sources for a range of invertebrates at different times of year.	Y	
C	Invasive non-native plant species (listed on Schedule 9 of WCA ¹) and others which are to the detriment of native wildlife (using professional judgement) ² cover less than 5% of the total vegetated area ³ . Note - to achieve Good condition, this criterion must be satisfied by a complete absence of invasive non-native species (rather than <5% cover).	N	The potential for invasive species to colonise is considered reasonably high due to being a high-use area
Additional Criteria - must be assessed for Open mosaic habitat on previously developed land only:			
D1	The parcel shows spatial variation and forms a mosaic of at least four early successional communities (a) to (h) PLUS bare substrate. (a) annuals; (b) mosses/liverworts; (c) lichens; (d) ruderals; (e) inundation species; (f) open grassland; (g) flower-rich grassland; (h) heathland.		
D2	The parcel contains pools of water such as permanent and ephemeral waterbodies.		
Additional Criteria - must be assessed for Bioswale and SuDS habitat types only:			
E1	Plant species are mostly native. If non-native species are present, they should not be detrimental to the habitat or native wildlife ⁴ .	Y	
E2	The vegetation is comprised of plant species suited to wetland or riparian situations.	Y	
Additional Criterion - must be assessed for Intensive green roofs only:			
F	The roof has a minimum of 50% native and non-native wildflowers. 70% of the roof area is soil and vegetation (including water features).		
Additional Criterion - must be assessed for Biodiverse green roofs only:			
G	The roof has a varied depth of 80 – 150 mm; at least 50% is at 150 mm and is planted and seeded with wildflowers and sedums or is pre-prepared with sedums and wildflowers. Note – to achieve Good condition some additional habitat, such as sand piles, stones, logs etc are present.		

Essential criteria relevant for habitat type achieved (Yes or No)				
		Number of criteria passed		
Condition Assessment Result	Condition	Assessment Score Achieved ×/□		
Results for habitats requiring assessment of 3 core criteria only (all listed urban habitats except Open)				
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C.	Good (3)			
• Passes 2 of 3 core criteria; OR • Passes 3 of 3 core criteria but does not meet the requirements for Good condition within criterion C.	Moderate (2)			
• Passes 0 or 1 of 3 core criteria.	Poor (1)			
Results for Green roofs (requiring assessment of 4 criteria only - core criteria plus additional criterion)				
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C; AND • Passes additional criterion relevant to specific habitat type (F or G).	Good (3)			
• Passes 2 or 3 of 4 criteria; OR • Passes 4 of 4 criteria but does not meet the requirements for Good condition within criterion C.	Moderate (2)			
• Passes 0 or 1 of 4 criteria.	Poor (1)			
Results for Open mosaic habitat on previously developed land, Bioswale or SuDS (requiring				
• Passes all 3 core criteria; AND • Meets the requirements for Good condition within criterion C; AND • Passes all additional criteria relevant to specific habitat type (Group D or Group E)	Good (3)			
• Passes 3 or 4 of 5 criteria; OR • Passes 5 of 5 criteria but does not meet the requirements for Good condition within criterion C.	Moderate (2)	Y		
• Passes 2 or fewer of 5 criteria.	Poor (1)			
Suggested enhancement interventions to improve condition score				
Footnotes				
Footnote 1 – Wildlife and Countryside Act 1981 (as amended). Footnote 2 – Sources of information about detrimental non-native species can be found on the GB Non-native Species Secretariat (GBNNS) website: Home » NNS (nonnativespecies.org) and Natural England Access to Evidence page should also be checked for up-to-date information: Horizon-scanning for invasive non-native plants in Great Britain - NECR053 (naturalengland.org.uk) For criterion C – For green roof habitat types only – buddleia <i>Buddleja davidii</i> should be assessed alongside Schedule 9 species. This species impairs the health of the local ecosystem and reduces the biodiversity potential of the roof. It is also a sign that a roof has not been planted and seeded correctly in subsequent years. Footnote 3 – Assess this for each distinct habitat parcel. If the distribution of invasive non-native species varies across the habitat, split into parcels accordingly, applying a buffer zone around the invasive non-native species with a size relative to its risk of spread into adjacent habitat, using professional judgement. Footnote 4 – Use professional judgement. Sources of information about non-native species that are not detrimental to native wildlife can be found on the GBNNS website: Alternative plants » NNS (nonnativespecies.org)				

Condition Sheet: INDIVIDUAL TREES Habitat Type			
Habitat Type(s)			
Individual trees – Urban trees			
Individual trees – Rural trees			
Habitat Description			
Proposed trees within Service Station landscaping			
Individual trees (description applied to the urban or rural environment).			
Young trees over 7.5 cm in diameter at breast height whose canopies are not touching.			
Site name and location		Swindon Services	On-site or off-site
On-site			
Limitations (if applicable)			Survey reference (if relating to a wider survey)
Grid reference			Habitat parcel reference
			Proposed trees within Service Station landscaping
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The tree is a native species (or at least 70% within the block are native species).	Y	
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	N	
C	The tree is mature (or more than 50% within the block are mature).	N	
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their	Y	
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	N	
F	More than 20% of the tree canopy area is oversailing vegetation beneath.	Y	
Number of criteria passed		3	
Condition Assessment Result (out of 6 criteria)		Condition Assessment Score	Score Achieved x/□
Passes 5 or 6 criteria		Good (3)	
Passes 3 or 4 criteria		Moderate (2)	Y
Passes 2 or fewer criteria		Poor (1)	
Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.			
Suggested enhancement interventions to improve condition score			
Footnotes			
Footnote 1 - See gov.uk standing advice on ancient and veteran trees. Available from: Keepers of time: ancient and native woodland and trees policy in England (publishing.service.gov.uk) and: Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK (www.gov.uk)			

Condition Sheet: WOODLAND Habitat Type						
UK Habitat Classification (UKHab) Habitat Type(s)						
Woodland and forest - Lowland beech and yew woodland						
Habitat Description						
Other broadleaved woodland on southern boundary of site						
ukhab – UK Habitat Classification						
This condition sheet is based on the England Woodland Biodiversity Group (EWBG) Woodland Condition Survey Method, available here: Woodland Wildlife Toolkit (sylva.org.uk)						
IMPORTANT: This biodiversity metric woodland condition assessment must be used to assess woodland being input into the biodiversity metric. The						
Site name and location	Swindon Services		On-site or off-site	On-site		
Limitations (if applicable)	Not impacted by development and not surveyed therefore assumed to be in good condition		Survey reference (if relating to a wider survey)			
Grid reference			Habitat parcel reference	Southern boundary		
Condition Assessment Criteria						
Indicator		Good (3 points)	Moderate (2 points)	Poor (1 point)	Score per indicator	Notes (such as justification)
A	Age distribution of trees	Three age-classes ¹ present.	Two age-classes ¹ present.	One age-class ¹ present.	3	
B	Wild, domestic and feral herbivore damage	No significant browsing damage evident in woodland ² .	Evidence of significant browsing pressure is present in 40% or less of whole woodland ² .	Evidence of significant browsing pressure is present in 40% or more of whole woodland ² .	3	
C	Invasive plant species	No invasive species ³ present in woodland.	Rhododendron <i>Rhododendron ponticum</i> or cherry laurel <i>Prunus laurocerasus</i> not present, other invasive species ³ <10% cover.	Rhododendron or cherry laurel present, or other invasive species ³ >10% cover.	3	
D	Number of native tree species	Five or more native tree or shrub species ⁴ found across woodland parcel.	Three to four native tree or shrub species ⁴ found across woodland parcel.	Two or less native tree or shrub species ⁴ across woodland parcel.	3	
E	Cover of native tree and shrub species	>80% of canopy trees and >80% of understory shrubs are native ⁵ .	50 - 80% of canopy trees and 50 - 80% of understory shrubs are native ⁵ .	<50% of canopy trees and <50% of understory shrubs are native ⁵ .	3	
F	Open space within woodland	10 - 20% of woodland has areas of temporary open space ⁶ . Unless woodland is <10ha, in which case 0 - 20% temporary open space is permitted ⁷ .	21 - 40% of woodland has areas of temporary open space ⁶ .	<10% or >40% of woodland has areas of temporary open space ⁶ . But if woodland <10ha has <10% temporary open space, please see Good category ⁷ .	3	
G	Woodland regeneration	All three classes present in woodland ⁸ ; trees 4 - 7 cm Diameter at Breast Height (DBH), saplings and seedlings or advanced coppice regrowth.	One or two classes only present in woodland ⁸ .	No classes or coppice regrowth present in woodland ⁸ .	3	
H	Tree health	Tree mortality less than 10%, no pests or diseases and no crown dieback ⁹ .	11% to 25% mortality and/or crown dieback or low-risk pest or disease present ⁹ .	Greater than 25% tree mortality and or any high-risk pest or disease present ⁹ .	3	
I	Vegetation and ground flora	Recognisable NVC plant community ¹⁰ at ground layer present, strongly characterised by ancient woodland flora specialists.	Recognisable woodland NVC plant community ¹⁰ at ground layer present.	No recognisable woodland NVC plant community ¹⁰ at ground layer present.	3	
J	Woodland vertical structure	Three or more storeys across all survey plots or a complex woodland ¹¹ .	Two storeys across all survey plots ¹¹ .	One or less storey across all survey plots ¹¹ .	3	
K	Veteran trees	Two or more veteran trees ¹² per hectare.	One veteran tree ¹² per hectare.	No veteran trees ¹² present in woodland.	3	

Footnote 11 – This criterion looks at structural diversity and is useful to understand in conjunction with the age of trees in a woodland. Vertical structure is defined as the number of canopy storeys present. Possible storey values are: 1) Upper; 2) Complex: recorded when the stand is composed of multiple tree heights that cannot easily be stratified into broad height bands (such as upper, middle or lower); 3) Middle; 4) Lower; and 5) Shrub layer. There might be no storeys where the woodland has been felled. See EWBG INDICATOR 11 for more information.

Footnote 12 - See EWBG method INDICATOR 12 for more information. See gov.uk standing advice on ancient and veteran trees. Available from:

[Keepers of time: ancient and native woodland and trees policy in England \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/publications/keepers-of-time-ancient-and-native-woodland-and-trees-policy-in-england)

and:

[Ancient woodland, ancient trees and veteran trees: advice for making planning decisions - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/publications/ancient-woodland-ancient-trees-and-veteran-trees-advice-for-making-planning-decisions)

Footnote 13 – See EWBG method INDICATOR 13 for more information. This includes logs, large dead branches on the forest floor and stumps (<1 m tall) >20 cm diameter at narrowest point and >50 cm long. Also includes standing dead trees (>1 m tall) and also deadwood on standing live trees. Diameter is measured at the narrowest point on the stem. Minimum diameter of 20 cm.

Footnote 14 - See EWBG method INDICATOR 15 for more information. Examples of disturbance are: significant nutrient enrichment; soil compaction from trampling, machinery, animal poaching or litter.

Reptile Report



Swindon Services

On behalf of Moto Hospitality Ltd

May 2024

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1 Executive Summary

Report purpose	This report provides details of surveys in relation to reptiles pertaining to the M4 Junction 16 site.
Date and methods of survey	On 22 March 2024 70 reptile refugia were deployed within areas of suitable reptile habitat at the M4 Junction 16 site on 22 March 2024. Seven visits were then conducted to identify presence or likely absence of reptiles within the site in suitable weather conditions throughout April and May 2024: • April 02, 08, 16, 30 • May 07, 15 and 21
Key findings	A low population of slow-worms has been recorded within the site, consistently on the northern boundary of the eastern field (within the proposed biodiversity enhancement area of the site) and rarely on the northern and southern boundaries and central hedgerow (H1). A total of two males and two female slow-worms was encountered with a peak count of three slow-worms during a single survey. A low population of slow-worm is present, restricted to the site boundaries which have a suitable structure for foraging and resting. Upon collection of the reptile refugia on 23 May 2024 a single grass snake was recorded on the southern boundary of the site. A low population of grass snake is therefore also present.

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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 reptile 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 7.3ha 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 Suitable habitat and opportunities for reptiles within the site are present within the grassland, treeline and hedgerow edges, and bramble and mixed scrub on site. The presence of damp grassland and nearby ponds/water bodies further increase the suitability of the site for grass snake. However, much of the site comprises predominantly short sward modified grassland which is of poor foraging and refuge opportunities for reptiles (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 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 reptiles pertaining to the Swindon Services site at Junction 16 of the M4.

3 Methods

3.1 Reptile Surveys

3.1.1 A presence/absence reptile survey was undertaken by deploying 70 artificial reptile refugia within the site and off-site habitats to the west. Refugia were deployed in accordance with industry standard guidelines (Gov.uk, 2015) (see locations on Figure 1 in Appendix 1). Refugia comprised of 50cm² pieces of roofing felt (x40), Onduline (x20) and/or corrugated metal (x10). The refugia were checked on seven occasions during suitable weather conditions between the months of April and May. The number of refugia deployed exceeded the current industry standard guidance which suggests between 5 and 10 refugia are used per hectare of suitable habitat, therefore 37-73 refugia would be required within the site, assuming all habitats are suitable which is not the case (as the central fields are unsuitable). The refugia were deployed on 22 March 2024 and were left in situ for two weeks prior to the first survey visit to allow the

1 in

Appendix 1.

Table 3.1: *Reptile presence / absence survey details (final date was collection of refugia)*

Date	Surveyor*	Survey timing	Weather
02/04/24	RH	14:00-15:30	13°C, cloud 7/8, wind Bf 7, no rain (ground very waterlogged throughout)
08/04/24	JB	10:00-11:30	11-12°C, cloud 7/8, wind Bf 2, no rain
16/04/24	CJ	13:00-14:00	12°C, cloud 4/8, wind Bf 4, no rain
30/04/24	JB	08:00-09:00	10-11°C, cloud 4/8, wind Bf 3, no rain
07/05/24	JB	10:00-11:00	14-15°C, cloud 3/8, wind Bf 3, no rain
15/05/24	JB	7:30-8:30	12°C, cloud 6-7/8, wind Bf 2-4, no rain
21/05/24	JB	08:00-09:00	11°C, cloud 6/8, wind Bf 3-4, no rain
23/05/24	JB	19:00-20:30	11°C, cloud 8/8, wind Bf 2, no rain

* Where CJ = Clare John; HE = Harry Eldon; JB = Jack Bailey; and RH = Ross Hellier

3.1.2 The population size class for reptiles was estimated based on Froglife guidelines (Froglife, 1999) as follows in Table 3.2 below.

Table 3.2: *Criteria for assigning reptile population size (Froglife 1999)*

Species	Low population (Score 1)	Good population (Score 2)	Exceptional population (Score 3)
Adder	<5	5-10	<10
Grass snake	<5	5-10	>10
Common lizard	<5	5-20	>20
Slow-worm	<5	5-20	>20

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

4 Results

4.1 Reptile Surveys

- 4.1.1 The main fields of the site are unsuitable for reptiles to rest or forage due to being waterlogged early in the season, having poor vegetation structure, compact ground and no opportunities for resting.
- 4.1.2 A low population of slow-worm has consistently been recorded on the northern boundary of the eastern field (between tile numbers 48 and 52 on Figure 1 in Appendix 1, within the proposed biodiversity enhancement area of the site). On the final survey, individuals were also recorded on the northern and southern boundary and central hedge (H1). It was noted that ground conditions had become drier, making these boundaries more suitable than in previous surveys.
- 4.1.3 A total of two males and two females were encountered with a peak count of three slow-worms during a single survey. This confirms presence of a low population of slow-worm within the site, restricted to the site boundaries which are drier and have a structure suitable for resting and foraging.
- 4.1.4 During collection of the refugia on 23 May 2024, a single sub-adult grass snake (*Natrix helvetica*) was recorded on the southern boundary of the site beneath tile 59. This confirms presence of a low population of grass snake within the site.
- 4.1.5 The remainder of common reptile species which have potential to be present are considered likely absent.
- 4.1.6 No reptiles have been recorded in the west of the site.

Table 4.1: *Reptile presence / absence survey results*

Date	Survey results	Tile numbers	Other observations
02/04/24	-	-	Three common toad and three small mammals
08/04/24	One male and one female slow-worm	51 and 52	Two roe deer and one small mammal
16/04/24	One male and one female slow-worm	49 and 52	Two common toad
30/04/24	One male and one female slow-worm	48 and 50	One small mammal
07/05/24	Two male slow-worms	48	Two common toad and two small mammals

15/05/24	-	-	One small mammal
21/05/24	One male and two female slow-worms	44, 53 and 69	-

- 4.1.7 Common toad were recorded within the site at a variety of locations, including tiles numbered 5 (western), 44 (northern), 51 & 52 (north-eastern), 57 & 58 (south), and 70 (central hedgerow).

5 References

Froglife (1999). *Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation.* Froglife Advice Sheet 10. Froglife, Halesworth

Gov.uk (2015). *Guidance. Reptiles: surveys and mitigation for development projects.* Natural England and Department for Environment, Food & Rural Affairs, Worcester.

Appendix 1: Figures

Figure 1: Refugia locations



LEGEND

Site boundary (7.33 ha)

Reptile Mats

Location (1:75,000):

Project:

Swindon Services

Client:

Smith Jenkins Ltd

Drawing Title:

Reptile Mat Locations

Drawing No.:
EBD_2511_DR004

Scale (@A3):
1:1,500

Central Eastings, Northings:
410494, 182645

Date Drawn:
27/03/2024

Drawn by:
JF

Approved by:
BG

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