

Norwich Western Link

Environmental Statement

Chapter 10: Biodiversity

Appendix 10.20: Species of Principal Importance Report 2021 Part 1 of 2

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1 Introduction

1.1.1 WSP UK Ltd was commissioned by Norfolk County Council to undertake a SPI assessment, with the following objectives:

- Undertake an initial exercise to scope all listed SPI in or out of further habitat level assessment taking into account a number of factors including species distribution and habitat preference;
- Undertake a follow-up desk-based habitat level assessment of SPI scoped in to determine presence/absence within the Scheme boundary; and
- Present the findings in a baseline report.

1.1.2 The findings of this report will be used to inform the impact assessment and proposed mitigation for additional SPI confirmed present or considered likely present within the Scheme boundary. Details of the impact assessment and mitigation will be included within the Biodiversity Chapter of the Environmental Statement.

1.1.3 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

Species of Principal Importance Report





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Species of Principal Importance Report

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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:
 - 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.
 - 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. A Phase 1 Habitat Survey (WSP UK Ltd., 2020) undertaken in 2020 identified the presence of habitats which have the potential to support Species of Principal Importance (SPI) such as Common Toad *Bufo bufo* and Western European Hedgehog *Erinaceus europaeus* not captured in other protected/notable species assessments undertaken in support of the Scheme (herein referred to as 'additional SPI'). SPI captured in other protected/notable species assessments include: reptiles, invertebrates, bats, great crested newt, Otter, Water Vole, birds, molluscs, crustaceans, fish and vascular and non-vascular plants. For specific assessments and species see Table 4-1.
- 1.2.2. It was recommended that assessment for additional SPI be undertaken to establish a sufficient baseline to inform impact assessment. This approach was agreed with Natural England following a meeting on 30th March 2021 with the outcome being that the SPI scope would be habitat appraisal only with no specific survey work.

1.3 Brief and Objectives

- 1.3.1. WSP UK Ltd was commissioned by Norfolk County Council to undertake a SPI assessment, with the following objectives:
- Undertake an initial exercise to scope all listed SPI in or out of further habitat level assessment taking into account a number of factors including species distribution and habitat preference;
 - Undertake a follow-up desk-based habitat level assessment of SPI scoped in to determine presence/absence within the Scheme boundary; and
 - Present the findings in a baseline report.
- 1.3.2. The findings of this report will be used to inform the impact assessment and proposed mitigation for additional SPI confirmed present or considered likely present within the Scheme boundary. Details of the impact assessment and mitigation will be included within the Biodiversity Chapter of the Environmental Statement.

1.4 Study Area

- 1.4.1. The Study Area for SPI extended up to 2km from the Scheme boundary which was based on the typical home ranges of the additional SPI scoped in for further habitat level assessment. Details on species typical home ranges and habitat preferences are presented within their individual results sections and can be found in Section 4.3.

2 Relevant Legislation and Policy

2.1 Legal Compliance and Policy

- 2.1.1. Natural Environment and Rural Communities (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.
- 2.1.2. Many local authorities in the UK have also produced a local Biodiversity Action Plan (BAP) at the County or District level.
- 2.1.3. The Norfolk BAP was launched in 1999 as a mechanism for translating national objectives into local action and implementing the national Species and Habitat Action Plans at the county level. It predominantly includes species and habitats included on the UK list of Species and Habitats of Principal Importance that are found within the county.

3 Methods

3.1 Desk Study

- 3.1.1. A desk study was undertaken in September 2021 and involved a review of existing ecological baseline information available in the public domain and to obtain information held by relevant third parties. This included consulting Norfolk Biodiversity Information Service (NBIS) for local records of SPI.
- 3.1.2. For the purpose of the desk study exercise, records were collated within 2km from the Scheme, in order to capture species information at an appropriate radius. This approach is consistent with current good practice guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2017).
- 3.1.3. Existing habitat data obtained from the Phase 1 Habitat Survey and Barn Owl survey (which assessed grassland habitats up to 1km from the Route alignment) was also reviewed.
- 3.1.4. Incidental records of additional SPI recorded during other habitat and species surveys undertaken across the Scheme since 2019 was also used to inform the assessment.

3.2 SPI Scoping Exercise

- 3.2.1. An initial exercise was undertaken to scope all listed SPI in or out of further habitat level assessment taking into account the following factors:
 - Whether SPI were already subject to detailed targeted surveys covered in separate technical appendices in support of the Scheme;
 - Species distribution;
 - Whether suitable habitats exist within the local area; and
 - The existence of local and/or incidental records identified in the Desk Study.

3.3 Habitat Level Assessment

- 3.3.1. This assessment used existing habitat data obtained from the Phase 1 Habitat Survey and Barn Owl survey, as well as additional online Geographical Information System (GIS) databases, as well as local and incidental records to determine the presence/absence of SPI scoped in.

3.4 Notes and Limitations

- 3.4.1. This report provides a view of the likelihood of additional SPI occurring within the Scheme based on a desk-based habitat level assessment and review of incidental and local records. It should not be taken as providing a full and definitive assessment of any notable species/species group, which would require further targeted survey effort. This approach however is considered appropriate to inform impact assessment and has been agreed with Natural England following consultation.

- 3.4.2. Records held by local biological record centres and local recording groups are generally collected on a voluntary basis; therefore, the absence of records does not demonstrate the absence of species, it may simply indicate a gap in recording coverage. As a result, this report relies heavily upon on an assessment of the habitats present within the respective species Study Areas.
- 3.4.3. Where only four figure grid references are provided for protected and/or notable species by third parties, the precise location of species records can be difficult to determine, and they could potentially be present anywhere within the given 1km x 1km square. Equally, six figure grid references are accurate to the nearest 100m only.

4 Results

4.1 Desk Study

- 4.1.1. The results of the Desk Study are incorporated within the SPI Scoping Exercise and Habitat Level Assessment sections below.

4.2 SPI Scoping Exercise

- 4.2.1. The results of the SPI Scoping Exercise are presented in Table 4-1 – SPI Scoping below. For simplicity, SPI have initially been grouped by taxon, with relevant species discussed in the following columns with respect to their status in relation to the Scheme.

Table 4-1 – SPI Scoping

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
Alga	No	All six species of alga listed as SPI are non-vascular saltwater species. As such, these species have been scoped out of this assessment due to the nature of the Scheme.	None
Amphibian	Partially	<p>Four species of amphibians are listed as SPI:</p> <ul style="list-style-type: none"> ■ Common Toad <i>Bufo bufo</i> ■ Great Crested Newt (GCN) <i>Triturus cristatus</i> ■ Pool Frog <i>Pelophylax lessonae</i> ■ Natterjack Toad <i>Epidalea calamita</i> <p>Common Toad have been scoped in to this assessment. This is due to suitable habitats such as ponds, woodland and rough grassland being present within the Scheme as well as several incidental records of Common Toad being recorded. Common Toads are therefore considered further in Section 4.3 below.</p> <p>GCN have been scoped out of this assessment given that they have been considered in separate technical appendices.</p> <p>Natterjack Toad and Pool Frog are only known to be present at a few isolated locations within Norfolk, the closest of which is situated approximately 25km from the Scheme. Natterjack Toad and Pool Frog have therefore been scoped out of this assessment.</p>	Common Toad

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
Ant/Bee/Beetle/Bug/ Butterfly/Centipede/ Fly/Grasshopper/ Cricket/Millipede /Moth/Spider/Wasp	No	Terrestrial Invertebrates such as Beetles, Moths and Spiders have been scoped out of this assessment given that they have been covered in a separate technical appendix which considers SPI within these taxa.	None
Worm	No	Two species of worm are listed as SPI: <ul style="list-style-type: none"> ■ Lagoon Sandworm <i>Armandia cirrhosa</i> ■ Jennings's Ribbon-worm <i>Prostoma jenningsi</i> <p>The Lagoon Sandworm is a marine mollusc found in coastal habitats in the south of England. As such, this species has been scoped out of this assessment due to the nature of the Scheme.</p> <p>The Jennings's Ribbon-worm <i>Prostoma jenningsi</i> is a terrestrial mollusc known to be present at a single site in Lancashire. As such, this species has been scoped out of this assessment due to the location of the Scheme.</p>	None
Bird	No	Birds have been scoped out of this assessment given that they have been covered in separate technical appendices which considers bird SPI.	None
Mammal	Partially	Brown Hare <i>Epus europaeus</i> , Harvest Mouse <i>Micromys minutus</i> Western European Hedgehog <i>Erinaceus europaeus</i> , and Polecat <i>Mustela putorius</i>	Brown Hare Harvest Mouse

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
		<p>have been scoped in to this assessment due to suitable habitat being present within the Scheme and its locality, as well as local and/or incidental records being returned for these species. Brown Hare, Hedgehog, Harvest Mouse and Polecat are therefore considered further in Section 4.3 below.</p> <p>All other 14 mammal species listed as SPIs have been scoped out of this assessment. This includes:</p> <ul style="list-style-type: none"> ■ All bat species (Barbastelle Bat <i>Barbastella barbastellus</i>, Bechstein`s Bat <i>Myotis bechsteinii</i>, Noctule <i>Nyctalus noctula</i>, Soprano Pipistrelle <i>Pipistrellus pygmaeus</i>, Brown Long-eared bat <i>Plecotus auritus</i>, Greater Horseshoe Bbat <i>Rhinolophus ferrumequinum</i> and Lesser Horseshoe Bat <i>Rhinolophus hipposideros</i>) given that bats have been considered in separate technical appendices. ■ Otter <i>Lutra lutra</i> and Water Vole <i>Arvicola amphibious</i> given that they have been considered in separate technical appendices. ■ Mountain Hare <i>Lepus timidus</i>, Pine Marten <i>Martes martes</i>, Hazel Dormouse <i>Muscardinus avellanarius</i> and Red Squirrel <i>Sciurus vulgaris</i> and Common Seal <i>Phoca vitulina</i> due to their known distributions in the United Kingdom. 	<p>Hedgehog Polecat</p>

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
Caddisfly/Damselfly/ Dragonfly/Mayfly/Stonefly	No	Macroinvertebrates such as Caddisfly, Damselfly, Dragonfly, Mayfly and Stonefly have been scoped out of this assessment given that they have been covered in a separate technical appendix which considers SPI within this taxon.	None
Bryophyte/Lichen/ Fungi/Stonewort	No	<p>All 244 species of Bryophyte, Lichen, Fungi and Stonewort listed as SPI have been scoped out of this assessment given that they have been covered in the following separate technical appendices:</p> <ul style="list-style-type: none"> ▪ Fungi Survey which considers Fungi SPI. ▪ Lichen Survey which considers Lichen SPI ▪ National Vegetation Classification (NVC) which considers Bryophyte SPI. ▪ Macrophyte Survey which considers Stonewort SPI. 	None
Bryozoan	No	<p>Two species of Bryozoan are listed as SPI:</p> <ul style="list-style-type: none"> • Crystal Moss Animal <i>Lophopus crystallinus</i> • Trembling Sea-Mat <i>Victorella pavida</i> <p>The Crystal Moss Animal has been scoped out of this assessment given that it is not known to exist within watercourses and bodies in proximity to the Scheme.</p> <p>The Trembling Sea-Mat has also been scoped out due to the nature of the Scheme.</p>	None

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
Cetacean	No	All 16 species of Cetacean listed as SPI have been scoped out of this assessment due to the non-marine nature of Scheme.	None
Cnidarian	No	The taxon Cnidarian is composed of marine invertebrates. As such, all 11 species of Cnidarian listed as SPI have been scoped out of this assessment due to the nature of Scheme.	None
Crustacean	No	There are five species of Crustacean listed as SPI which have all been scoped out due to the following: <ul style="list-style-type: none"> • Marine Invertebrates the Lagoon Sand Shrimp <i>Gammarus insensibilis</i> and Spiny Lobster <i>Palinurus elephas</i> due to the nature of the Scheme. • British Cave Shrimp <i>Niphargus glenniei</i> and Tadpole Shrimp <i>Triops cancriformis</i> given that they are only known to exist at few specific sites in the UK, none of which are within Norfolk. • White-clawed Crayfish <i>Austropotamobius pallipes</i> given that it has been covered in a separate technical appendix. 	None
Fish – Bony/Fish - Jawless	No	All 35 Fish species listed as SPI have been scoped out of this assessment given that they have been	None

Taxon	Scoped in (Yes/Partially/No)	Reason	Summary of SPI scoped in
		covered in a separate technical appendix which considers Fish SPI.	
Mollusc	No	There are 20 species of Mollusc listed as SPI which have all been scoped out due to the following: <ul style="list-style-type: none"> • Marine Molluscs due to the nature of the Scheme. • All Freshwater Molluscs given that they have been covered in the Macroinvertebrate and Desmoulin's Whorl Snail technical appendices. 	None
Reptile	No	All six species of reptile listed as SPI have been scoped out of this assessment given that they have been considered in a separate technical appendix.	None
Shark/Skate/Ray	No	All 13 species of Shark/Skate/Ray listed as SPI have been scoped out of this assessment due to the nature of the Scheme.	None
Turtle	No	Both species of Turtle listed as SPI have been scoped out of this assessment due to the nature of Scheme.	None
Vascular Plant	No	All 152 species of Vascular Plant listed as SPI have been scoped out of this assessment given that they have been covered in separate technical appendices which consider Vascular Plant SPI.	None

4.3 Habitat Level Assessment

4.3.1. The exercise above scoped in the following SPI for further habitat level assessment:

- Common Toad;
- Brown Hare;
- Harvest Mouse;
- Western European Hedgehog; and
- Polecat.

4.3.2. Each of these species is therefore considered further below to determine their presence/absence in relation to the Scheme based on a desk-based habitat level assessment and review of incidental and local records.

Common Toad

- 4.3.3. Common Toad is a widespread amphibian found throughout mainland Britain. They have a strong migratory instinct and will follow the same route back to ancestral breeding ponds each spring. After a relatively short breeding period (often no more than a week), adult toads migrate up to 2km away from ponds, where they spend the majority of their lifecycle in terrestrial habitats such as woodland, hedgerows and rough grassland.
- 4.3.4. The habitat level assessment for Common Toad (presented in Appendix A, Figure 1) therefore focussed on suitable habitats comprising ponds, woodland, hedgerows and rough grassland within and up to 2km from the Scheme boundary based on their typical home range.
- 4.3.5. This assessment identified a total of 178 water bodies within the Study Area which were widely distributed across the landscape and present both within and outside the Scheme boundary, providing opportunities for Common Toad breeding. A number of these water bodies however are situated beyond the A1067 and A47 to the north and south which are likely to present significant barriers to Common Toad dispersal into the Scheme.
- 4.3.6. The assessment also identified the presence suitable Common Toad terrestrial habitats throughout the Study Area comprising woodland, hedgerows and rough grassland. All of these habitat types were also identified throughout the Scheme boundary which would provide opportunities for foraging, dispersal and refuge within the Scheme. The habitats were also generally well connected throughout the Study Area and Scheme boundary which would encourage movement and dispersal across the landscape, increasing the likelihood of Common Toad occurring within the Scheme. The A47 and A1067 to the north and south of the Scheme however are likely to limit dispersal and habitat connectivity to the north and south.
- 4.3.7. The desk study did not return any local records of Common Toad within a 2km radius of the Scheme boundary. A total of five incidental records of Common Toad however were recorded during other ecological surveys undertaken in relation to the Scheme. Details of

these records are provided below, with locations and abundances presented in Appendix A, Figure 1:

- Three individuals recorded in rough grassland along the southern edge of Ringland Lane during reptile surveys undertaken in 2019.
- Two individuals recorded within Rose Carr woodland during March 2021.
- One individual recorded in rough grassland along the southern edge of the A1067 during terrestrial invertebrate surveys undertaken in 2021.

4.3.8. Common Toad were therefore confirmed present within the Scheme based on incidental records alone, with the distribution of these records indicating that this species is more abundant within the northern aspect of the Scheme. Given that suitable habitat exists throughout the Scheme boundary however, it is likely that Common Toad are present throughout the Scheme.

Brown Hare

4.3.9. Brown Hare are a widespread species of mammal that occur throughout much of the United Kingdom, predominantly in low-lying areas. Usually solitary animals, they reside in shallow depressions (known as forms) throughout much of the day before moving out to forage at night. Brown Hare feed predominantly on young grassland, cereals and herbs within rough grassland and arable habitats and are known to use hedgerows and woodland edges for occasional cover during the day. The typical home range of Brown Hare is below 2km with field size, hare density and proportion of non-farmed habitat influencing factors (Schai-Braun & Hackländer, 2014) .

4.3.10. The habitat level assessment for Brown Hare (presented in Appendix A, Figure 2) therefore focussed on suitable habitats comprising rough grassland, arable land, hedgerows and woodland edge within and up to 2km from the Scheme boundary based on their typical home range.

4.3.11. The assessment identified extensive arable land within the Study Area interspersed with areas of rough grassland, hedgerows and woodland edges. It should be noted though that not all of the arable land identified within the Study Area is likely to be sown with cereal crop and therefore suitable Brown Hare habitat presented in Appendix A, Figure 2 is likely to be overrepresented. Based on Department for Environment, Food and Rural Affairs (DEFRA) statistics (DEFRA, 2019), cereal farms in the East of England region accounted for 51% of farm types in 2019 and therefore only around half the arable land identified within the Study Area is likely to be suitable for Brown Hare.

4.3.12. All of the suitable Brown Hare habitat types were also identified throughout the Scheme boundary which would provide opportunities for foraging, dispersal and refuge within the Scheme. The habitats were also generally well connected throughout the Study Area and Scheme boundary particularly east to west, which would encourage movement and dispersal across the landscape, increasing the likelihood of Brown Hare occurring the Scheme. The A1067 and A47 and to the north and south of the Scheme however are likely

to limit north/south dispersal and habitat connectivity, particularly given that the species is vulnerable to road collision.

- 4.3.13. The desk study returned a total of 22 records for Brown Hare within a 2km radius of the Scheme boundary. The distribution of the records indicate that Brown Hare are generally widespread throughout the Study Area, with one record of two individuals returned from within the Scheme boundary in 2011. The locations and abundances of local records returned for Brown Hare are presented in Appendix A, Figure 2.
- 4.3.14. A total of nine incidental records of Brown Hare were also reported during other ecological surveys undertaken in relation to the Scheme. These records related to at least 24 individuals within or in close proximity to the Scheme boundary. One incidental record was reported during an evening bat survey in 2021 within the edge of Rose Carr woodland, while all other incidental records reported Brown Hare foraging or moving across arable land. The locations and abundances of incidental records for Brown Hare are presented in Appendix A, Figure 2.
- 4.3.15. Brown Hare were therefore confirmed present within the Scheme boundary from both incidental and local records. The location of the records, as well as the extent and distribution of suitable habitats within the Scheme boundary indicates that Brown Hare are likely to be present throughout the Scheme in good numbers.

Harvest Mouse

- 4.3.16. Harvest Mouse are a native species of mammal that are most commonly found throughout southern England with their range extending as far north as Yorkshire. Harvest Mouse prefer habitats consisting of tall grassland and cereal crops which they use to construct their characteristic nests. These habitats, along with hedgerows and reed beds, provide a source of seeds and berries that make up most of their diet. Harvest mice are mainly solitary animals, though home ranges of different animals may overlap. Usually home ranges are approximately 100m in diameter, however, individuals have been known to travel up to 355m (May – October) (Vecsernyés, 2020).
- 4.3.17. The habitat level assessment for Harvest Mouse (presented in Appendix A, Figure 3) therefore focussed on suitable habitats comprising tall grassland, arable land and hedgerows within and up to 2km from the Scheme boundary vastly exceeding the home range of the species.
- 4.3.18. The assessment identified extensive arable land within the Study Area interspersed with areas of tall grassland and hedgerows. As discussed above in relation to Brown Hare however, only around half the arable land identified within the Study Area is likely to be suitable for Harvest Mouse. All of the suitable Harvest Mouse habitat types were also identified throughout the Scheme boundary which would provide opportunities for foraging, dispersal, refuge and nesting within the Scheme. The habitats were also generally well connected throughout the Study Area and Scheme boundary which would encourage movement and dispersal across the landscape, increasing the likelihood of Harvest Mouse

occurring within the Scheme. The A1067 and A47 and to the north and south of the Scheme however are likely to limit north/south dispersal and habitat connectivity.

- 4.3.19. The desk study did not return any local records of Harvest Mouse within a 2km radius of the Scheme boundary and no incidental records were reported during other ecological surveys undertaken in relation to the Scheme.
- 4.3.20. Taking into account the extent and connectivity of suitable habitat present within the Study Area and Scheme boundary however, the presence of Harvest Mouse within the Scheme cannot be discounted despite the lack of local or incidental records. Harvest mouse are therefore considered to be potentially present within the Scheme boundary.

Western European Hedgehog

- 4.3.21. The Western European Hedgehog is a native species of mammal found throughout the United Kingdom. In rural areas, hedgehogs utilise habitats such as rough grassland, hedgerows and woodland edges where they forage for invertebrates such as worms, beetles and slugs. They also use these habitats as nest sites for breeding, resting and hibernation. Studies have found Hedgehog home ranges are around 10-20 hectares (ha) in size, with Hedgehogs found to roam up to a distance of 2km in a single night (Morris, 1988).
- 4.3.22. The habitat level assessment for Hedgehog (presented in Appendix A, Figure 4) therefore focussed on suitable habitats comprising rough grassland, hedgerows and woodland edges within and up to 2km from the Scheme boundary based on the typical home range of the species.
- 4.3.23. The assessment identified all of these habitat types throughout the Study Area, including the Scheme boundary, which would provide opportunities for foraging, dispersal, refuge and hibernation. The habitats were also generally well connected throughout the Study Area and Scheme boundary which would encourage movement and dispersal across the landscape, increasing the likelihood of Hedgehog occurring within the Scheme. The A1067 and A47 and to the north and south of the Scheme however are likely to limit north/south dispersal and habitat connectivity, particularly given that the species is vulnerable to road collision.
- 4.3.24. The desk study returned a total of nine records for Hedgehog within a 2km radius of the Scheme boundary. None of the records were returned from within the Scheme boundary itself, although the closest record was returned from Weston Green, approximately 300m to the north in 2015. Of the remaining records, 6 were returned in association with the village of Taverham to the east, while two were returned from the village of Honingham to the south. The locations and abundances of local records for Hedgehog are presented in Appendix A, Figure 4. No incidental records of Hedgehog were reported during other ecological surveys undertaken in relation to the Scheme.
- 4.3.25. Taking into account the extent and connectivity of suitable habitat present within the Study Area and Scheme boundary, as well as the existence of local records close to the Scheme, Hedgehog are considered likely to be present within the Scheme boundary.

Polecat

- 4.3.26. The Polecat is a native species of mammal that was almost driven to extinction in the 18th century. They are most abundant in Wales, the midlands and areas of central southern England but are known to be spreading eastwards and northwards from these areas. A national Polecat survey undertaken from 2014-2015 reported that records were fairly widely distributed in Norfolk (both west and east Norfolk), with the majority of verifiable records being Polecat-Ferrets, with a few records of true Polecats in West Norfolk only and no records of true Polecats in East Norfolk (Vincent Wildlife Trust, 2016). Since then, records of true Polecats have been reported throughout Norfolk including South Lopham, Ludham, Attleborough and Twyford, the latter being approximately 15km north west of the Scheme within the Wensum valley, suggesting that they are spreading rapidly throughout the county.
- 4.3.27. In Britain, Polecats favour lowland arable habitats, interspersed with hedgerows, rough grassland, woodland edges and riverbanks where their diet is mainly made up of wild rabbits, as well as other small mammals, amphibians and invertebrates.
- 4.3.28. Polecats are mainly solitary animals, though home ranges of different animals may overlap. Male home ranges are usually larger (1.5-5.0km²) than those of females (0.4-3.0km²) (Vincent Wildlife Trust, 2014) with the average home range being 1.81km² (Baghli & Verhagen, 2004).
- 4.3.29. As such, the habitat level assessment for Polecat (presented in Appendix A, Figure 5) therefore focussed on suitable habitats comprising arable field margins, rough grassland, hedgerows, woodland edges and riverbanks within and up to 2km from the Scheme boundary based on the average home range of the species.
- 4.3.30. The assessment identified all of these habitat types throughout the Study Area, including the Scheme boundary, which would provide opportunities for foraging and dispersal. The habitats were also generally well connected throughout the Study Area and Scheme boundary which would encourage movement and dispersal across the landscape, increasing the likelihood of Polecat occurring within the Scheme. The A1067 and A47 and to the north and south of the Scheme however are likely to limit north/south dispersal and habitat connectivity, particularly given that the species is vulnerable to road collision.
- 4.3.31. The desk study returned a total of two records for Polecat within the Study Area, although it is unclear whether these related to true Polecats or Polecat-Ferret hybrids. None of the records were returned from within the Scheme boundary itself, although the closest record was returned from farmland near Felthorpe approximately 1.2km to the north east in 2015. The remaining records were returned from farmland near the village Hockering, north of the A47. The locations and abundances of local records for Polecat are presented in Appendix A, Figure 5. No incidental records of Polecat were reported during other ecological surveys undertaken in relation to the Scheme.



4.3.32. Taking into account the extent and connectivity of suitable habitat present within the Study Area and Scheme boundary, as well as the existence of local records close to the Scheme, the presence of Polecat within the Scheme boundary cannot be ruled out.

5 Summary

- 5.1.1. The assessment confirmed the presence of the following additional SPI within the Scheme boundary based on incidental records alone:
- Common Toad; and
 - Brown Hare.
- 5.1.2. The assessment concluded the likely or potential presence of the following additional SPI within the Scheme boundary based on an assessment of habitats and local records:
- Harvest Mouse;
 - Hedgehog; and
 - Polecat.

6 References

6.1 Project References

- WSP UK Ltd. (2020) Norwich Western Link Road - Phase 1 Habitat Survey. London

6.2 Technical References

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Appendix A - Figures

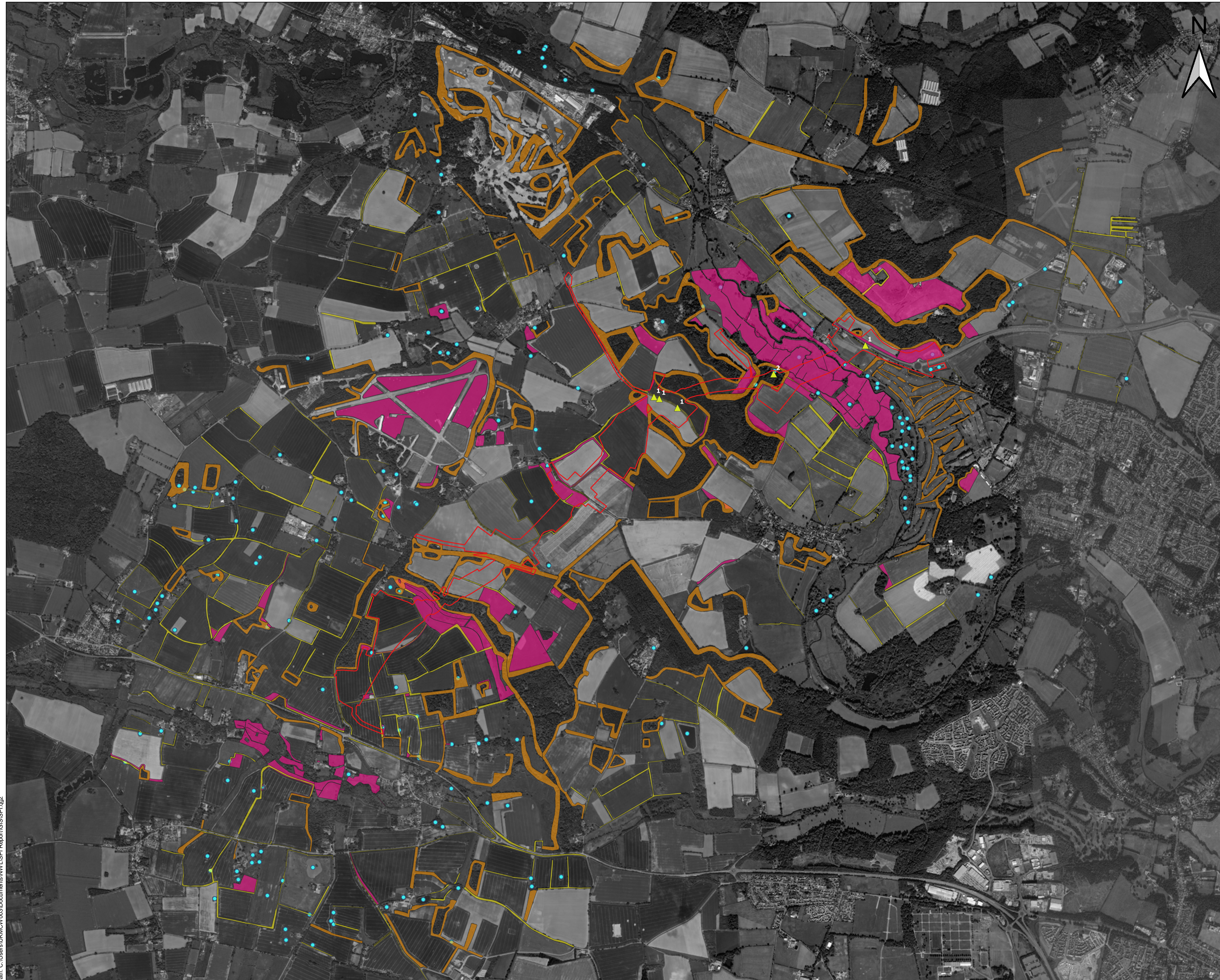
Figure 1 - Common Toad Habitats and Records

Figure 2 - Brown Hare Habitats and Records

Figure 3 - Harvest Mouse Habitats and Records

Figure 4 - Hedgehog Habitats and Records

Figure 5 - Polecat Habitats and Records



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- Legend**
- Scheme Boundary
 - 2km buffer from Scheme Boundary
 - Water Body
- Suitable Habitats:**
- Hedgerow
 - Rough Grassland
 - Woodland Edge
 - ▲ Incidental Common Toad Record

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	<small>Check</small>		

Drawing Status

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Job Title

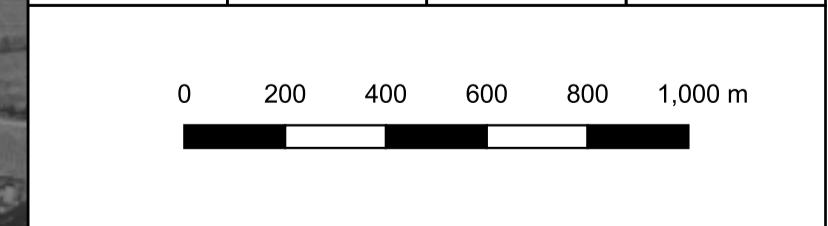
Norfolk County Council
Norwich Western Link

Drawing Title

Appendix A, Figure 1 - Common Toad Habitats and Records

Scale at A1 1:15,000

Drawn UKMCW003			
<small>Stage 1 Check</small> SM	<small>Stage 2 Check</small> IE	<small>Originated</small> MW	<small>Date</small> 17/11/2021



Drawing Number

70061370-09-28-0001

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Legend

Scheme Boundary

2km buffer from Scheme Boundary

Suitable Habitats:

- Arable
- Hedgerow
- Rough Grassland
- Woodland Edge

Brown Hare Records:

- Brown Hare Desk Study Record
- ▲ Local Brown Hare Record

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Job Title

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Drawing Title

**Appendix A, Figure 2 - Brown
Hare Habitats and Records**

Scale at A1

1:15,000

Drawn

UKMCW003

Stage 1 Check

SM

Stage 2 Check

IE

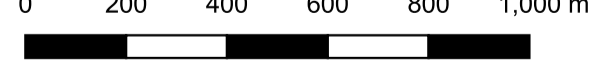
Originated

MW

Date

15/11/2021

0 200 400 600 800 1,000 m



Drawing Number

70061370-09-28-0002



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- Legend
- Scheme Boundary
 - 2km buffer from Scheme Boundary
- Suitable Habitats:
- Arable
 - Hedgerow
 - Rough Grassland

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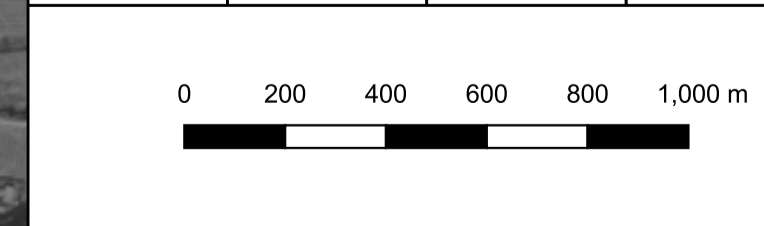
**Norfolk County Council
Norwich Western Link**

Drawing Title

Appendix A, Figure 3 - Harvest Mouse Habitats and Records

Scale at A1: **1:15,000**

Drawn	UKMCW003		
Stage 1 Check	Stage 2 Check	Originated	Date
SM	IE	MW	15/11/2021

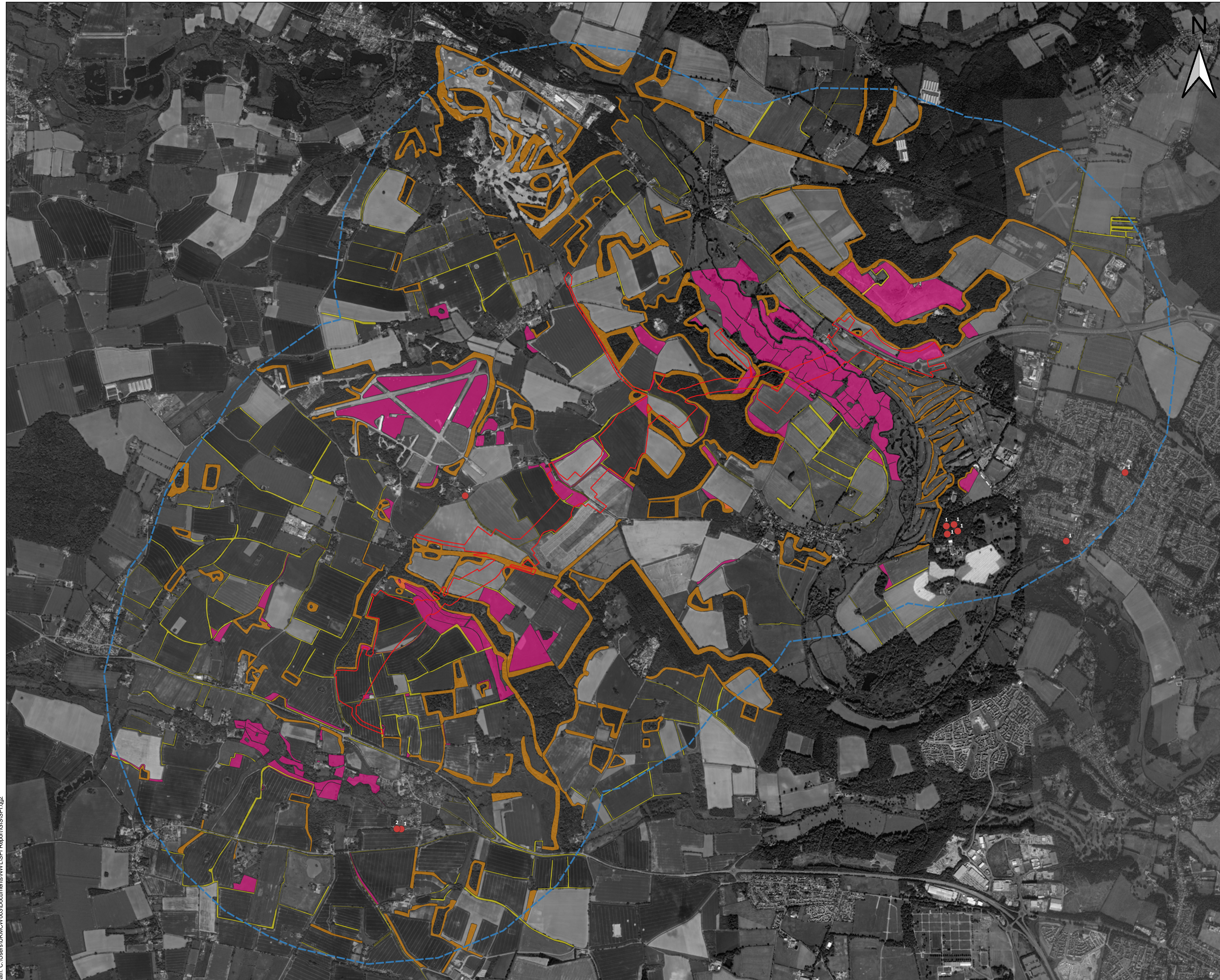


Drawing Number: **70061370-09-28-0003**

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- Legend
- Scheme Boundary
 - 2km buffer from Scheme Boundary
- Suitable Habitats:
- Hedgerow
 - Rough Grassland
 - Woodland Edge
 - Local Hedgehog Record



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Revision Details	By	Date	Suffix
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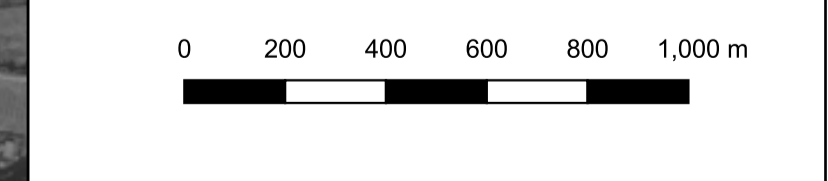
Drawing Status **FINAL**

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

Drawing Title
Appendix A, Figure 4 - Hedgehog Habitats and Records

Scale at A1 **1:15,000**

Drawn	UKMCW003		
Stage 1 Check	Stage 2 Check	Originated	Date
SM	IE	MW	15/11/2021



Drawing Number
70061370-09-28-0004