

Norwich Western Link

Environmental Statement Chapter

10: Biodiversity – Appendix

10.13: Breeding Bird Report 2021

Part 1 of 3

Author: WSP

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1 Introduction

1.1.1 WSP UK Ltd was commissioned by Norfolk County Council (NCC) to complete breeding bird surveys, with the following objectives:

- Complete a robust breeding bird survey;
- Compile a list of bird species encountered and their breeding status (i.e. confirmed, probable or possible breeding, or not considered to be breeding on the Site); and
- Estimate of the likely number of territories / colonies of breeding bird species of conservation concern.

1.1.2 The results of the breeding bird survey are provided in this report and the survey findings will be used to inform the impact assessment and proposed mitigation for breeding birds across the Scheme. Details of this impact assessment and mitigation will be included within the Biodiversity Chapter of the Environmental Statement.

1.1.3 The Survey Area in relation to breeding birds comprised a walked transect approximately 13.3km long. Due to the length and size of the Survey Area, this transect was divided into three sections, one of which was walked on a separate day for each survey visit. The transects covered each habitat type suitable to support breeding birds that would be impacted by the Scheme, this included woodland, hedgerows, arable, scrub, wetland and grassland. The transects are shown on drawing 70061370-09-22-0002 (Appendix B).

1.1.4 The following Study Areas were used to inform the methodology and establish the baseline during the desk study:

- Internationally designated sites for birds were considered within 10km of the Scheme;
- Nationally designated sites for birds were considered within 5km of the Scheme; and

- Individual records of all bird species and non-statutory designated sites were requested within 2km of the Scheme.

1.1.5 We have included a summary of key information shown in this document in an accessible format. However, some users may not be able to access all technical details. If you require this document in a more accessible format please contact norwichwesternlink@norfolk.gov.uk



Norfolk County Council

Norwich Western Link Road

Breeding Bird Report





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Breeding Bird Report

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WSP

4th Floor

6 Devonshire Square

London

EC2M 4YE

Phone: +44 20 7337 1700

Fax: +44 20 7337 1701

WSP.com



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1 Introduction

1.1 Project Background

- 1.1.1. The Norwich Western Link Road (NWL) is a highway scheme linking the A1270 Broadland Northway from its junction with the A1067 Fakenham Road to the A47 trunk road near Honingham.
- 1.1.2. The NWL, hereafter referred to as the Scheme, will comprise the following listed below.
 - Dualling the A1067 Fakenham Road westwards from its existing junction with the A1270 to a new roundabout located approximately 400m to the north west;
 - Construction of a new roundabout; and
 - Constructing a dual carriageway link from the new roundabout to a new junction with the A47 near Honingham.
- 1.1.3. As part of a separate planned scheme, National Highways proposes to realign and dual the A47 from the existing roundabout at Easton to join the existing dual carriageway section at North Tuddenham. If that scheme proceeds, it is expected that National Highways will construct the Honingham junction and the Norwich Western Link will connect to the north-eastern side of that junction.
- 1.1.4. The Scheme will cross the River Wensum and its flood plain by means of a viaduct. In addition, six other structures are proposed to cross minor roads and to provide habitat connectivity. The Scheme will include ancillary works such as provision for non-motorised users, necessary realignment of the local road network, including the stopping up of some minor roads, and the provision of environmental mitigation measures.

1.2 Ecological Background

- 1.2.1. An ecological Desk Study was completed in March 2020 to include data relevant to the Route. The Desk Study Area for this was defined as a 2km radius of the Scheme Boundary and within this area all bird species records were requested from Norfolk Biodiversity Information Service (NBIS). This Desk Study was subsequently updated in September 2021 to provide a recent baseline for the Scheme and this Survey Area is shown on drawing 70061370-09-22-0001 (Appendix A).
- 1.2.2. A Phase 1 Habitat Survey (WSP UK Ltd., 2020), undertaken in 2020, identified suitable terrestrial habitat which could support breeding birds. Habitats included tussocky grassland, woodland, scrub, field margins, hedgerows and open farmland. As the Scheme will involve the loss of such habitat, it was recommended that breeding bird surveys be undertaken to establish a sufficient baseline to inform impact assessment.

1.3 Brief and Objectives

- 1.3.1. WSP UK Ltd was commissioned by Norfolk County Council (NCC) to complete breeding bird surveys, with the following objectives:

- Complete a robust breeding bird survey;
- Compile a list of bird species encountered and their breeding status (i.e. confirmed, probable or possible breeding, or not considered to be breeding on the Site); and
- Estimate of the likely number of territories / colonies of breeding bird species of conservation concern.

1.3.2. The results of the breeding bird survey are provided in this report and the survey findings will be used to inform the impact assessment and proposed mitigation for breeding birds across the Scheme. Details of this impact assessment and mitigation will be included within the Biodiversity Chapter of the Environmental Statement.

1.4 Study and Survey Area

1.4.1. The Survey Area in relation to breeding birds comprised a walked transect approximately 13.3km long. Due to the length and size of the Survey Area, this transect was divided into three sections, one of which was walked on a separate day for each survey visit. The transects covered each habitat type suitable to support breeding birds that would be impacted by the Scheme, this included woodland, hedgerows, arable, scrub, wetland and grassland. The transects are shown on drawing 70061370-09-22-0002 (Appendix B).

1.4.2. The following Study Areas were used to inform the methodology and establish the baseline during the desk study:

- Internationally designated sites for birds were considered within 10km of the Scheme;
- Nationally designated sites for birds were considered within 5km of the Scheme; and
- Individual records of all bird species and non-statutory designated sites were requested within 2km of the Scheme.

2 Relevant Legislation

2.1 Legal compliance

Conservation of Habitats and Species Regulations 2017 (AS AMENDED) (Habitat Regulations)

- 2.1.1. The Habitat Regulations Part 1 Regulation 10 (2) & (3) state that local authorities *‘must take such steps in the exercise of their functions as they consider appropriate to contribute to...the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the UK including by means of the upkeep, management and creation of such habitat...’*. The legislation continues to state that economic and recreation requirements must be taken into consideration in considering which measures are appropriate.

Wildlife and Countryside Act 1981 (as amended)

- 2.1.2. Under the Wildlife and Countryside Act 1981 (as amended) all wild birds are protected from killing and injury, and their nests and eggs protected from taking, damage and destruction whilst in use; therefore, recommendations to avoid contravention of this legislation are included within the Ecology Chapter of the Environmental Statement.
- 2.1.3. Additional protection is extended to species listed under Schedule 1 of the Act, meaning it is also an offence to disturb these species at or near the nest, or whilst they have dependent young during the breeding season.

Natural Environment and Rural Communities Act 2006

- 2.1.4. The NERC Act 2006 reinforces the duty upon all public authorities, including planning authorities, to have regard for the conservation of biodiversity when discharging their duties. The Act refines the definition of biodiversity conservation, stating that it includes restoring or enhancing a population or habitat. Section 41 of the NERC Act requires the Secretary of State to list habitats and species of principal importance (HPIs and SPIs) for the conservation of biodiversity in England. The habitats and species listed in accordance with Section 41 largely replicate those listed on the UK Biodiversity Action Plan (BAP) which occur in England (however there are exceptions).

2.2 Planning Policy

- 2.2.1. At a national context planning policy is driven by the National Planning Policy Framework (NPPF) (2021). The NPPF sets out, amongst other points, how at an overview level the *‘planning system should contribute to and enhance the national and local environment by:*
- *...recognising the wider benefits of ecosystem services;*

- *minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures...'*

2.2.2. The NPPF states that this should be achieved through local planning development frameworks and gives recommendations for criteria based policies which recognise the hierarchy of designated sites which range from internationally important habitat, to sites of importance at a local level and ensure that protection is 'commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.'

2.2.3. A list of principles which local planning authorities should follow when determining planning applications is included in the NPPF which includes the following:

- *'if significant harm resulting from a development cannot be avoided...adequately mitigated, or, as last resort, compensated for, then planning permission should be refused;*
- *...opportunities to incorporate biodiversity in and around developments should be encouraged;*
- *planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland...unless the need for, and benefits of, the development in that location clearly outweigh the loss...'*

2.2.4. Although the NPPF revoked Planning Policy Statement 9 (PPS9), the ODPM circular 06/2005 originally prepared to accompany PPS9 remains current; this states that 'the presence of a protected species is a material consideration when a planning authority is considering a development proposal' and also includes confirmation that 'potential effects of a development, on habitats or species listed as priorities in the UK BAP...are capable of being a material consideration in the...making of planning decisions.'. The circular advises that local authorities should consult Natural England before granting planning permission if the proposals could adversely affect a protected species, this definition of a protected species includes birds.

3 Methods

3.1 Desk Study

- 3.1.1. An ecological desk study was completed in March 2020 and subsequently updated in September 2021 to include recent data relevant to the Scheme. Records of all species, including birds, were requested from NBIS. These records included all species from within a 2km buffer of the Scheme Boundary within the last 10 years. Freely downloadable datasets (available from Multi Agency Geographic Information for the Countryside (MAGIC), Department for Environment, Food and Rural Affairs) were consulted for information regarding designated sites.

3.2 Breeding Bird Survey

- 3.2.1. To inform an evaluation of the habitats within the Survey Area for bird species, six breeding bird survey visits were completed between April and July 2021. Given the potential impacts of the Scheme which involves a permanent loss of habitat, territory (registration) mapping techniques were undertaken (Bibby, et al., 2000). This technique forms the basis of the British Trust for Ornithology (BTO) Common Bird Census (CBC), the outcome of which provides a sufficient level of confidence when describing the breeding bird community present. The surveys were scoped before the publication of the online Bird Survey Guidelines (Bird Survey & Assessment Steering Group, 2021) however the methodology and effort applied for the Scheme is consistent with that guidance.
- 3.2.2. Surveys of breeding birds were conducted along the length of the Scheme encompassing both the hard engineering corridor and compound areas included within the Scheme Boundary to establish the breeding bird community present and the inclusion of any sensitive ornithological receptors. The Survey Area was expanded to also include a buffer of 100 m to allow for all bird territories potentially exposed to disturbance to be identified. In an effort to cover this area the proposed transect route totalled approximately 13.3 km in length. Due to this length and size of the Survey Area this transect was divided into three. The survey areas are presented on drawing 70061370-09-22-0002, Appendix B.
- 3.2.3. All survey visits were completed in the early morning, commencing near dawn and during periods of good visibility and suitable weather conditions, i.e. avoiding periods of persistent rain or fog, extreme temperatures or high winds. Each of the survey visits lasted between three to five hours in duration and was completed over three days, walking a different transect each day (Appendix B).

- 3.2.4. During each survey visit the surveyors walked slowly, surveying all habitat along the transect routes while scanning and listening for birds. In accordance with good practice guidance (Bibby, et al., 2000) the start points, and direction of the route walked was varied; this serves to minimise bias, as birds may be active at different times of day in different areas. The locations of birds seen and heard were mapped using standard BTO two letter codes and activity symbols. Where breeding activity was observed this was recorded in accordance with the following categories:
- Non-breeder (NB) – Birds observed flying over, considered to still be on migration or a summering non-breeder;
 - Possible breeding (PoB) – Birds observed singing or present in suitable habitat in breeding season;
 - Probable breeding (PrB) – A pair observed in suitable habitat, territorial behaviour observed in the same place on at least two separate occasions, or by many individuals simultaneously on one day, or birds observed visiting a probable nest site, showing courtship or display behaviour in suitable breeding habitat or nest building; and
 - Confirmed breeding (CB) – Nest containing eggs or young seen or heard, adults observed carrying faecal sac or food, feigning injury as a distraction display or entering or leaving a nest site in circumstances indicating an occupied nest, a used nest or eggshells found or recently fledged or downy young recorded (showing evidence of dependency on adults).
- 3.2.5. In addition, incidental bird records gathered during other ecological surveys on the Site have been incorporated within this report where these provide additional information to that gathered during the targeted breeding bird surveys. In particular these include records of nocturnal species and Kingfisher *Alcedo atthis*.

3.3 Dates of Survey and Personnel

- 3.3.1. Lead surveyors were competent and experienced in conducting breeding bird surveys. The dates and weather conditions for each survey visit are displayed in Table 3-1 below.

Table 3-1 – Dates of survey and weather conditions

Survey Visit	Dates	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))
		Day:	1	2	3
1	7 th April – 9 th April 2021	Temperature (Start/End) Wind Cloud Cover Rain	0/3 5 7 0	3/6 2 7 0	6/8 4 7 0
2	21 st April – 23 rd April 2021	Temperature (Start/End) Wind Cloud Cover Rain	5/7 3 8 0	0/5 2 6 0	0/4 1 0 0
3	5 th May – 7 th May 2021	Temperature (Start/End) Wind Cloud Cover Rain	4/8 3 0 0	4/8 2 3 0	5/8 3 0 0
4	18 th May – 20 th May 2021	Temperature (Start/End) Wind Cloud Cover Rain	6/10 2 1 0	8/10 2 7 1	7/10 1 1 0
5	2 nd June – 4 th	Temperature (Start/End) Wind Cloud Cover	12/15 2 2	12/14 2 2	12/15 1 1

Survey Visit	Dates	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))	Weather Conditions (Based on weather codes from the Breeding Bird Instructions (BTO, et al., 2015))
		Day:	1	2	3
	June 2021	Rain	0	0	0
6	22 nd June – 24 th June 2021	Temperature (Start/End)	10/13	8/10	10/14
		Wind	3	1	2
		Cloud Cover	7	1	4
		Rain	0	0	0

3.4 Notes and Limitations

- 3.4.1. The optimal timing for a survey of breeding birds is April-June. Natural England guidance (2010) suggests that, in terms of frequency of survey visits, at least one visit every two weeks from March to July i.e. 10 visits are required. However, this generic recommendation follows, without question, that of the historic CBC guidelines from the BTO which was designed for the purposes of providing reliable population trends for the UK's commoner breeding species. For the purpose of determining a robust baseline for NWL, six visits were considered adequate to provide enough information on baseline conditions and to enable impacts to be properly assessed (see the biodiversity chapter of the Environmental Statement). The survey effort applied to breeding birds is consistent with that proposed by Bird Survey & Assessment Steering Group (2021) and was agreed in principle with Natural England.
- 3.4.2. The spring of 2021 was characterised by consistent cold temperatures as noted for both April survey visits with temperatures as low as 0°C. This is not expected to place limitations on the interpretation of results as on some of the April survey days took place during periods of warmer weather.

- 3.4.3. Certain species such as Raven *Corvus corax* and crossbill *Loxia curvirostra* amongst others, typically commence breeding before April. The habitats present within the Survey Area, results of the desk study and location of the Scheme suggest that the breeding presence of such species is unlikely. As a result, this is expected to place no limitations on the interpretation of the breeding bird community present.
- 3.4.4. Whilst every effort has been made to detect all species present, some bird species are more difficult to detect due to their ecology (crepuscular species) or behaviour (secretive nature) and therefore may have gone undetected by this survey. As a factor applicable to all bird surveys, this is not considered to place significant constraints upon interpretation of the results for this Survey Area.

4 Results

4.1 Overview

- 4.1.1. A total of 66 species were recorded on or over the Site during the breeding bird survey, of these 33 are known to either breed or probably breed on Site (CB or PrB, Section 3.2.4). Of the 66 species recorded, 33 are considered to be of conservation concern through listing on either Red or Amber Birds of Conservation Concern (BoCC), Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) or as a Species of Principal Importance (SPI). 13 of these species are considered to either breed or probably breed on the Site.
- 4.1.2. The numbers of birds recorded within each category are listed below. It should be noted categories are not exclusive and a species can be listed in more than one conservation category (for example listed as both a SPI in accordance with the NERC Act 2006 and as either a Red or Amber list of BoCC).
- Five species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). One species, red kite, was considered as a 'probable breeder' on the Site whilst four were not considered to breed on the Site;
 - Eight species listed as SPI in accordance with Section 41 of the NERC Act 2006 (also UKBAP species). Four were confirmed or probable breeders on the Site whilst one was considered possibly breeding;
 - Eight BoCC Red list species. Three were confirmed or probable breeders on the Site whilst one was considered as possibly breeding; and
 - 21 BoCC Amber list species. Nine were confirmed or probable breeders on the Site whilst three were considered as possibly breeding on Site.

4.2 Desk Study

- 4.2.1. No internationally designated sites in relation to bird qualifying features or assemblages, i.e. RAMSAR or Special Protection Areas (SPA's), were identified within 10km of the Site Boundary.
- 4.2.2. Four nationally designated Sites of Species Scientific Interest (SSSI's) were identified within 5km of the Site Boundary, one of which is also designated as an Special Area of Conservation (SAC). Details regarding these sites and their relation to breeding bird assemblages are included within Table 4-1 below.

Table 4-1 – Designated sites and their likely association with breeding birds

Site Name	Location	Description	Association with breeding birds
River Wensum SAC & SSSI	Within Site Boundary	An example of an enriched, calcareous lowland river with a total of over 100 species of plants, a rich invertebrate fauna and a relatively natural corridor.	The SSSI citation states that Kingfisher <i>Alcedo atthis</i> and Little Grebe <i>Tachybaptus ruficollis</i> breed along the river, whilst the adjacent wetlands support populations of Reed Warbler <i>Acrocephalus scirpaceus</i> , Sedge Warbler <i>Acrocephalus schoenobaenus</i> and Barn Owl <i>Tyto alba</i> .
Alderford Common SSSI	2.5 km North-West	Supports a wide range of habitats developed in response to variations in soils and topography. The habitats represented include scrub, woodland, bracken heath, marshy grassland and ponds.	Noted to support an “outstanding assemblage” of breeding birds including species such as Lesser Whitethroat <i>Curruca curruca</i> , Whitethroat <i>Curruca communis</i> , Turtle Dove <i>Streptopelia turtur</i> , Woodcock <i>Scolopax rusticola</i> and Hawfinch <i>Coccothraustes coccothraustes</i> . Also supports the largest population of Nightingales <i>Luscinia megarhynchos</i> in East Norfolk.
Hockering Wood SSSI	2.4 km West	One of the largest blocks of ancient, semi-natural woodland in Norfolk. The major stand-type is acid oak-lime wood which is rare in the county and noted to support a diverse range of bryophytes and ground flora.	No reference to breeding birds in citation but likely to support assemblages of common woodland bird species.

Site Name	Location	Description	Association with breeding birds
Swannington Upgate Common SSSI	2.2 km North	Supports an exceptionally wide range of semi-natural vegetation including dry acidic heathland, wet heathland with acidic flushes, fen, birch and alder woodland, scrub, bracken, rough grassland and ponds within a small area.	Noted to support a wide range of breeding birds including Teal <i>Anas crecca</i> , Woodcock, Lesser Whitethroat, Sedge Warbler and Lesser Redpoll <i>Acanthis cabaret</i> .

- 4.2.3. In total, a further 12 non-statutory sites were identified within a 2km buffer of the Scheme Boundary. These consisted of 10 County Wildlife Sites (CWS) and two Roadside Nature Reserves (RNS) however it is unlikely that any of these sites supports an assemblage of breeding birds of such ornithological significance to impact the assessment of the breeding bird population within the Survey Area.
- 4.2.4. Records of all species, including birds, were requested from NBIS in September 2021. The Desk Study returned records of multiple bird species of conservation interest. This included records of 10 species of relevance to the breeding period that are specifically protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). These comprised Kingfisher, Marsh Harrier *Circus aeruginosus*, Red Kite *Milvus milvus*, Osprey *Pandion haliaetus*, Hobby *Falco subbuteo*, Common Quail *Coturnix coturnix*, Crossbill, Black Redstart *Phoenicurus ochruros*, Firecrest *Regulus ignicapilla* and Barn Owl.
- 4.2.5. Records of a further 23 and 39 species respectively were returned of those on the included Red List and Amber Lists of BoCC (Stanbury, et al., 2021). These species were broadly typical of those that frequent arable and woodland habitat.

4.3 Breeding Bird Survey

- 4.3.1. In total, 66 species of bird were recorded within the Survey Area on at least one occasion during the six survey visits and kingfisher were recorded incidentally on other survey visits. Of the 67 species, six species protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) were identified. These comprised Barn Owl, Brambling *Fringilla montifringilla*, Fieldfare *Turdus pilaris*, Hobby, Kingfisher and Red Kite.
- 4.3.2. Eight species listed as a Species of Principal Importance (SPI) were recorded during the breeding bird survey, these were: Skylark *Alauda arvensis*, Linnet *Linaria cannabina*, Cuckoo *Cuculus canorus*, Yellowhammer *Emberiza citrinella*, Herring Gull *Larus argentatus*, Song Thrush *Turdus philomelos*, Starling *Sturnus vulgaris* and Lapwing *Vanellus vanellus*.

- 4.3.3. Nine species included on the Red List BoCC (Stanbury, et al., 2021) were recorded during the breeding bird survey, these were: Cuckoo, #Fieldfare, Greenfinch *Chloris chloris*, Lapwing, Linnet, Skylark, Starling, Herring Gull and Yellowhammer.
- 4.3.4. A further 21 species included on the Amber List BoCC (Stanbury, et al., 2021) were recorded during the breeding bird survey, these were: Black-headed Gull *Chroicocephalus ridibundus*, Bullfinch *Pyrrhula pyrrhula*, Dunnock *Prunella modularis*, Greylag Goose *Anser anser*, Kestrel *Falco tinnunculus*, Lesser Black-backed Gull *Larus fuscus*, Mallard *Anas platyrhynchos*, Meadow Pipit *Anthus pratensis*, Moorhen *Gallinula chloropus*, Mute Swan *Cygnus olor*, Oystercatcher *Haematopus ostralegus*, Rook *Corvus frugilegus*, Sedge Warbler, Snipe *Gallinago gallinago*, Song Thrush, Sparrowhawk *Accipiter nisus*, Stock Dove *Columba oenas*, Tawny Owl *Strix aluco*, Whitethroat, Woodpigeon *Columba palumbus* and Wren *Troglodytes troglodytes*.
- 4.3.5. Notable species of conservation concern were subject to territory (registration) mapping (Bibby, et al., 2000). A summary of these species is included in Table 4-2 below and territory maps are presented in appendices C – K.
- 4.3.6. Specific barn owl surveys were undertaken in relation to the Scheme and results including suitable habitats, nesting and roosting locations are presented within a barn owl technical appendix (Report Number: 70061370-09-29). As a result, barn owl breeding status is not referenced in this report.

Table 4-2 – Territories of Notable Species of Conservation Concern

Species	Conservation Status	Transect 1	Transect 2	Transect 3	Total
Barn Owl	Bern2, CITESA, FEP7/2 & WCA1i	0	0	0	0
Dunnock	BAmb & Bern2	2	1	1	4
Greenfinch	BAmb & Bern2	0	0	1	1
Linnet	Bern2, BRed & FEP7/2	0	1	0	1
Red Kite	BD1, CITESA, CMs_A2, FEP7/2, RLGLB.NT & WCA1i	1	0	0	1
Sedge Warbler	BAmb	1	0	0	1
Skylark	BD2.2, BRed, FEP7/2 & Sect.41	3	14	7	24
Song Thrush	BD2.2, BAmb & FEP7/2	2	2	3	7

Species	Conservation Status	Transect 1	Transect 2	Transect 3	Total
Tawny Owl	BAmb, Bern2 & CITESA	1	0	0	1
Whitethroat	BAmb	2	2	2	6
Wren	BAmb & Bern2	20	13	11	44
Yellowhammer	Bern2, BRed, FEP7/2, Sect.41 & UKBAP	1	3	2	6

4.3.7. The conservation status's included within Table 4-2 above are expanded on below:

- BAmb / BRed – Birds of Conservation Concern Amber / Red;
- Sect.41 - Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England Section 41;
- BD1 – Birds Directive Annex 1;
- WCA1i - Wildlife and Countryside Act 1981 (Schedule 1 Part 1);
- UKBAP - UK Biodiversity Action Plan priority species; and
- Norfolk LBAP – Norfolk Local Biodiversity Action Plan.

Summary of Territory Mapping

Dunnock

4.3.8. In total, 31 records of Dunnock were identified throughout the breeding bird surveys. Using these records, four territories were mapped for Dunnock within the Survey Area (Appendix C). Each of these territories is either wholly or partially encompassed by the Scheme Boundary and are generally located within areas composed of edge habitat such as hedgerows and field margins.

Linnet

4.3.9. Overall, 26 records of Linnet were identified throughout the breeding bird surveys. Using these records, one territory was mapped within the Survey Area (Appendix D). This territory was located along Weston Road, within the Scheme Boundary and is composed of hedgerow, grassland, field margin and arable habitats.

Greenfinch

4.3.10. Overall, 13 records of Greenfinch were identified throughout the breeding bird surveys. Using these records, one territory was mapped within the Survey Area (Appendix E). This territory was located South of the A47 and composed of mostly hedgerow, field margin and urban habitat.

Red Kite

- 4.3.11. Two Red Kites were observed over and adjacent to the Rose Carr and Nursery woodlands along transect 1 on visits C, D and E. Whilst it is considered that this constitutes a territory being present within the Scheme Boundary using the criteria detailed in this report, no nest was located, nor any behaviour observed indicative of breeding. It is therefore considered unlikely that they have nested within the Scheme. Individual red kite were also intermittently observed across transects 2 and 3 however no behaviour or observations indicated other territories being present within the Survey Area.

Sedge Warbler

- 4.3.12. Seven records of sedge warbler were identified throughout the breeding bird surveys. All of these records were recorded within the river Wensum floodplain along transect one. Using these records, a single territory was mapped within the Survey Area (Appendix F). This territory was composed of wet ditch, reed and floodplain habitats.

Skylark

- 4.3.13. In total, 121 records of skylark were identified throughout the breeding bird surveys. Using these records, 24 territories were mapped (Appendix G). Of these, 16 are located either wholly or partially within the Scheme Boundary. All territories, with the exception of one, were composed primarily of arable habitat. The exception was one territory located along transect 1 located on the floodplain of the River Wensum, this territory was composed of rough grazing habitat.

Song Thrush

- 4.3.14. Overall, 26 records of Song Thrush were identified throughout the breeding bird surveys. Using these records, seven territories were mapped within the Survey Area (Appendix H). These territories were all composed of woodland habitat and three were partially encompassed by the Scheme Boundary.

Tawny Owl

- 4.3.15. Tawny Owl were confirmed breeding in transect 1 at Rose Carr woodland with recently fledged juveniles recorded during the June moth surveys. Other nocturnal surveys recorded calling Tawny Owl adults throughout the transects 2 and 3 however no observations indicated other breeding pairs within the Survey Area.

Whitethroat

- 4.3.16. Overall, 32 records of Whitethroat were identified throughout the breeding bird surveys. Using these records, six territories were mapped within the Survey Area (Appendix I). These territories were equally distributed across the Scheme with two territories identified along each transect. All territories were composed of hedgerow and field margin habitat and five territories were either wholly or partially encompassed by the Scheme Boundary.

Wren

4.3.17. Overall, 186 records of Wren were identified throughout the breeding bird surveys. Using these records, 44 territories were mapped within the Survey Area (Appendix J) making wren the most recorded breeding bird. These territories were spread across the Scheme and were generally small, consisting of woodland or hedgerow habitats.

Yellowhammer

4.3.18. In total, 41 records of yellowhammer were identified throughout the breeding bird surveys. Using these records, six territories were mapped within the Survey Area (Appendix K). Of these, one territory was wholly encompassed within the Scheme Boundary and three other territories were partially encompassed. Habitats included within these territories consisted of hedgerows, field margins and arable fields.

Other Species Results

4.3.19. Table 4-3 below shows the breeding status of all bird species recorded throughout the breeding bird surveys. Notation within is in line with the descriptions listed in section 3.2.4. Where no breeding description is provided in a given cell, the species was not recorded in the particular transect during the surveys.

Table 4-3 – Breeding status of all species recorded

Species	Transect 1	Transect 2	Transect 3
Blackbird	CB	PrB	PrB
Blackcap	CB	PrB	PrB
Black-headed Gull	N/A	NB	N/A
Blue Tit	CB	CB	PoB
Brambling	N/A	NB	N/A
Bullfinch	N/A	N/A	NB
Buzzard	PoB	NB	PoB
Carrion Crow	PoB	PoB	PoB
Chaffinch	PoB	PrB	PrB
Coal Tit	PrB	PoB	PoB
Chiffchaff	PrB	PrB	PoB
Collared Dove	N/A	N/A	PoB

Species	Transect 1	Transect 2	Transect 3
Cuckoo	NB	N/A	PoB
Dunnock	PrB	PrB	PrB
Egyptian Goose	N/A	NB	N/A
Fieldfare	NB	N/A	N/A
Garden Warbler	PrB	PoB	N/A
Goldcrest	PrB	PoB	PrB
Goldfinch	PrB	N/A	PrB
Great Spotted Woodpecker	CB	CB	PoB
Great Tit	CB	CB	CB
Green Woodpecker	PoB	PoB	N/A
Greenfinch	PoB	PoB	PrB
Grey Heron	NB	N/A	N/A
Greylag Goose	NB	N/A	NB
Herring Gull	NB	NB	NB
Hobby	N/A	NB	N/A
Jackdaw	CB	PoB	CB
Jay	PrB	PrB	PoB
Kestrel	PoB	N/A	NB
Kingfisher	PoB	N/A	N/A
Lapwing	N/A	N/A	NB
Lesser black-backed Gull	NB	NB	NB
Linnet	PoB	PrB	PoB
Little Owl	NB	N/A	N/A

Species	Transect 1	Transect 2	Transect 3
Long-tailed Tit	CB	NB	PoB
Magpie	PrB	PoB	N/A
Mallard	CB	NB	NB
Meadow Pipit	NB	N/A	N/A
Moorhen	PoB	N/A	N/A
Mute Swan	PoB	NB	N/A
Nuthatch	PrB	N/A	PoB
Oystercatcher	NB	NB	N/A
Pheasant	PrB	PrB	PrB
Pied Wagtail	PoB	NB	NB
Red Kite	PrB	NB	NB
Red-legged Partridge	PrB	PoB	PrB
Reed Warbler	PoB	N/A	N/A
Ring-necked parakeet	N/A	NB	N/A
Robin	CB	PrB	PrB
Rook	NB	NB	NB
Sedge Warbler	PrB	N/A	N/A
Siskin	NB	N/A	N/A
Skylark	CB	CB	PrB
Snipe	NB	N/A	N/A
Song Thrush	PrB	PrB	PrB
Sparrowhawk	N/A	NB	NB
Starling	NB	NB	N/A

Species	Transect 1	Transect 2	Transect 3
Stock Dove	PoB	N/A	PoB
Swallow	PoB	N/A	N/A
Tawny Owl	CB	PoB	PoB
Treecreeper	CB	PrB	N/A
Wheatear	N/A	NB	N/A
Whitethroat	PrB	PrB	PrB
Woodpigeon	CB	PoB	PrB
Wren	CB	PrB	PrB
Yellowhammer	CB	PrB	PrB

Transect 1

- 4.3.20. Overall, 57 species of bird were recorded along transect 1. Of these: 15 species were confirmed as breeding, 15 species as probably breeding, 14 species as possibly breeding and 13 species non-breeding.
- 4.3.21. Of the species considered confirmed or probably breeding along transect 1 one was protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), red kite. A further two species (Skylark and Yellowhammer) designated as Red List BoCC and eight species (Dunnock, Mallard, Sedge Warbler, Song thrush, Tawny Owl, Whitethroat, Woodpigeon and Wren) designated as Amber list BoCC were also considered either confirmed breeding or possibly breeding along transect 1.

Transect 2

- 4.3.22. In total, 47 species of bird were recorded along transect 2. Of these: four species were confirmed as breeding, 15 species as probably breeding, 10 species as possibly breeding and 18 species non-breeding.
- 4.3.23. Of the species considered either confirmed or probably breeding along transect 2 none were protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Three species (Skylark, Linnet and Yellowhammer) designated as Red List BoCC and five species (Dunnock, Song Thrush, Tawny Owl, Whitethroat and Wren) designated as Amber list BoCC were also considered either confirmed breeding or possibly breeding along transect 2.

Transect 3

- 4.3.24. Overall, 42 species of bird were recorded along transect 3. Of these: two species were confirmed as breeding, 16 species as probably breeding, 13 species as possibly breeding and 11 species non-breeding.
- 4.3.25. Of the species considered either confirmed or probably breeding along transect 3 none were protected under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Four species (Greenfinch, Skylark and Yellowhammer) designated as Red List BoCC and three species (Dunnock, Song Thrush, Whitethroat, Woodpigeon and Wren) designated as Amber list BoCC were also considered either confirmed, or probably breeding along transect 3.

5 References

5.1 Project References

WSP UK Ltd. (2020). Phase 1 Habitat Survey. Cambridge. Report Number: 70061370-09-08

5.2 Technical References

Bibby, et al. (2000). Bird Census Techniques. Bodmin, Cornwall: Academic Press.

Bird Survey & Assessment Steering Group. (2021). Bird Survey Guidelines for assessing ecological impacts, v.0.1.0. Retrieved from <https://birdsurveyguidelines.org> [date accessed: 21/12/2021]

Stanbury, A. J., Eaton, M. A., Aebischer, N. J., Balmer, D., Brown, A. F., Douse, A., . . . Win, I. (2021). The status of our bird populations: the fifth Birds of Conservation Concern in the United Kingdom, Channel Islands and Isle of Man and second IUCN Red List assessment of extinction risk for Great Britain. *British Birds*, 114, 723-747.



Appendix A – Desk Study Areas

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- Legend
- Scheme Boundary
 - 2km buffer from Scheme Boundary
 - 5km buffer from Scheme Boundary
 - 10km buffer from Scheme Boundary



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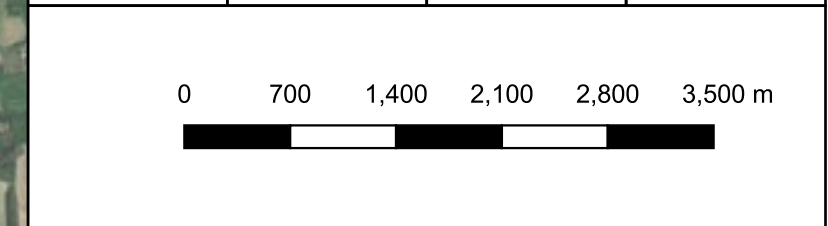
**Norfolk County Council
Norwich Western Link**

Drawing Title

Appendix A - Desk Study Areas

Scale at A1 **1:50,000**

Drawn	UKMCW003		
Stage 1 Check	IE	Stage 2 Check	AH
		Originated	MW
		Date	16/11/2021



Drawing Number

70061370-09-22-0001



Appendix B – Breeding Bird Survey Area



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- Legend**
- Scheme Boundary
 - 100m buffer from Scheme Boundary
 - Transect Route:
 - Transect 1
 - Transect 2
 - Transect 3

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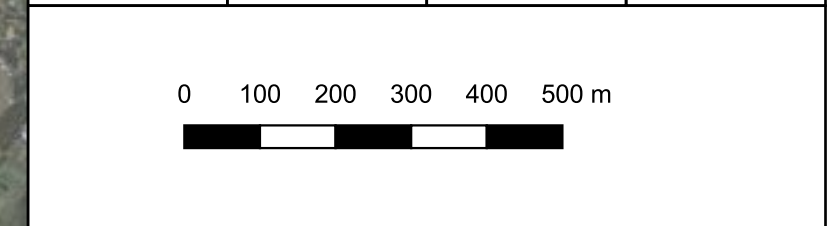
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Norwich Western Link

Drawing Title

Appendix B - Breeding Bird
Survey Area and Transects

Scale at A1 1:10,000

Drawn UKMCW003			
<small>Stage 1 Check</small> IE	<small>Stage 2 Check</small> AH	<small>Originated</small> MW	<small>Date</small> 16/11/2021



Drawing Number

70061370-09-22-0002



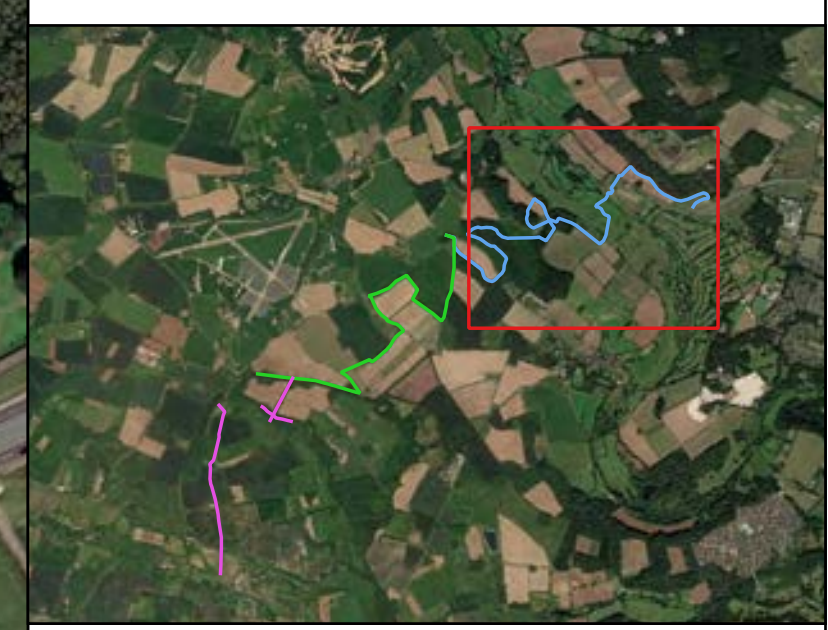
Appendix C – Dunnock Territory Maps



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- Legend**
- Scheme Boundary
 - Transect Route:
 - Transect 1
 - Territories:
 - Dunnock
 - Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving



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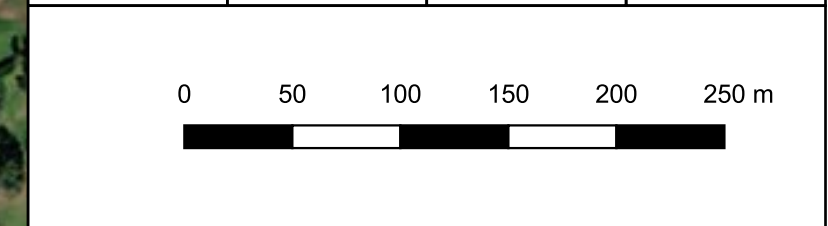
Drawing Status: **FINAL**

Job Title:
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Norwich Western Link**

Drawing Title:
Dunnock Territories Transect 1

Scale at A1: **1:3,500**

Drawn	UKMCW003		
Stage 1 Check	Stage 2 Check	Originated	Date
SM	IE	MW	05/11/2021



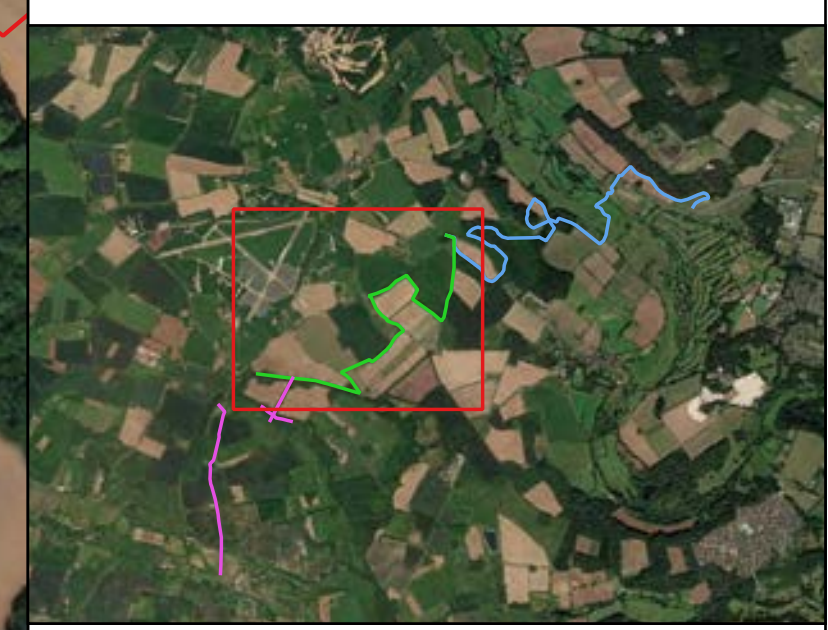
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Legend

- Scheme Boundary
- Transect Route:
 - Transect 2
- Territories:
 - Dunnock
- Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving



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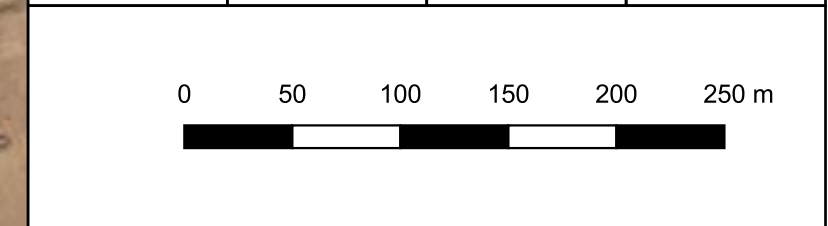
Drawing Status: **FINAL**

Job Title: **Norfolk County Council
Norwich Western Link**

Drawing Title: **Dunnock Territories Transect 2**

Scale at A1: **1:3,500**

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Stage 1 Check	SM	Stage 2 Check	IE
		Originated	MW
		Date	05/11/2021

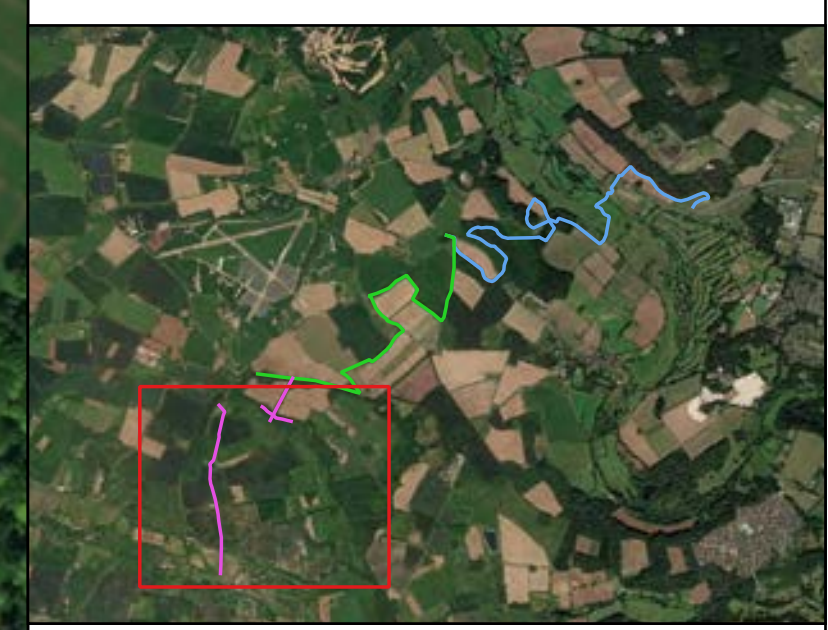


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- Legend**
- Scheme Boundary
 - Transect Route:
 - Transect 3
 - Territories:
 - Dunnock
 - Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving



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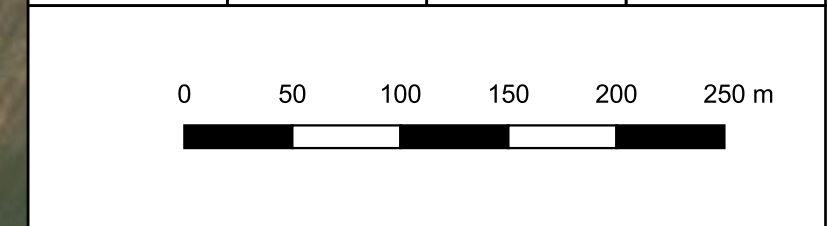
Drawing Status **FINAL**

Job Title
**Norfolk County Council
Norwich Western Link**

Drawing Title
Dunnock Territories Transect 3

Scale at A1 **1:3,500**

Drawn	UKMCW003	Originated	Date
Stage 1 Check	Stage 2 Check		
SM	IE	MW	05/11/2021



Drawing Number
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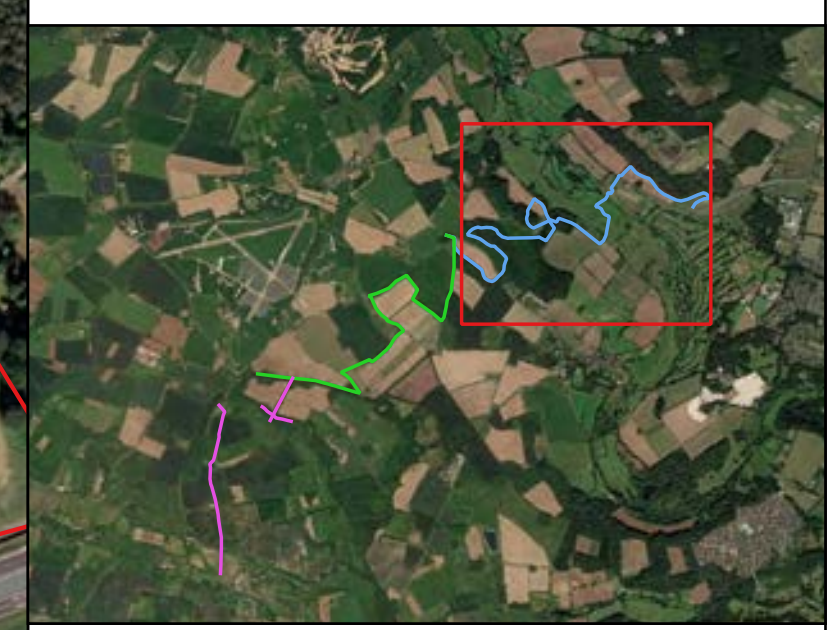


Appendix D – Linnet Territory Maps



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- Legend**
- Scheme Boundary
 - Transect Route:
 - Transect 1
 - Territories:
 - Linnet
 - Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving



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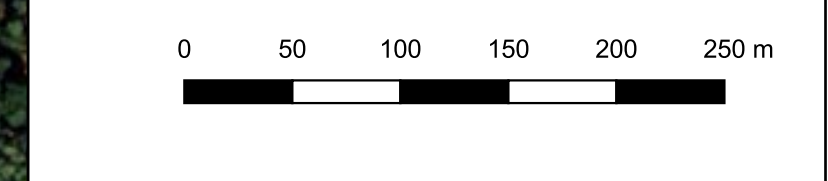
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**Norfolk County Council
Norwich Western Link**

Drawing Title:
Linnet Territories Transect 1

Scale at A1: **1:3,500**

Drawn: UKMCW003

Stage 1 Check SM	Stage 2 Check IE	Originated MW	Date 05/11/2021
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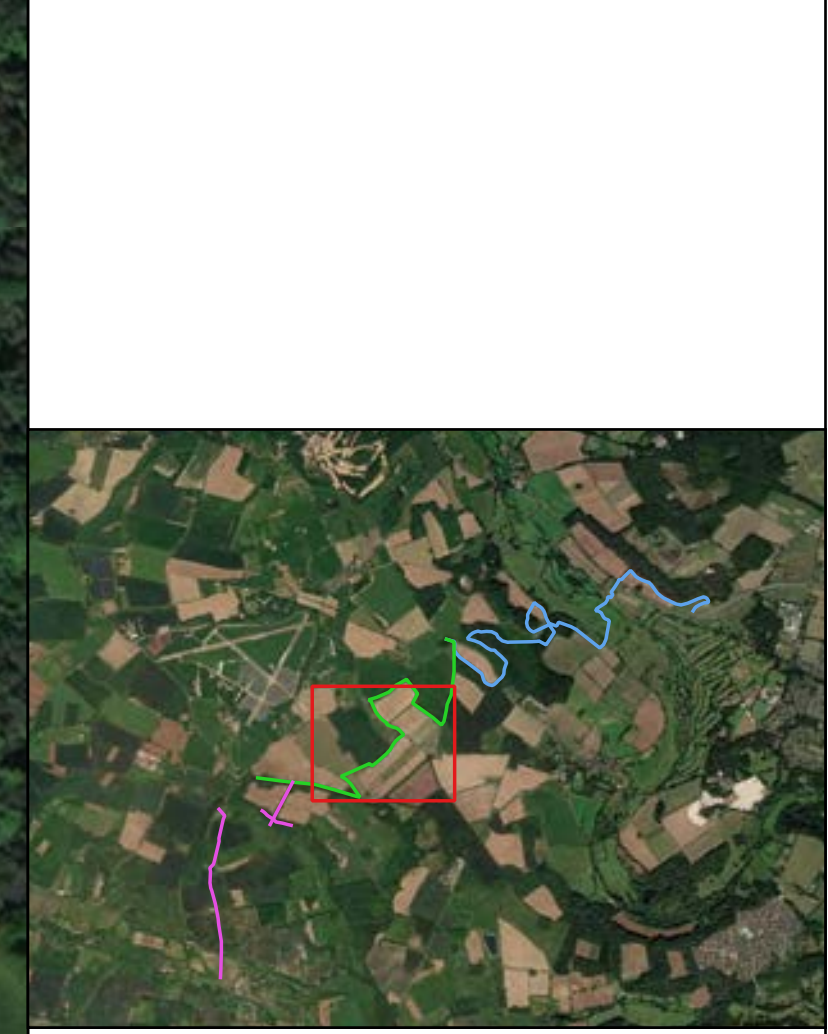


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- Legend**
- Scheme Boundary
 - Transect Route:
 - Transect 2
 - Territories:
 - Linnet
 - Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving



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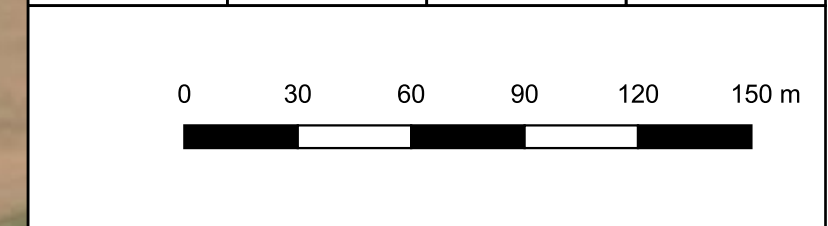
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Job Title:
**Norfolk County Council
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Drawing Title:
Linnet Territories Transect 2

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Stage 1 Check	Stage 2 Check	Originated	Date
SM	IE	MW	05/11/2021

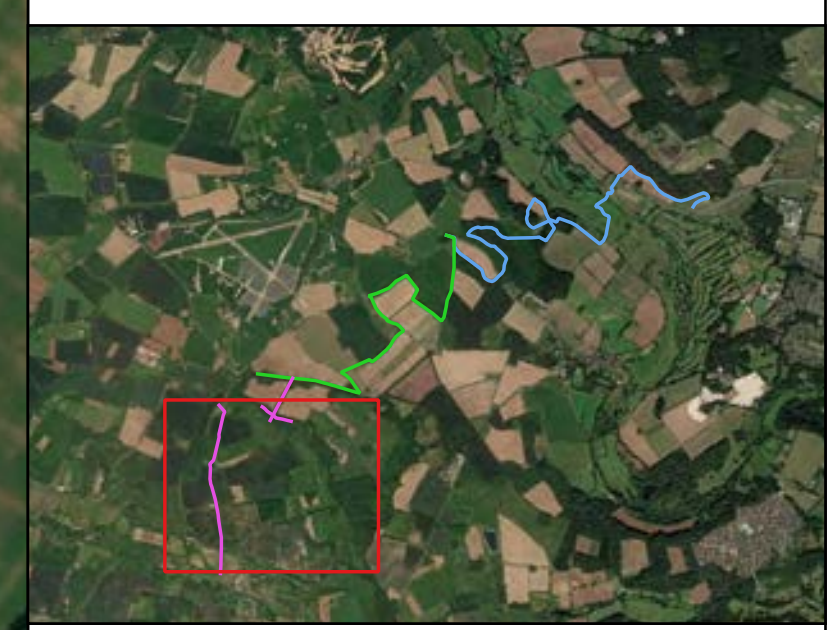


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- Legend**
- ▭ Scheme Boundary
 - Transect Route:
 - Transect 3
 - Territories:
 - ▭ Linnets
 - Notation:
 - Singing
 - Contact Call
 - Singing Together
 - ≡ Alarm Call
 - ⇒ Flight Lines
 - Same Bird Moving



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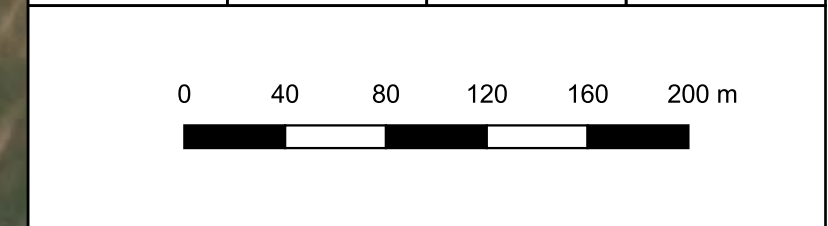
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Job Title: **Norfolk County Council
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Drawing Title: **Linnet Territories Transect 3**

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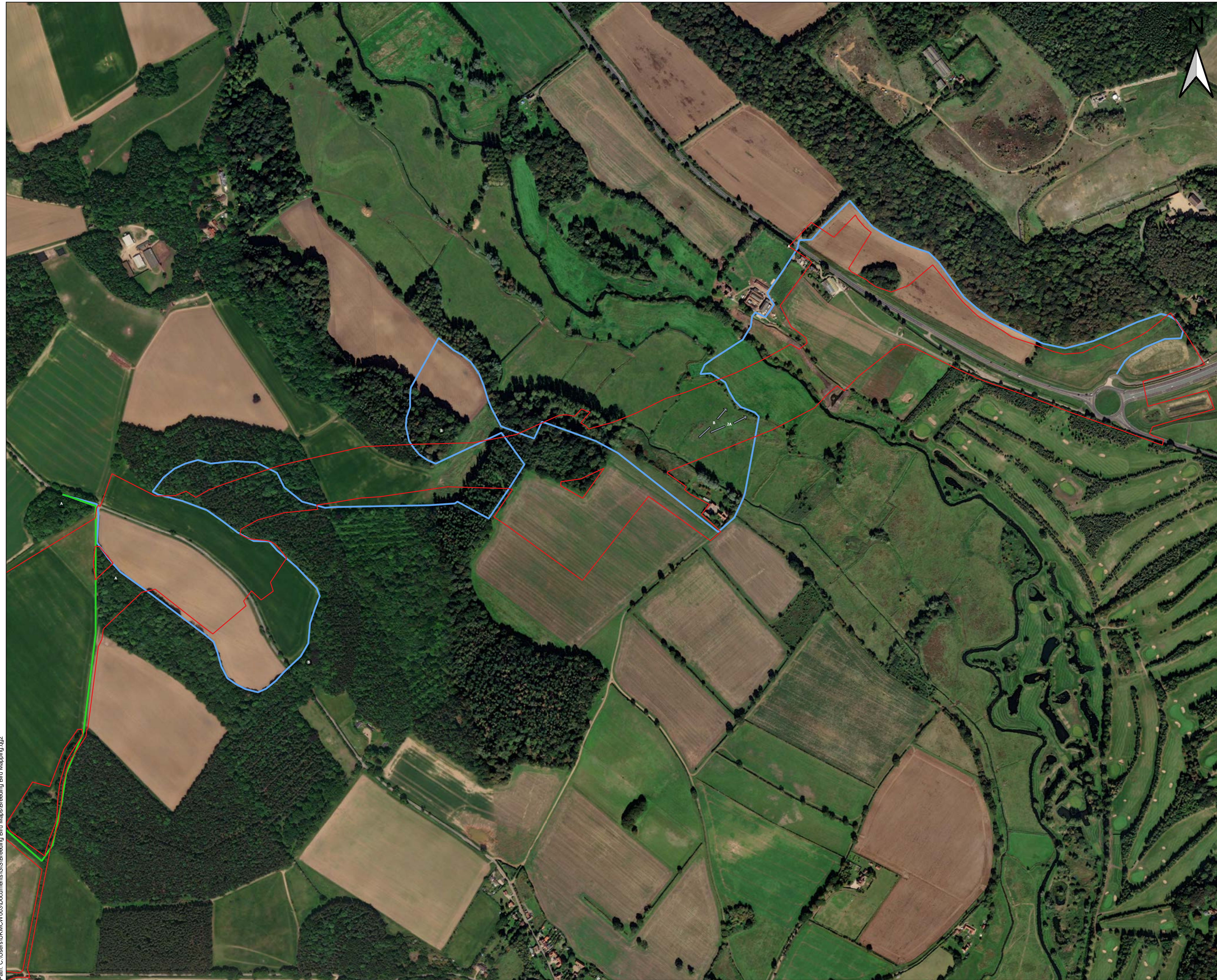
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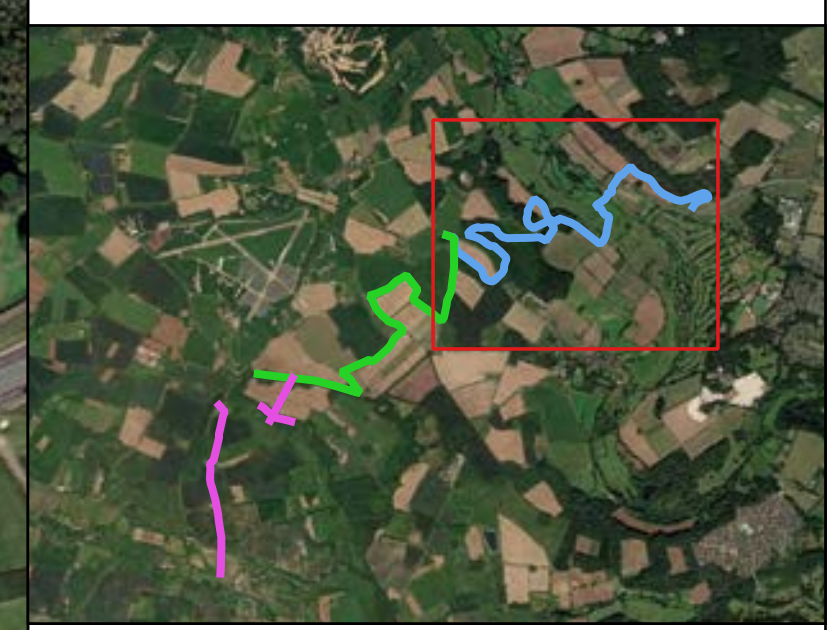


Appendix E – Greenfinch Territory Maps



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- Legend**
- ▬ Scheme Boundary
 - Transect Route:**
 - ▬ Transect 1
 - ▬ Transect 2
 - ▬ Transect 3 - Territories:**
 - Greenfinch - Notation:**
 - Singing
 - Contact Call
 - Singing Together
 - ▬ Alarm Call
 - ⇒ Flight Lines
 - ▬ Same Bird Moving
 - ★ Nest



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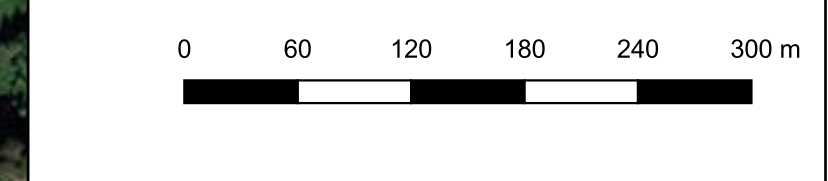
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Job Title:
**Norfolk County Council
 Norwich Western Link**

Drawing Title:
Greenfinch Territories Transect 1

Scale at A1: **1:4,000**

Drawn	UKMCW003		
Stage 1 Check	SM	Stage 2 Check	IE
		Originated	MW
		Date	06/12/2021



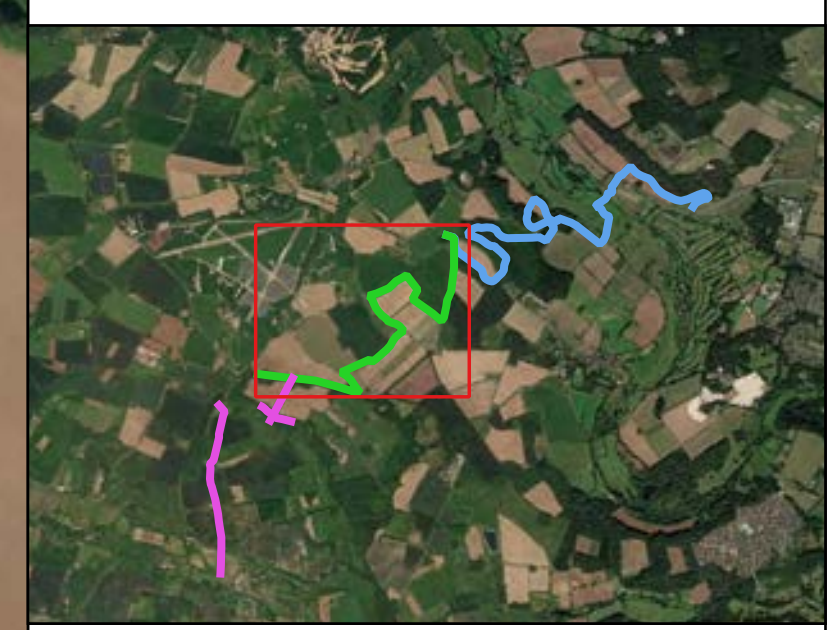
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Legend

- Scheme Boundary
- Transect Route:
 - Transect 1
 - Transect 2
 - Transect 3
- Territories:
 - Greenfinch
- Notation:
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving
 - ★ Nest



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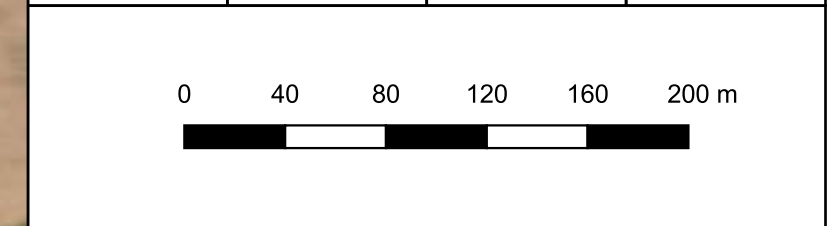
Drawing Title

Greenfinch Territories Transect 2

Scale at A1

1:3,000

Drawn	UKMCW003		
Stage 1 Check	Stage 2 Check	Originated	Date
SM	IE	MW	06/12/2021



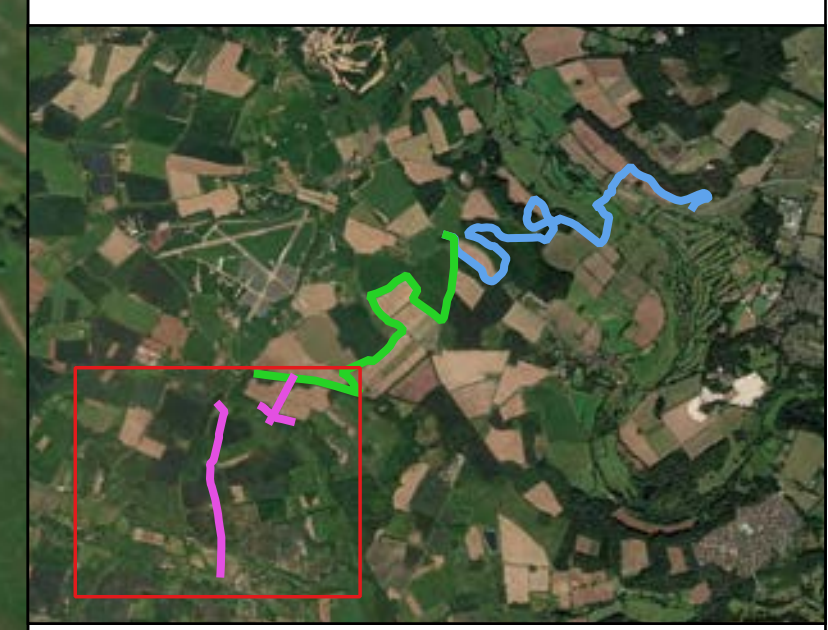
Drawing Number

70061370-09-22-GR2



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- Legend**
- Scheme Boundary
 - Transect Route:**
 - Transect 1
 - Transect 2
 - Transect 3
 - Territories:**
 - Greenfinch
 - Notation:**
 - Singing
 - Contact Call
 - Singing Together
 - Alarm Call
 - Flight Lines
 - Same Bird Moving
 - ★ Nest



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Job Title:
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Drawing Title:
Greenfinch Territories Transect 3

Scale at A1: **1:4,000**

Drawn: UKMCW003			
Stage 1 Check: SM	Stage 2 Check: IE	Originated: MW	Date: 06/12/2021



Drawing Number: **70061370-09-22-GR3**

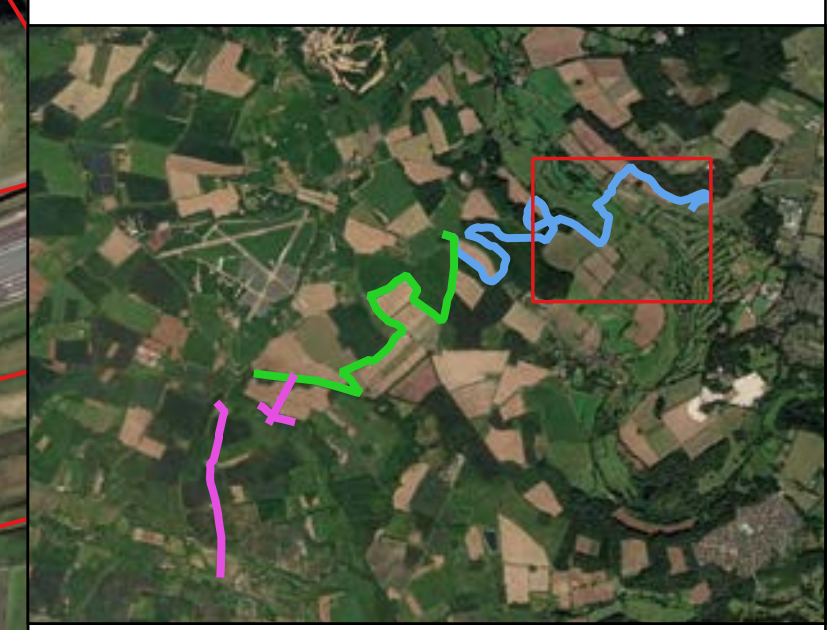


Appendix F – Sedge Warbler Territory Maps



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- Legend**
- ▭ Scheme Boundary
 - Transect Route:**
 - Transect 1
 - Transect 2
 - Transect 3
 - Territories:**
 - ▭ Sedge Warbler
 - Notation:**
 - Singing
 - Contact Call
 - Singing Together
 - ≡ Alarm Call
 - ⇒ Flight Lines
 - Same Bird Moving
 - ★ Nest



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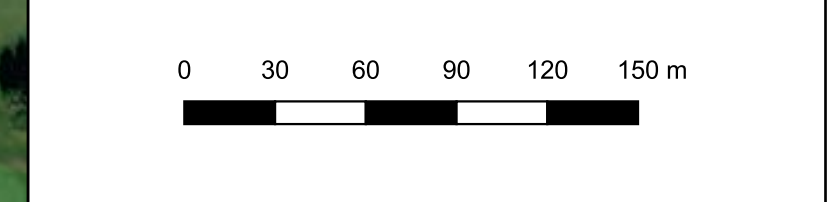
Drawing Status: **FINAL**

Job Title:
**Norfolk County Council
Norwich Western Link**

Drawing Title:
Sedge Warbler Transect 1

Scale at A1: **1:2,500**

Drawn	UKMCW003
Stage 1 Check	SM
Stage 2 Check	IE
Originated	MW
Date	06/12/2021



Drawing Number:
70061370-0922-SW1



Appendix G - Skylark Territory Maps
