

A47/A11 Thickthorn Junction

Scheme Number: TR010037

Volume 6

6.3 Environmental Statement Appendices **Appendix 8.6 – Breeding Bird, Hobby and Barn** **Owl Survey Report**

APFP Regulation 5(2)(a)

Planning Act 2008

Infrastructure Planning (Applications: Prescribed
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Infrastructure Planning

Planning Act 2008

**The Infrastructure Planning
(Applications: Prescribed Forms and
Procedure) Regulations 2009**

The A47/A11 Thickthorn Junction
Development Consent Order 202[x]

ENVIRONMENTAL STATEMENT APPENDICES

Appendix 8.6 – Breeding Bird, Hobby and Barn Owl Survey Report

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Sweco

A47/A11 Thickthorn Junction

Breeding Bird, Hobby and Barn Owl Survey Report



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Contents

1	Non-technical summary.....	1
2	Limitations and exceptions.....	2
2.1	Site-specific Limitations	2
3	Introduction	3
3.1	Purpose.....	3
3.2	Site Description.....	3
4	Bird legislation	4
4.1	Planning policy.....	4
4.2	Local planning policy.....	4
4.3	Birds of conservation concern	5
5	Methodology	7
5.1	Breeding bird surveys	7
5.2	Barn owl surveys.....	8
5.3	Hobby surveys	8
6	Survey findings.....	10
6.1	2017 AECOM Report.....	10
6.2	2020 breeding bird survey results	10
7	Assessment and mitigation.....	12
7.1	Breeding birds.....	12
7.2	Barn owls	13
7.3	Enhancements	18
8	Conclusion	19
9	References	20

Drawings

DCO Site Boundary (HE551492-GTY-EGN-000-DR-LX-00001-P01)
DCO BOUNDARY AREA PLAN (HE551492-GTY-LLO-000-DR-CH-31000)
778577-MLM-ZZ-XX-DR-J-0001 - Walking Route 1
778577-MLM-ZZ-XX-DR-J-0002 - Walking Route 2
778577-MLM-ZZ-XX-DR-J-0003 - Walking Route 3
778577-MLM-ZZ-XX-DR-J-0004 – BBS Survey of Route 1
778577-MLM-ZZ-XX-DR-J-0005 – BBS Survey of Route 2
778577-MLM-ZZ-XX-DR-J-0006 – BBS Survey of Route 3

778577-MLM-ZZ-XX-DR-J-0007 – Barn Owl Survey Sites

1 Non-technical summary

This breeding bird survey report has been prepared by MLM and relates to proposed junction works where the A11 meets the A47 at Thickthorn Junction.

The proposals involve improvements to the existing junction, through a new link roads along with ancillary roads and infrastructure to accommodate the proposed works.

A total of 44 bird species were recorded on site during the breeding bird surveys, of which 14 species of importance were identified. The following mitigation is required to offset the impacts:

- Compensatory rough grassland should be created alongside the A47 motorway.
Ten skylark plots should be created in the surrounding fields surrounding the proposed carriageway.
- Woodland on site should be replaced on a like-for-like basis alongside the carriageway or near the drainage basins.
- Hedgerow should be replaced on a like-for-like basis either through new planting or enhancement of existing hedgerow.
- All species used for planting should be locally sourced and native and include some fruit or berry producing species.
- Vegetation clearance should take place outside the breeding bird period (March to September inclusive) or a suitably trained ecologist should supervise the clearance.
- Five barn owl nest boxes should be sited in areas of created rough grassland or within receptive local farms.
- Post-development monitoring of barn owl numbers should be done in years 1, 3 and 5.

The following enhancement measures have been recommended to provide nesting or foraging habitat for species which, though unlikely to be impacted by the development, have populations in decline that could benefit from their implementation:

- The modification of the two drainage basins to create kingfisher banks with nesting boxes.
- The installation of nesting boxes for raptors and owls in areas of rough grassland.
- The installation of two mallard nesting tubes in each drainage basin.

2 Limitations and exceptions

This report and its findings should be considered in relation to the terms and conditions proposed and scope of works.

Interpretations and recommendations contained in the report represent professional opinions, which were arrived at in accordance with currently accepted industry practices at the time of reporting and based on current legislation in force at that time.

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This report is prepared and written in the context of the proposals stated in the introduction to this report and should not be used in a differing context. Furthermore, alterations to the initial proposals or changes in conditions on site over time may necessitate an alteration to the report in whole or in part after its submission. Therefore, in the event of any change in proposals or lapse of one year or more from the date of the report, the content of the report should not be relied upon unless referred to MLM for validation and, if necessary, re-appraisal.

Scientific survey data will be shared with local biological records centre in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) professional code of conduct.

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Please note that MLM does not purport to provide specialist legal advice.

Unless stated specifically, drawings and plans are indicative only. As such, the position of features marked on the plans or drawings should not be taken as 100% accurate.

2.1 Site-specific Limitations

All breeding bird surveys were undertaken in good conditions and everywhere along the proposed survey route (drawings 778577-MLM-ZZ-XX-DR-J-0001, 778577-MLM-ZZ-XX-DR-J-0002 and 778577-MLM-ZZ-XX-DR-J-0003) was accessible for the breeding bird surveys. There were no limitations to these surveys.

All hobby surveys were undertaken in good conditions and everywhere along the proposed survey route, (drawing 778577-MLM-ZZ-XX-DR-J-0001) was accessible, with the exception of the final hobby visit undertaken on 21 September 2020, during which access to the southern areas of the site, near Home Farm was not possible due to landowner restrictions. This is a minor limitation as although this area is where the hobbies were recorded in 2017 (ref. 1), none of the 2020 hobby or breeding bird surveys have recorded hobby within this area, suggesting that they did not breed in this area this year.

Access to all the barn owl sites was possible, however access into [REDACTED] [REDACTED] was not possible. This is not a limitation as it was possible to see into the [REDACTED] [REDACTED] [REDACTED]

A further limitation was encountered during the barn owl inspection [REDACTED]. The landowner confirmed that barn owls had previous bred [REDACTED] [REDACTED] that were suitable for barn owl, however these could not all be inspected due to their height being beyond the reach of the ladder. This is a minor limitation, as whilst [REDACTED] may support barn owls, the proposed development will not be directly impacting it. Therefore mitigation measures outlined to support the loss of foraging habitat and reduce collision risk for the barn owls using the [REDACTED] should sufficiently mitigate for impacts to a nest or roost within [REDACTED]

3 Introduction

3.1 Purpose

This breeding bird, hobby and barn owl survey report has been prepared by MLM and relates to proposed works at the junction works where the A11 meets the A47 at Thickthorn Junction.

The proposals involve improvements to the existing junction, through a new link roads along with ancillary roads and infrastructure to accommodate the proposed works.

Surveys undertaken by AECOM 2017 (ref. 1) identified the site as being of local importance, finding a total of 49 species on site of which 12 were considered species of conservation concern.

3.2 Site Description

The site is located where the A11 and A47 meet, just south-west of Norwich in Norfolk. The central grid reference is TG 18585 05266. The bird survey zone comprised of all areas identified within drawing HETTJCT-000000-EGN-000-RP-LX-00000-P01 which was provided on the 6th February 2020. The habitat within the impact area consisted of lowland farmland which was a mixture of grazing and cereal crops with occasional scattered veteran trees. There was also a number of mature hedges, scrub and areas of plantation, semi-natural broad-leaved woodland and mixed woodland which criss-crossed the site. Towards the south of the site were wetlands which included a drainage basin, two fishing lakes and the Cantley Stream, which is a tributary of the River Yare.

4 Bird legislation

The main pieces of legislation relating to breeding birds within England and Wales are:

- **The Conservation of Habitat and Species Regulations 2017** transposes European Union Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law. The regulations also transpose elements of the EU Wild Birds Directive in England and Wales. The regulations provide for the designation and protection of 'European Sites', the protection of 'European Protected Species' and the adaptation of planning controls for the protection of such sites and species. Under the regulations, public bodies have a duty in exercising their functions to have regard to the EC Habitats Directive and Wild Birds Directive
- **The Wildlife and Countryside Act 1981** (as amended) provides detail on a range of protection and offences relating to wild birds, other animals, and plants. The level of protection depends on which Schedule of the Act the species is listed on. Licences are available for specific purposes to permit actions that would otherwise constitute an offence in relation to species.
- **The Natural Environment and Rural Communities (NERC) Act 2006** imposes an obligation on all public bodies, including local authorities, to consider whether their activities can contribute to the protection of wildlife. The duty is created by section 40(1) of the Act, which states that: "Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity."

4.1 Planning policy

The recommendations of this report are in line with the key principles of the National Policy Statement for National Networks NN NPS7). Section 5 of this document (Generic Impacts) Framework (ref. 2) and Government Circular 06/05 (Ref. 3).

4.2 Local planning policy

South Norfolk Council has a joint core strategy with Broadlands and Norwich councils. This local plan was adopted in January 2014 and is the current active local planning policy for the Proposed Scheme area. The following local policies are considered relevant to the site.

Policy 1: Addressing climate change and protecting environmental assets

To address climate change and promote sustainability, all development will be located and designed to use resources efficiently, minimise greenhouse gas emissions and be adapted to a changing climate and more extreme weather.

Development will therefore:

- *be energy efficient*
- *provide for recycling of materials*
- *use locally sourced materials wherever possible*
- *be located to minimise flood risk, mitigating any such risk through design and implementing sustainable drainage*
- *minimise water use and protect groundwater sources*
- *make the most efficient appropriate use of land, with the density of development varying according to the characteristics of the area, with the highest densities in centres and on public transport routes*
- *minimise the need to travel and give priority to low impact modes of travel*
- *be designed to mitigate and be adapted to the urban heat island effect in Norwich*
- *improve the resilience of ecosystems to environmental change*

The environmental assets of the area will be protected, maintained, restored and enhanced and the benefits for residents and visitors improved.

Development and investment will seek to expand and link valuable open space and areas of biodiversity importance to create green networks. Where there is no conflict with biodiversity objectives, the quiet enjoyment and use of the natural environment will be encouraged and all proposals should seek to increase public access to the countryside.

All new developments will ensure that there will be no adverse impacts on European and Ramsar designated sites and no adverse impacts on European protected species in the area and beyond including by storm water runoff, water abstraction, or sewage discharge. They will provide for sufficient and appropriate local green infrastructure to minimise visitor pressures. Development likely to have any adverse effect on nationally designated sites and species will be assessed in accordance with national policy and legislation.

In areas not protected through international or national designations, development will:

- *Minimise fragmentation of habitats and seek to conserve and enhance existing environmental assets of acknowledged regional or local importance. Where harm is unavoidable, it will provide for appropriate mitigation or replacement with the objective of achieving a long-term maintenance or enhancement of the local biodiversity baseline*
- *Contribute to providing a multifunctional green infrastructure network, including provision of areas of open space, wildlife resources and links between them, both off site and as an integral part of the development*
- *Help to make provision for the long-term maintenance of the green infrastructure network*
- *Protect mineral and other natural resources identified through the Norfolk Minerals and Waste Development Framework*

Birds of conservation concern

In addition to legal protection some bird species are classified according to their conservation status. The conservation status of all regularly occurring British birds has been analysed in co-operation with the leading governmental and non-governmental conservation organisations, including: the Royal Society for the Protection of Birds (RSPB), the British Trust for Ornithology (BTO) and Bird Life International. This has resulted in the continuing production of the Birds of Conservation Concern (BoCC) publication which is periodically revised, currently version 4 (ref. 4).

The basis of the publication is that a species' ongoing population trend is assigned to one of three lists of Conservation Concern: UK Red, Amber and Green. Although the lists confer no legal status in themselves, they are used by both councils and government to inform legislation, policy and local biodiversity action plans and therefore most bird species identified at risk will usually be covered under legislation above. In addition to this, in line with CIEEM guidance on assessing ecological impacts (ref. 5) the statuses also assist with the identification of local, county and regional importance, providing a value for the nature conservation of a species against a geographical frame of reference.

Red list birds are those which have experienced a severe decline of more than 50% of the population or range over the last 25 years, as measured by the number of 10 km squares occupied by breeding birds of the species concerned. Species listed as globally threatened by Birdlife International, and those with a historical decline in the UK between 1800 and 1995 (without evidence of recovery) are also included.

Birds of Conservation Concern Amber list criteria for breeding birds are those which have experienced a moderate decline of between 25% and 49% of population and/or range over the last 25 years. Species of European conservation concern and those with a historical decline but which are currently recovering are also included.

Birds of Conservation Concern Green list encompasses species that are either increasing or whose numbers are constant.

5 Methodology

5.1 Breeding bird surveys

5.1.1 Personnel

All surveys were carried out by experienced MLM ornithologist, [REDACTED] BSc (Hons) Grad CIEEM, who has over eight years' ornithological experience and [REDACTED] MEdol (Hons) Grad CIEEM who has over seven years' ornithological experience. This report has subject to review by [REDACTED] PhD MA (Cantab) BA (Hons) CEcol MCIEEM MRSB, who has over 15 years' experience in ecological consultancy and research.

5.1.2 Survey method

The survey methodology involved standard territory (registration) mapping techniques as detailed in Bibby *et al.* (ref. 6). This method is based on the observation that many species during the breeding season are territorial. This is found particularly amongst passerines (song birds), where territories are often marked by conspicuous song, display, and periodic disputes with neighbouring individuals. Registrations of birds, using standard British Trust for Ornithology (BTO) two letter species codes and activity codes (ref. 7) were placed onto an appropriate field map. The survey area included the whole of the area within the red line boundary, as well as any field boundaries or likely nesting areas within 500m of the main A47 and A11 carriageway. All field boundaries were walked slowly and birds were identified by both sight and sound, with records of their behaviour taken and recorded onto plans. The walked route is shown on drawing 778282-MLM-ZZ-XX-DR-J-0001.

For recording passerines, specific symbols were used for singing, calling, movements of the same bird between different areas, flying, carrying food, nest building, aggressive encounters and other notable behaviour. The expected outcome of this technique is that mapped registrations fall into clusters, approximately coinciding with territories. Where a species has closely packed territories (for example the reed warbler *Acrocephalus scirpaceus*), the mapping of simultaneously singing birds becomes essential. Territory boundaries are taken to be between such birds.

5.1.3 Weather conditions

All of the surveys took place during suitable weather conditions of no rain or strong winds. Detailed weather conditions for those surveys are presented in table 5.1 below.

Table 5.1 Weather conditions when roosts were identified

Survey visit	Date (2020)	Start Time	Sunrise	Temp. (°C)	Cloud (oktas)	Wind (Beaufort)	Rain	Visibility
BBS 1	17/3	06:00	06:10	4	7	1N	N/A	Good
BBS 1	18/3	06:00	06:09	10	8	1N	N/A	Good
BBS 2	15/4	05:30	06:04	2	0	1NW	N/A	Good
BBS 2	16/4	05:30	06:03	8	0	0	N/A	Good
BBS 3	19/5	04:30	04:51	12	5	1-2W	N/A	Good
BBS 3	20/5	04:30	04:50	12	0	1W	N/A	Good
BBS 4	29/6	04:15	04:30	17	4	2-3W	N/A	Good
BBS 4	30/6	04:15	04:30	16	4	2W	N/A	Good

5.2 Barn owl surveys

5.2.1 Personnel

The site survey was undertaken by two surveyors on 21 September 2020. The survey was led by Joshua Stafford (Natural England Barn Owl Survey Class Licence Registration No. CL29/00321). The survey assistant was Sophie Barrell, who is working towards her licence. Both surveyors have experience of surveying for barn owls in a range of buildings, supporting structures and trees.

5.2.2 Survey method

The barn owl survey method followed recommendations by Shawyer 2011 and the Barn Owl Trust 2010 (ref. 8 and ref. 9). This comprised a visual inspection of the buildings, nest boxes and sites identified in the AECOM 2017 barn owl survey (ref. 1) as having potential to support roosting or nesting barn owls. It also included additional sites that had been identified by MLM during the breeding bird surveys. The building inspections included all internal and external surfaces and features, such as wall tops and cavities where barn owls could potentially roost, as well as roof timbers, floors or stored materials for field signs such as pellets, feathers or whitewash.

Initially an external inspection was undertaken around each building by both surveyors, after which the assistant surveyor stayed outside in a strategic position to watch for any owls exiting the building whilst the lead surveyor entered the building to make an initial search for owls. After the initial inspection both surveyors entered each building to conduct a thorough search. An assessment was made of barn owl habitat surrounding the site.

Where possible the surveyors made efforts to speak with the building owners to ascertain if they had seen barn owls on site and if so how long they had been present and the times they most frequently saw them.

Survey equipment employed comprised ladders, binoculars, torches and an inspection camera to check into cavities which were awkward to access.

5.2.3 Weather conditions

The surveys were undertaken later in the day, after the hobby surveys. The weather conditions for both types of survey were sunny spells with temperatures of around 17°C and a westerly breeze (Beaufort 2).

5.3 Hobby surveys

5.3.1 Personnel

All surveys were carried out by experienced MLM ornithologists [REDACTED] and [REDACTED], with [REDACTED] BSc (Hons) MCIEEM also assisting on one visit. [REDACTED] has around 5 years' consultancy experience and has assisted with a number of bird surveys.

5.3.2 Survey method

The survey methodology for hobby followed that laid out in the publication 'Raptors: A Field Guide for Surveys and Monitoring' (ref. 10). This consists of four surveys, the first survey covered the whole site, walking the BBS survey route, and took place on the 21 of May, within the designated April-May window, to check for territory occupancy. During the April-May window, hobbies tend to congregate over open water, wetlands and forest clearings to 'hawk' for insects. It is important during this time to watch out for birds hunting cooperatively as this can reveal the presence of a potential pair early.

The second survey took place on the 18 of June within the required June survey window, again following the existing survey route but with vantage points added over the historic breeding areas. Three vantage points were added on the land to the south near Home Farm, and three points were added to the west near Thickthorn Hall and Thickthorn Park & Ride, both areas where hobbies were recorded in 2017. Surveyors spent 30 minutes at each point viewing suitable habitat and scanning the area.

The third survey took place between on the 3 August within the July and mid-August window with the aim of looking to record feeding or calling young, as hobbies become more demonstrative as the young grow.

The final visit took place on the 21 September within the mid-August-September window. with the aim of recording fledged young and parental feeding.

5.3.3 Weather conditions

All of the hobby surveys took place during suitable weather conditions of no rain or strong winds and during their required survey windows as required for the methodology. Detailed weather conditions for the specific hobby surveys are presented in table 5.2 below.

Table 5.2 Weather conditions when roosts were identified

Survey visit	Date (2020)	Start Time	Sunrise	Temp. (°C)	Cloud (oktas)	Wind (Beaufort)	Rain	Visibility
HBS 1	21/05	05:00	04:50	12	6	2N	N/A	Good
HBS 2	18/06	04:45	04:30	14	6	0	N/A	Good
HBS 3	03/08	05:00	05:17	16	8	1W	N/A	Good
HBS 4	21/09	07:30	6:30	15	4	1W	N/A	Good

6 Survey findings

6.1 2017 AECOM Report

The 2017 AECOM report identifies a total of 49 species as likely to be breeding within or close to the study area boundary. The majority are common widespread species. Key species recorded include: kingfisher (*Alcedo atthis*), hobby (*Falco subbuteo*), barn owl (*Tyto alba*), house sparrow (*Passer domesticus*), song thrush (*Turdus philomelos*), skylark (*Alauda arvensis*), linnet (*Linaria cannabina*) and dunnock (*Prunella modularis*).

6.2 2020 breeding bird survey results

A total of 44 species were recorded on site during the breeding bird surveys, of which 14 are species of importance. These consisted of a single Wildlife and Countryside Act schedule 1 species, seven BoCC red-listed species and six BoCC amber-listed species. The remaining species were all BoCC green-listed, consisting of common species, mainly associated with woodland, hedgerows and gardens that can be found around the Thickthorn Junction.

The results of the breeding bird surveys are shown on drawing 778577-MLM-ZZ-XX-DR-J-0004, 778577-MLM-ZZ-XX-DR-J-0005 and 778577-MLM-ZZ-XX-DR-J-0006. The impact area from the Proposed Scheme has been mapped to show initial loss alongside retained areas, however this area may be subject to change following the finalisation of the plans. Note that only species identified as being of ecological importance have been mapped; they have been compared to their statuses within the Norfolk Bird Report (ref. 11). The results of surveys are included in table 6.1 below.

Table 6.1 Results of the breeding bird surveys

Common name & (BTO Code)	Scientific name	Status	Indicative number of territories identified	Number of indicative territories within the Impact area.	Status in the Norfolk Bird Report
Barn owl (BO)	<i>Tyto alba</i>	Schedule 1	1	0	Resident
Herring gull (HG)	<i>Larus argentatus</i>	NERC S41, BoCC Red	A single pair of birds was recorded loafing during the March 2020 survey. These are not considered to be breeding on site.		A fairly common breeder, passage migrant and overwintering species
Skylark (S.)	<i>Alauda arvensis</i>	NERC S41, BoCC Red	9	2	Resident
Song thrush (ST)	<i>Turdus philomelos</i>	NERC S41, BoCC Red	7	1	Common resident, recently decreasing
House sparrow (HS)	<i>Passer domesticus</i>	NERC S41, BoCC Red	3	0	Common but declining resident
Linnet (LI)	<i>Linaria cannabina</i>	NERC S41, BoCC Red	2	0	Common resident
Starling (SG)	<i>Sturnus vulgaris</i>	NERC S41, BoCC Red	4	None breeding but large family groups were foraging	Common resident
Mistle thrush (M.)	<i>Turdus viscivorus</i>	BoCC Red	1	0	Common resident

Common name & (BTO Code)	Scientific name	Status	Indicative number of territories identified	Number of indicative territories within the Impact area.	Status in the Norfolk Bird Report
Mallard (MA)	<i>Anas platyrhynchos</i>	BoCC Amber	2	0	Widespread resident
Black-headed gull (BH)	<i>Chroicocephalus ridibundus</i>	BoCC Amber	A single group of six birds was recorded foraging and loafing in fields north of the impact area. They are not considered to be breeding on site.		Very common resident
Stock dove (SD)	<i>Columba oenas</i>	BoCC Amber	2	0	Resident
Kestrel (K.)	<i>Falco tinnunculus</i>	BoCC Amber	2	0	Resident breeder
Dunnock (D.)	<i>Prunella modularis</i>	NERC S41, BoCC Amber	5	1	Common resident
Bullfinch (BF)	<i>Pyrrhula pyrrhula</i>	NERC S41, BoCC Amber	2	1	Resident

Sch 1 -Wildlife and Countryside Act Schedule 1 species; **NERC S41** - Natural Environment Research Council Act section 41 species; **BoCC Red** - Birds of Conservation Concern Red list; **BoCC Amber** - Birds of Conservation Concern Amber list

7 Assessment and mitigation

7.1 Breeding birds

7.1.1 Ground nesting birds & foraging species (Skylark & Starlings)

Whilst the Proposed Scheme will only impact two indicative skylark territories, there were at least four indicative skylark territories within fields where works would be taking place, that will likely be affected by loss of supporting habitat. Skylark use of these areas changed as time progressed, with breeding occurring early on in the existing arable land with well spread out territories. Some aggressive territorial behaviour was recorded in the north eastern fields adjacent to the village of Cringleford but this was to be expected given the multiple territories here. However as the Cringleford residential development has expanded, skylarks have been increasingly forced into the areas closer to the proposed scheme during the later stages of the breeding season which is where one of the impacted pairs has come from.

Starlings were not recorded breeding within the impact zones, however during the 29 June visit multiple family groups of up to 20 starlings were recorded feeding on the grassland, with other flocks of 16 starlings regularly recorded within the impact areas. The rough grassland area is likely important foraging habitat for the starlings to find invertebrates to feed their young.

Skylarks require open farmland habitats with short, sparse vegetation. They have a preference for grassland, but will use field margins and arable crops until they get too dense to breed within. Starlings favour similar habitat to forage within. The Proposed Scheme will result in the loss of around 6.5ha of arable fields (subject to finalisation of plans), and patches of grassland and meadows, note final designs are still being formalised therefore this may be subject to change. It is therefore recommended that, to offset this loss, a suitable area of compensatory rough grassland be provided on-site, alongside the A11 motorway, via the creation of field margins adjacent to the motorway or within landscaped areas in areas sealed off by the new layout. This will provide additional nesting capacity for skylarks as well as improving foraging for both skylarks and starlings. This, combined with the implementation of 10 skylark plots in fields alongside the new carriageway should create additional nesting capacity as well as the important foraging habitat to offset the loss of habitat caused by the Proposed Scheme.

7.1.2 Woodland birds (Song Thrush & Bulfinch)

The Proposed Scheme will result in the loss of around 5.1ha of established woodland within which is a single indicative song thrush territory, note this area is subject to change depending on the finalisation of the plans. In addition, a single indicative bullfinch territory will be impacted by the Proposed Scheme. To offset the loss of woodland it is recommended that planting occurs on a like-for-like basis along the roadside in the form of a line of trees or a tall hedgerow with standards. Effort should be made to connect existing blocks of woodland, which will speed up colonisation and utilisation.

To improve biodiversity and speed up the establishment process it is recommended that locally sourced native saplings are used for planting and that these incorporate a mixture of fruit and berry producing species which will provide autumn and winter foraging to all thrushes and early food for bullfinches, which will feed on the buds during spring.

7.1.3 Hedgerow birds (Dunnock)

The proposed development recorded a total of five indicative dunnock territories of which the Proposed Scheme would impact one. Dunnocks are a hedgerow and scrub species, using these habitats to nest and forage however, they will also feed in gardens. The Proposed Scheme will result in the approximate loss of around 2.1km of hedgerows, and around 1.6ha of scrubland suitable for nesting and foraging, note final designs are still being formalised therefore this area may be subject to change.

The Wild Frontier Botanical report (ref. 12) confirms that no hedgerows of significance will be removed by the proposed motorway and simply states that *“Other hedgerow lengths affected should be compensated for within the proposed scheme”*. As such it is recommended that the Proposed Scheme replaces hedgerow on a like-for-like basis, through the creation of hedgerow or the improvement of existing hedgerow on site. The new hedgerows could be combined with

barn owl mitigation to screen the new roads from adjacent fields (see 7.2.5 below). All species used for planting should be locally sourced and native and include some fruit or berry producing species.

7.1.4 Common bird assemblage

The overall survey area supports a wide range of common hedgerow, garden, woodland and urban bird species which would all be affected by the loss of the habitats mentioned above. The proposed mitigation for the above species will offset the impacts to these species through the like-for-like replacement of lost grassland, hedgerow and woodland.

In order to avoid impacting nesting birds during the works, all vegetation should be removed outside the breeding bird season (March to September inclusive). If this is not possible, a nesting bird check and supervision should be undertaken by a suitably qualified ecologist prior to any vegetation removal. If an active nest is found then works must cease in this area and a buffer of at least 5m must be maintained around the nest until the chicks have fledged.

7.2 Barn owls

The breeding bird surveys identified four locations potentially suitable for barn owls, one of which was originally surveyed in 2017 by AECOM (ref. 1). The location of these sites is illustrated in drawing 778577-MLM-ZZ-XX-DR-J-0007.

7.2.1 Site 1 - Metal shack

A thorough inspection of the [REDACTED] found an old barn owl roost, a total of 8 pellets were found with some dropping splats (photo 2). The pellets ranged in age quite considerably from piles of bones suggesting an age of three to four years to pellets with moth cases inside suggesting the most recent usage was around two years ago [REDACTED]. The low number of pellets and lack of nesting opportunities in the [REDACTED] suggest it has historically been used as an occasional roost. Piles of peacock butterfly (*Aglais io*) wings were also present [REDACTED], suggesting that the building has been used as a brown long-eared bat (*Plecotus auritus*) feeding roost. **The Proposed Scheme will result in the loss of [REDACTED]. Given its limited historic usage, provision of a barn owl box within the local area would likely mitigate for the loss of t [REDACTED].**



Photo 1. [REDACTED]

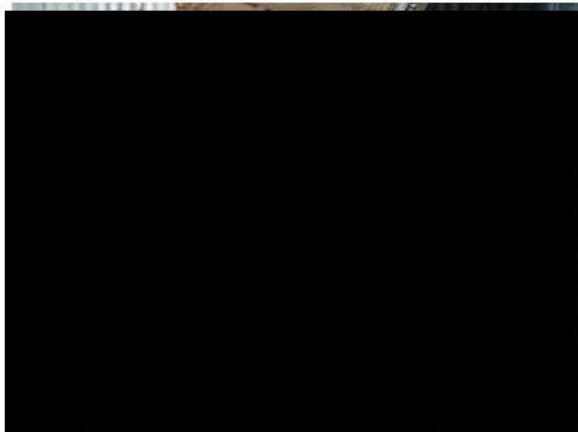
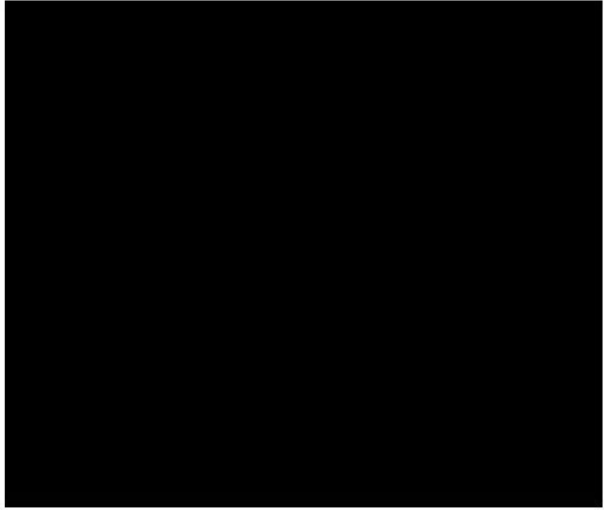
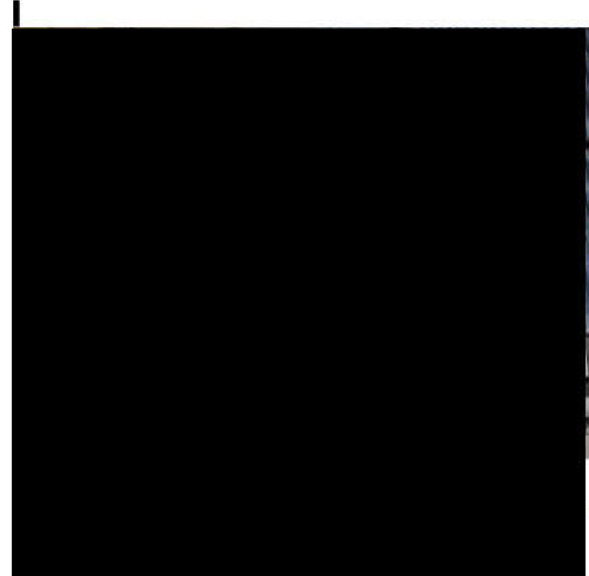
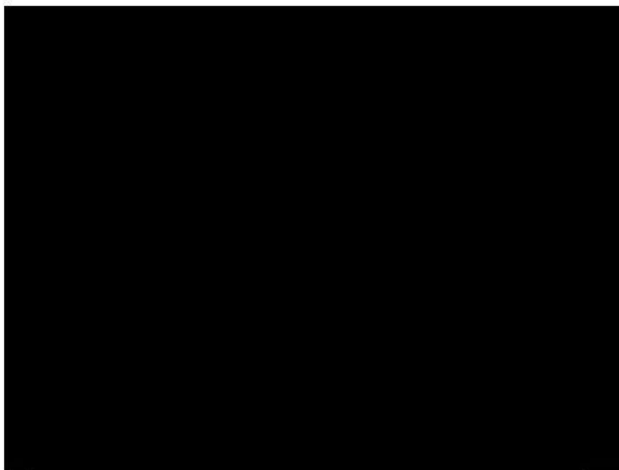
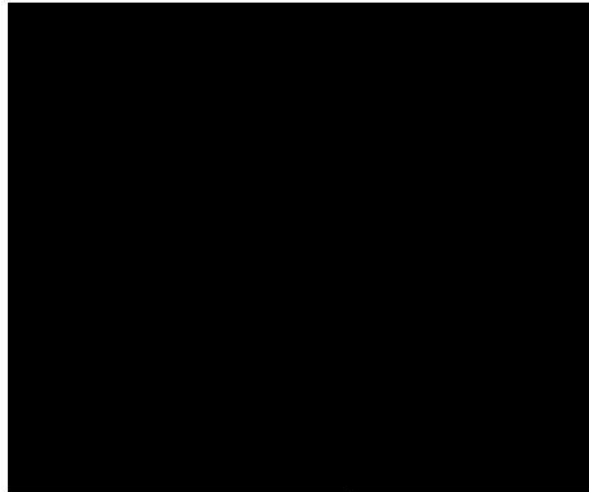
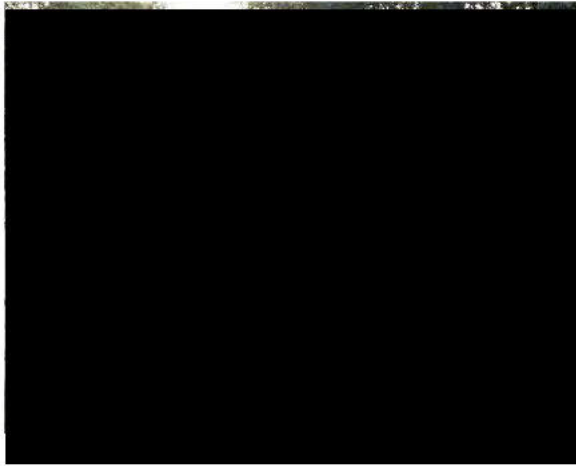


Photo 2. Roosting point above some old boards and pallets. Droppings and pellets were visible.



7.2.2 Site 2 – [REDACTED]

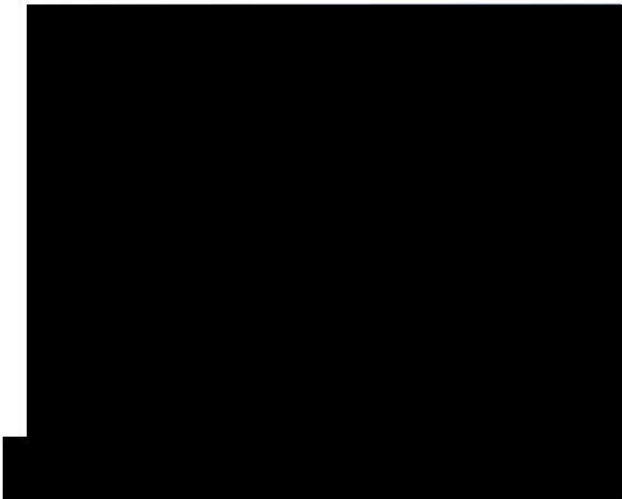
There were [REDACTED] The [REDACTED]
[REDACTED] These made it possible to see
inside [REDACTED] which revealed that the [REDACTED] did not appear to be in regular use, as dead leaves and materials were
on the floor having blown in under the main door. [REDACTED] also rendered the inside of
[REDACTED] t. These things, combined with the lack of accessible entrances for barn owls, means barn owls are
[REDACTED]. The [REDACTED] was also inspected for potential barn owl roosting, however no
evidence was found. **As such, it is considered that the site 2 does not currently have potential to support barn owls.**



rt

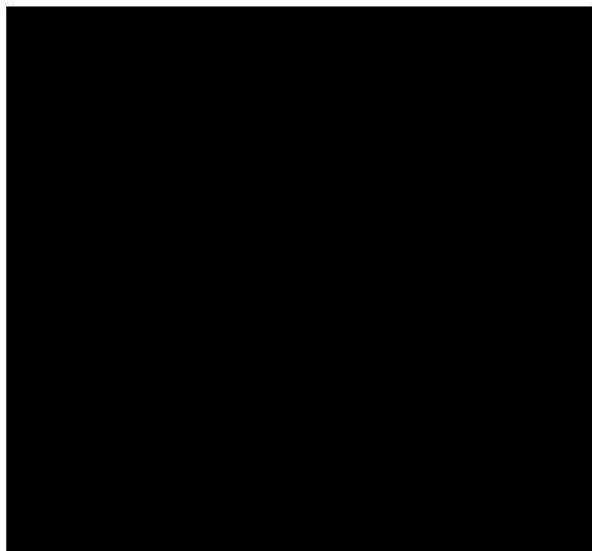
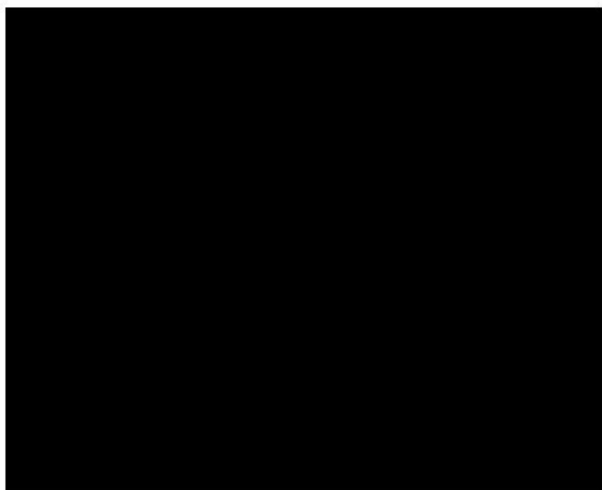
7.2.3 Site 4 – [REDACTED]

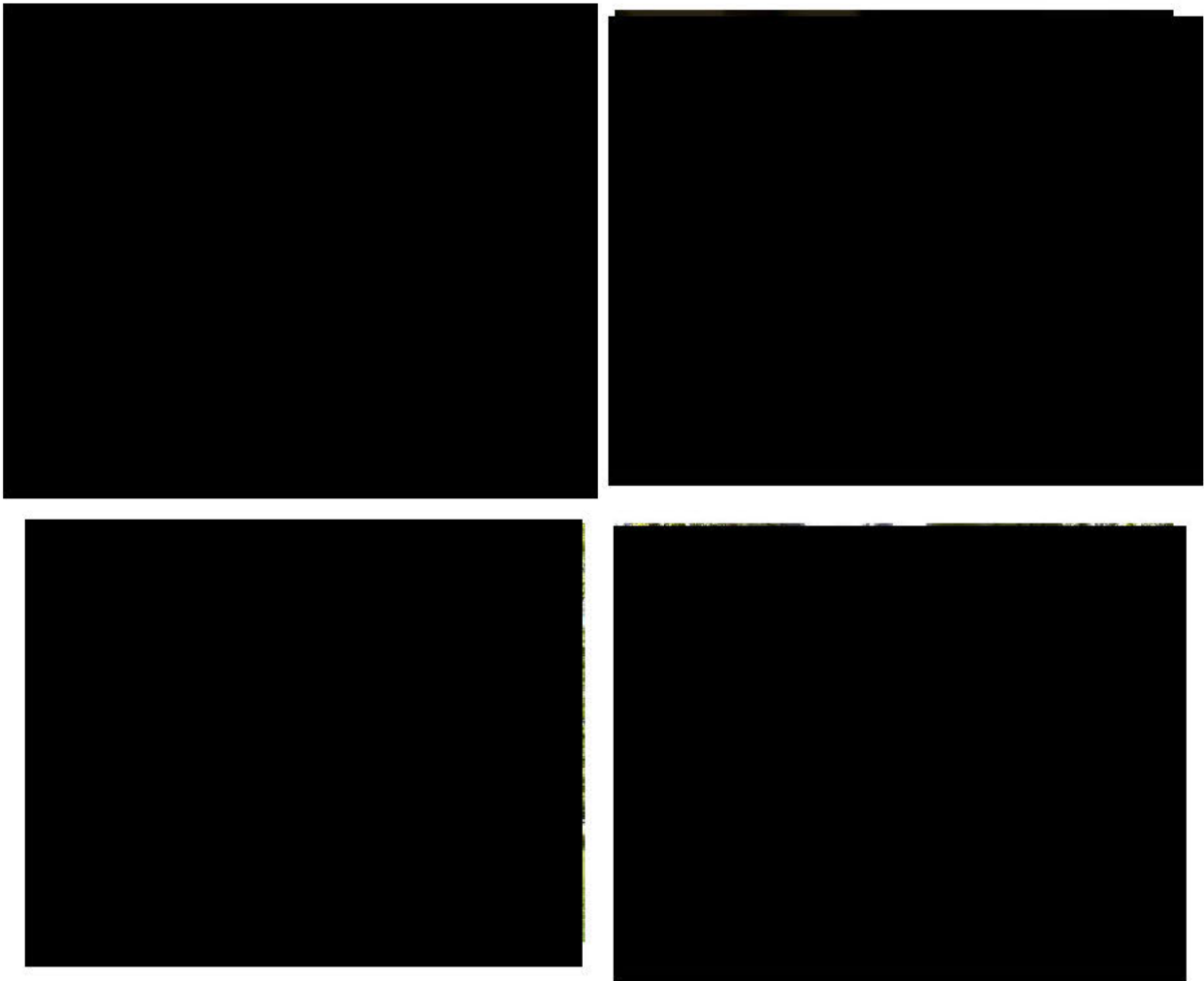
The [REDACTED] have been under construction since before the beginning of the breeding bird surveys in
March 2019. They have progressed during the surveys and n [REDACTED]
[REDACTED]. At the time of writing (September 2020), works are still ongoing to
finish the buildings but the main doors have been fitted, preventing access into the building. [REDACTED]
[REDACTED] The Proposed Scheme will not directly affect this
site, however works would impact land to the north and south which will result in a loss of foraging and a potential
collision risk increase from the additional flyover.



7.2.4 Site 3 - [REDACTED]

Located [REDACTED] Within the existing [REDACTED]
[REDACTED]
[REDACTED] There were multiple pellets all over the floor with ages ranging from fresh, likely produced in the past month, to 3-4 years old. The local land owner informed MLM that [REDACTED] This could have been the male, as males are excluded from the nest by the female once the chicks hatch. The landowner also confirmed an historic roost was [REDACTED]
[REDACTED] No evidence of barn owls was found during this inspection however the [REDACTED] has significant potential. **The Proposed Scheme will not directly affect this site. However, the Cantley lane link road is likely to result in the loss of foraging potential [REDACTED] and an increased collision risk for the any pair using [REDACTED] resulting in a negative impact.**





7.2.5 Mitigation

None of the nesting sites identified by the survey will be lost by the Proposed Scheme. A single historic roosting site will be lost due to the development and barn owls will likely be impacted by the increased collision risk caused by the additional slipways and widening of lane, the increase in traffic and the cutting off of potential foraging sites by the Cantley Lane link road. Studies by the Barn Owl Trust found that 90% of all barn owl mortalities are from major roads such as dual carriageways (ref. 8).

In addition to the collision risk, barn owls currently hunt along the verges and in the field margins of the land surrounding the current A47 and A11. The Proposed Scheme will result in a loss of around 5.1ha of grassland either through the loss of areas of grass and scrub, set aside grassland and meadow, note final designs are still being formalised therefore this may be subject to change. To mitigate for this loss of habitat, it is recommended that suitable compensatory rough grassland be provided, alongside the proposed scheme or efforts are made to explore the possibility for creating rough grassland off-site. Where the rough grassland has been created, nest boxes should be provided to offer additional nesting capacity.

To avoid encouraging barn owls to hunt alongside the new Cantley Lane Link Road and A11 to A47, the planting of either a high hedge or lines of closely-spaced trees should take place next to the road on both sides these could be spaced as required with a 65m verge for hedgerows and 9.5m verge for larger trees. This will force the owls to fly higher and over the road at a safe height. In addition to this it is recommended that any verges are well maintained through frequent cutting, around 4-6 times a year, to prevent the build-up of rough grassland and a dense thatch that provide suitable habitat for the voles and mice that barn owls predate. Where verges are maintained that are unsuitable for foraging, barn owls are less likely to use them.

It is recommended that post-development monitoring of the site should be undertaken to establish whether the Proposed Scheme increase barn owl casualties. This could be done in conjunction with Project Splatter (ref. 13), a scheme that maps animal strikes on road stretches to identify any specific area that may be a hotspot for barn owls. In addition, further barn owl surveys in years 1, 3 and 5 post-development should be undertaken to establish whether there has been a reduction in population size due to the works. If a reduction is observed, further mitigation may be required if the road is identified as the root cause, this may consist of additional planting to reduce potential problem areas, or the addition of further barn owl boxes to try and offset population loss in the area.

7.3 Enhancements

The breeding bird, hobby and barn owl surveys identified a number of at-risk species that are unlikely to be impacted by the Proposed Scheme but could benefit from enhancements.

7.3.1 Kingfisher

The 2017 AECOM bird survey recorded kingfisher breeding around the fishing lakes south of the outside the redline boundary. However, the 2020 MLM breeding bird surveys did not record any kingfishers. This was likely due to the significant reprofiling of these lakes that had taken place over winter, with clearance of vegetation, addition of fishing platforms and an otter proof fence likely deterring kingfishers from returning. Given the birds have likely bred on site in the past, enhancements could be created for kingfishers through the establishment of nesting banks around the two proposed drainage basins. These would consist of installing two Schwegler kingfisher nest tunnels into a raised section of bank created around the drainage basins. Kingfishers tend to use two different tunnels for their first and second broods. Therefore at least two nest tunnels should be sited in the same steep slope, keeping them at least 70cm apart.

7.3.2 Hobby

Whilst the surveys did not record hobby breeding within or nearby the site, enhancements to the site could be made to improve the site's ability to support nesting hobbies. The Proposed Scheme will create two drainage basins which provide ideal foraging habitat for hobby. Furthermore, plantation of woodland around these basins and to screen the motorways offers good opportunities to create nesting habitat. Where denser block of woodland will be created, designing in open glade areas within the woodland would also provide foraging and nesting sites for hobbies.

7.3.3 Raptors and owls

To further enhance nesting habitat for kestrel, sparrowhawk, barn owl, tawny owl and little owl, it is recommended that a number of boxes are put up around the proposed drainage basins within 50-100m .

7.3.4 Ducks (Mallard)

The proposed development will be creating two drainage basins scattered around the development. It is therefore recommended that two mallard nest tubes are installed in each basin to provide safe and secure nesting sites for mallards and other ducks.

8 Conclusion

A total of 44 species were recorded on site during the breeding bird surveys, of which 14 are species of importance. These comprised a single Wildlife and Countryside Act schedule 1 species, seven BoCC red-listed species and six BoCC amber-listed species. The remaining species were all BoCC green-listed consisting of common species, mainly associated with woodland, hedgerows and gardens that can be found around the Proposed Scheme. The following mitigation is required to offset the impacts:

- Compensatory rough grassland should be created alongside the motorway through the implementation of field margins along its whole length. Furthermore, in areas where the carriageway isolates or cuts off land parcels, rough grassland should be encouraged to provide additional ground nesting areas for skylark and foraging capacity for starlings, barn owls and other raptors.
- 10 skylark plots should be created in the surrounding fields to the west of the A11 carriageway, which will create additional nesting and foraging capacity to support skylarks near to where one of the territories will be lost.
- Woodland on site should be replaced on a like-for-like basis alongside the carriageway which will provide additional nesting and foraging habitat for song thrush, whilst also fulfilling the requirement of screening the proposed motorway and forcing barn owls up and over the carriageway, thereby reducing the chances of collision.
- Hedgerow should be replaced on a like-for-like basis either through new planting or enhancement of the species-poor defunct hedgerows that are present within the local area. This will provide mitigation for the loss of nesting habitat for dunnock, linnet and yellowhammer.
- All species used for planting should be locally sourced and native and include some fruit or berry producing species, which will provide a food source for birds in the autumn and winter months.
- Vegetation clearance should take place outside the breeding bird period (March to September inclusive) and where this is not possible, an inspection by a suitably trained ecologist should take place, with works halted within the area if an active nest is found.
- Five barn owl nest boxes should be sited in areas of created rough grassland (providing this will not encourage birds to use the roadside verge).
- Post-development monitoring of barn owl numbers is recommended, to determine if the new road is causing an increase in barn owl fatalities. This could be done in conjunction with Project Splatter (ref. 12), with further barn owl surveys in years one, three and five of operation, inspecting the existing nesting sites and the proposed boxes to determine if there has been a reduction in population size.

The following enhancement measures have been recommended to provide nesting or foraging habitat for species which, though unlikely to be impacted by the development, have populations in decline that could benefit from their implementation:

- The modification of the two proposed basins to create kingfisher nesting banks, with each bank containing two kingfisher nest boxes, to provide additional nesting habitat for kingfisher near a foraging source.
- Mixed woodland planting around the two proposed basins to provide future nesting sites for hobbies. Where denser blocks of woodland are created, landscaping should design in clearings into the woodland, which in turn will provide foraging and nesting habitat for hobbies.
- Installation of nesting boxes for raptors and owls along the A47, with local ringing groups contacted to potentially take over monitoring of the boxes.
- Installation of two mallard nest tubes in each basin to provide safe and secure nesting sites for mallards and other ducks.

9 References

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Drawings

Site Location

778577-MLM-ZZ-XX-DR-J-0001 - Walking Route 1

778577-MLM-ZZ-XX-DR-J-0002 - Walking Route 2

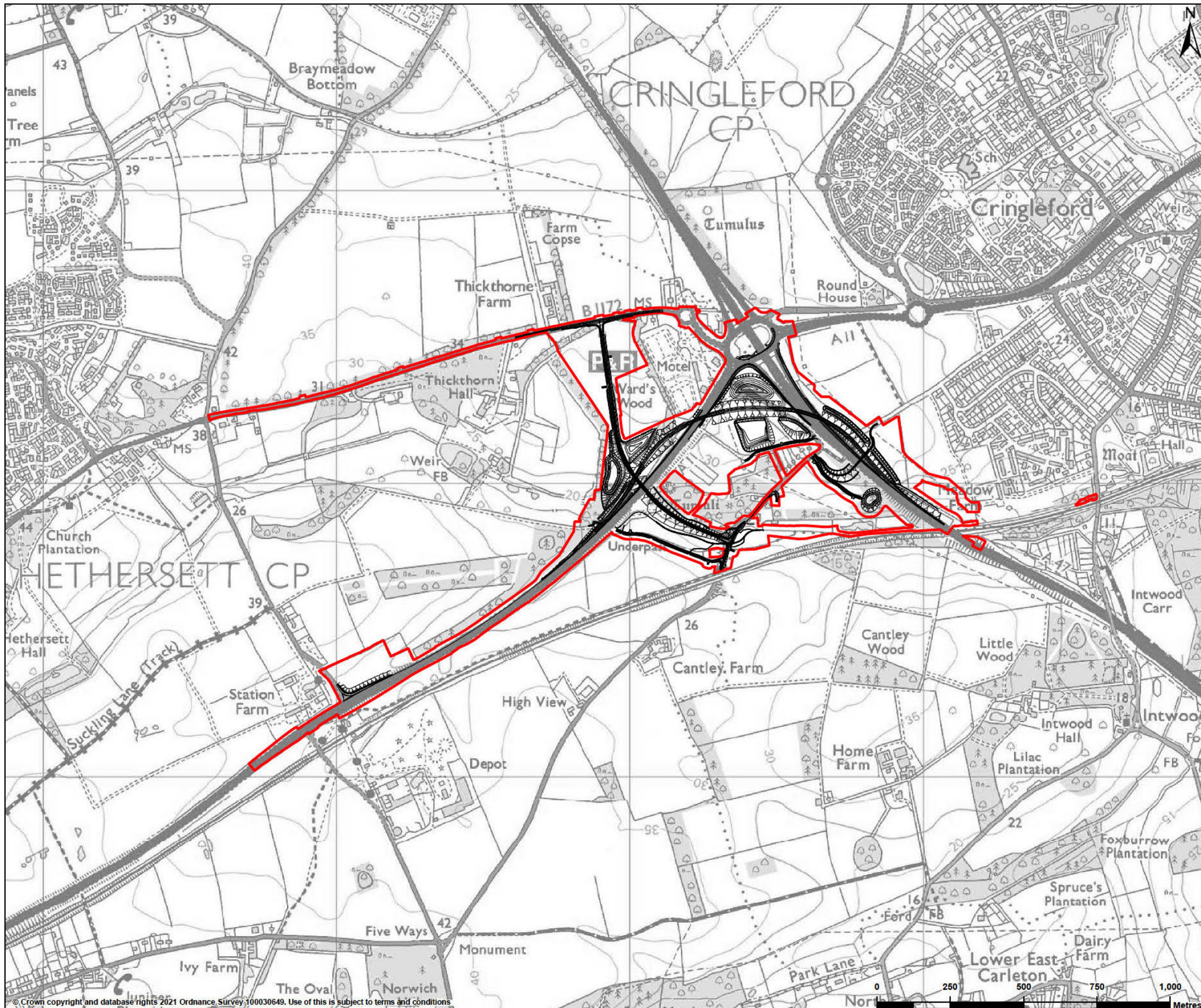
778577-MLM-ZZ-XX-DR-J-0003 - Walking Route 3

778577-MLM-ZZ-XX-DR-J-0004 – BBS Survey of Route 1

778577-MLM-ZZ-XX-DR-J-0005 – BBS Survey of Route 2

778577-MLM-ZZ-XX-DR-J-0006 – BBS Survey of Route 3

778577-MLM-ZZ-XX-DR-J-0007 – Barn Owl Survey Sites



LEGEND
 DCO boundary
 — Proposed scheme design

REFERENCE MAP

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PR2	23/03/2021	UPDATED DCO	AC	FG	FG
REV	DATE	REVISION NOTE	ORG	CHK D	APPD

DESIGNER

CONTRACTOR

CLIENT

PROJECT TITLE
 A47/A11 THICKTHORN JUNCTION

PROJECT STAGE
 PCF STAGE 3

DRAWING TITLE
 FIGURE 1.1 - SITE LOCATION
 TR010037/APP/6.2

SUITABILITY
 FOR INFORMATION

SHEET SIZE A3	SCALE 1:12,500	STATUS S2
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DRAWING NUMBER
 HE551492-GTY-EGN-000-DR-LX-30001

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LEGEND

- SITE BOUNDARY
- WALKING ROUTE



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 SCALE: 1:8000
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PROJECT:	A47/A11 THICKTHORN JUNCTION

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DRAWING NO:				778577-MLM-ZZ-XX-DR-J-0001				

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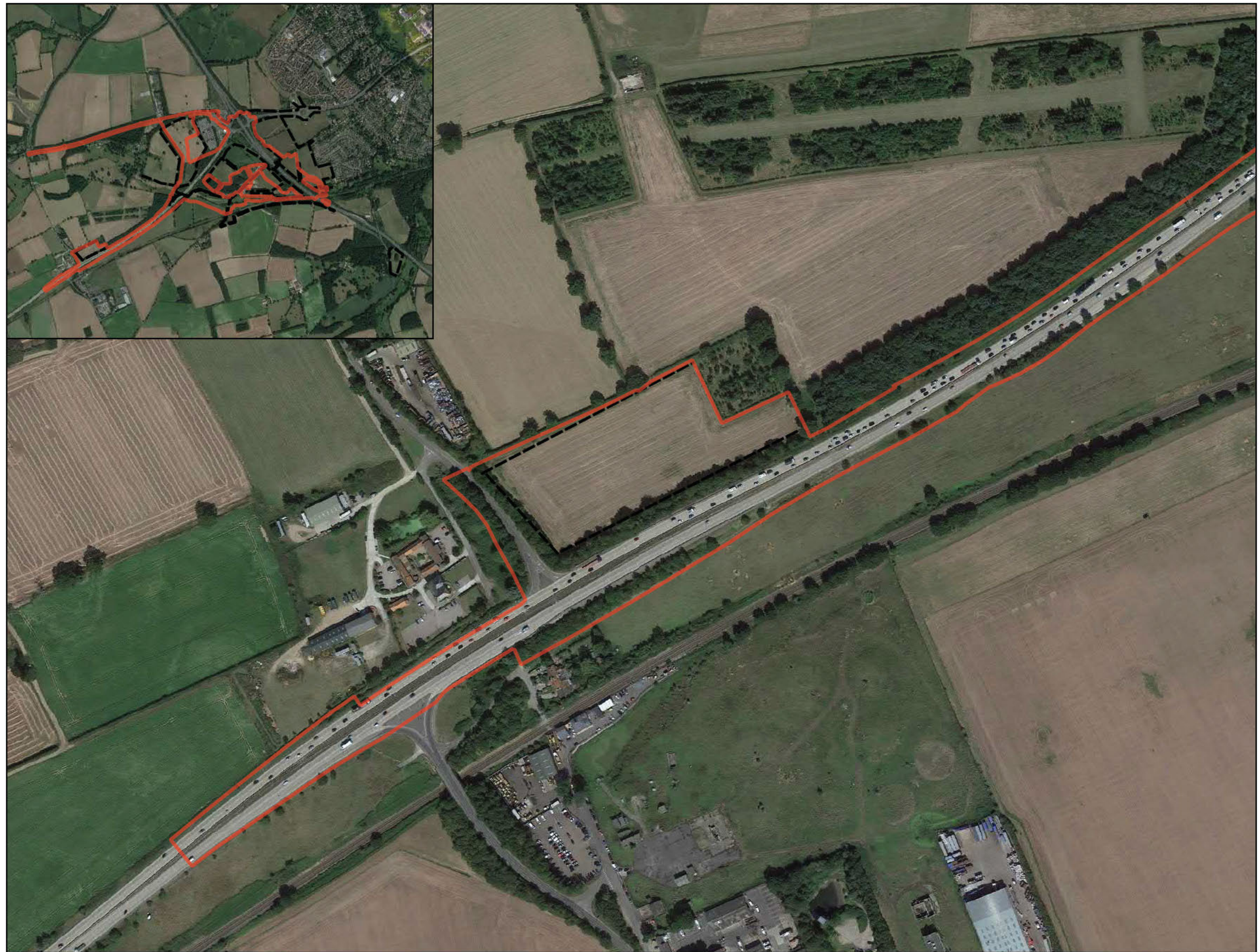
- SITE BOUNDARY
- WALKING ROUTE

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LEGEND

 SITE BOUNDARY



0 100 200 m



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PROJECT:	A47/A11 THICKTHORN JUNCTION

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DRAWN/DESIGN:	JS	DATE:	16/02/2021	STATUS:	S2		
CHECKED:	SB	APPROVED:	MB	REVISION:	C01		
DRAWING NO:				778577-MLM-ZZ-XX-DR-J-0007			

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