



Mallard Pass

Solar Farm

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Environmental Statement Volume 2 Appendix 7.4: Ecology and Biodiversity - Baseline Report

November 2022

PINS Ref: EN010127

Document Ref: EN010127/APP/6.2

Revision P0

Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations
2009 - Reg 5 (2) (a)

Mallard Pass Solar Farm

Environmental Statement, Appendix 7.4: Ecological Baseline Report

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1 Introduction

Background to commission

- 1.1 BSG Ecology was commissioned in March 2021 to conduct ecological surveys at an area of land surrounding Essendine on the Lincolnshire-Rutland border, to inform the Preliminary Environmental Information Report and Environmental Statement prepared in support of the Mallard Pass Solar Farm Development Consent Order Application (hereafter 'the Proposed Development').
- 1.2 This Ecological Baseline Report presents the methods and results of a desk study, extended Phase 1 habitat survey, badger survey, breeding bird survey, winter bird survey and great crested newt survey conducted by BSG Ecology.

2 Methods

Desk study

- 2.1 A desk study was carried out to gather existing records and information on designated sites and protected or otherwise notable¹ species within the local area.
- 2.2 Information on non-statutory designated sites, protected, notable and invasive species within a 2 km radius of the Order limits boundary was obtained from the Lincolnshire Environmental Records Centre (LRC) and from the Leicestershire and Rutland Environmental Records Centre (LRERC). Data were received on 04 May 2021. Due to a change in the Order limits boundary, additional data on Local Wildlife Sites within 2km of the additional area (Ryhall Road) were requested from LRERC on 7 January 2022.
- 2.3 The Multi-Agency Geographic Information for the Countryside (MAGIC) database (Defra, 2021; accessed most recently 17 November 2021) and Natural England's designated site information (Natural England, 2021) were also consulted to establish the ecological context of the Order limits and to search for information on internationally important designated sites up to 10 km from the Order limits and other statutory designated sites within 2 km. This was also searched for internationally important statutory sites designated for bats.
- 2.4 Mapping available on MAGIC was also used to identify ponds within 500 m of the main part of the Order limits and for locations of ancient woodland.
- 2.5 Additional information pertaining to species recorded along the Drift, an openly accessible lane adjacent to the western Order limits boundary, was supplied by Tom Tew of NatureSpace Partnership in an email dated 2 January 2022. This information has been considered where relevant below.
- 2.6 Detail of the legal and policy protection afforded to relevant protected and notable species and designated sites is provided in Annex 2.

Field survey

Extended Phase 1 habitat survey

- 2.7 The majority of the Phase 1 habitat survey was undertaken by Jamie Peacock BSc GradCIEEM, Ecologist at BSG Ecology, and Peter Newbold BSc MEnvSci MCIEEM CEcol, Principal Ecologist at BSG Ecology and Dr Philip Chapman Ecologist at BSG Ecology. All three are capable and experienced habitat surveyors and field botanists.
- 2.8 Due to the size of the main part of the Order limits it was surveyed in sections over three dates: 30 March, 31 March and 29 April 2021. This survey involved a walkover with reference to the industry standard guidance (JNCC, 2010) (Ref 1), during which

¹ Notable species here include those of national or local conservation interest. Species of national conservation interest are Species of Principal Importance (Section 41 of the NERC Act), those listed in Red Data Lists for England or the UK, red-listed species in *Birds of Conservation Concern* list (Eaton *et al.*, 2015), and species designated Nationally Scarce or Nationally Notable. Species of local conservation interest are those for which Leicestershire and Rutland or Lincolnshire have Biodiversity Action Plans.

the habitats present were recorded and mapped, with notes made on the species present and any features of ecological interest. Photographs were taken to provide supporting evidence (see Section 7). Two fields in the north-western part of the Order limits were covered on a visit in December 2021 as these were subsequently added to the Order limits.

- 2.9 In order to confirm certain habitat classifications and as a consequence of minor changes to the boundary of the Order limits, an additional visit was carried out to the Order limits on 10 and 11 August 2022.
- 2.10 The Phase 1 habitat survey was “extended” to include an assessment of the potential of the survey area to support protected and other species of conservation importance. This included an assessment of habitat suitability for bats, hazel dormouse, reptiles and amphibians.
- 2.11 A preliminary ground-level roost assessment of the trees and buildings within the Order limits was carried out with reference to industry standard guidance (Collins, 2016) (Ref 2). The surveyors searched for Potential Roost such as slipped roof tiles, woodwork rot holes and wall cavities (buildings) or knot holes, lightning scars and lifted bark (trees) which could provide roosting space for bats.

Water vole and otter

- 2.12 To determine whether water vole *Arvicola amphibius* is present along the Wests Glen River along the northern boundary of the Order limits and in wet ditches onsite, a water vole survey was undertaken on 09 July 2021 by Peter Newbold, with reference to industry standard guidance (Strachan *et al.* 2011) (Ref 3). Peter is an experienced mammal surveyor and is capable of identifying all field signs of water vole confidently.
- 2.13 This guidance recommends two survey visits during the best period for determining presence, with one survey in spring-early summer and a second visit (if required, e.g. if presence is not confirmed during the first visit) between late summer and mid-autumn. Due to the confirmation of presence of water vole on the West Glen River during the early summer visit and the classification of the onsite ditches as unsuitable (see “Results” below), the second visit was not considered to be required.
- 2.14 During the survey visit, the surveyor slowly walked along the banks (both sides) and waded within the channel (where accessible and safe to do so). The surveys covered the 1.48 km course of the West Glen River where it crosses the Order limits south of the railway line. The survey also covered all ditches on Order limits which held water at the time of survey. Evidence and potential evidence of water vole was noted, and the locations of field signs were marked on an annotated map.
- 2.15 Evidence of water vole can include droppings, latrines (used to mark territory boundaries or close to burrows), feeding signs (neat piles of vegetation close to the water’s edge with a 45° cut at the end), footprints and burrows (typically a series of holes along the water’s hedge, but occasionally up to 3 m up the bankside).

- 2.16 Due to the suitability of the West Glen River, for otter *Lutra lutra*, this watercourse was also concurrently searched for evidence of this species during the water vole surveys. Evidence of otter can include droppings, footprints, holts, feeding remains (chewed fish debris), and characteristic muddy slides used to access the water.

Badger

- 2.17 A survey for badger *Meles meles* was undertaken by Peter Newbold and Jamie Peacock in 2021 during the extended Phase 1 habitat survey. Both surveyors have extensive experience of surveying for badger. This survey included searching suitable habitats within the Order limits for evidence of badgers (setts, paths, latrines, foraging holes). The survey covered all linear features and open areas. The inner parts of larger woodland parcels were not surveyed as these are all to be retained and no setts directly impacted on.
- 2.18 Any setts located were recorded with information on number of entrances, extent of apparent activity in the vicinity and the presence of paths or latrines noted. This information was then used to determine the likely nature of the setts and whether they are in current use.
- 2.19 The setts have been classified based on the following adapted definitions from Neal and Cheeseman (1996) (Ref 4) and Harris *et al.* (1994) (Ref 5):
- Main sett - Normally where cubs are raised and in continuous and regular use throughout the year. Typified by large spoil heaps/mounds and well-trodden paths. There can be many entrances to the sett (often with some of these disused), although a main sett can sometimes only have a single entrance. There may be a scratching tree or playing area near the sett and usually a sizable latrine nearby.
 - Annexe sett - Intermediate-sized and may be used by breeding badgers. Normally close (<150m) to a main sett and connected to it by obvious paths. They may not be in use all the time, even if the main sett is very active but will be most of the time. May support a second litter if there is one.
 - Subsidiary sett - Similar to annexe setts but are likely to be further away (at least 50 m from the main sett) and not as well connected to the main sett as annexe setts. May only be used intermittently.
 - Outlier sett - Small setts with one or two entrance holes which are used sporadically by badgers as a temporary refuge (Neal & Cheeseman, 1996). Spoil heaps are likely to be small and there may not be obvious paths connecting to other setts.

Breeding bird surveys

- 2.20 To determine the value of the Order limits for breeding birds, four breeding bird surveys were undertaken in April, June and July 2021. Surveys were undertaken by Peter Newbold, assisted by Joe Bishop BSc qualCIEEM, Dr. Philip Chapman BA MSc PhD qualCIEEM (both Ecologists at BSG Ecology) and Stuart Elsom, an

independent ornithological surveyor. All personnel are experienced ornithological surveyors and can identify all UK species likely to be encountered by sight and sound.

- 2.21 Due to the size of the Order limits and the need to focus survey effort on the morning peak activity period of most bird species, the Order limits was covered simultaneously by a pair of surveyors. Survey dates and weather conditions recorded during the surveys are summarised in Table 1. The weather conditions during all survey visits were suitable (i.e. no rain or strong winds and good visibility).

Table 1: Dates, personnel and conditions of breeding bird survey visits

Date	Personnel	Conditions
29/04/2021	Peter Newbold and Philip Chapman	7°C, light wind, partial cloud, dry
11/06/2021	Peter Newbold and Stuart Eslom	16 °C, light wind, partial cloud, dry
09/07/2021	Peter Newbold and Joe Bishop	14 °C, light wind, cloudy, dry
23/07/2021	Peter Newbold and Joe Bishop	15 °C, light wind, overcast, dry

- 2.22 During each visit the Order limits was walked at a slow pace to enable all birds detected to be identified and located. Frequent stops were made to scan suitable habitats and to listen for singing and calling birds. All areas of suitable breeding habitat within the Order limits boundary and immediately adjacent areas were approached to within 50 m.
- 2.23 During the survey the location and activity of each bird detected (including those seen or heard) was recorded and mapped using standard two-letter British Trust for Ornithology (BTO) species codes combined with activity symbols.
- 2.24 Birds exhibiting breeding behaviour were assigned to one of two categories as part of the interpretation carried out after the surveys: likely breeding or confirmed breeding:
- Likely breeding: birds heard singing or alarm calling or simply present in suitable breeding habitat on one of the survey visits; a pair of birds present in suitable breeding habitat; a repeat observation of territorial behaviour (song or alarm calling) on two or more different visits in the same location; courtship behaviour or display in suitable breeding habitat; birds apparently visiting a nest site; or evidence of nest building (including excavation of a hole).
 - Confirmed breeding: one or more adults undertaking a distraction display; the presence of a used nest or eggshells; the presence of recently fledged or downy young (that are clearly of local origin); apparently incubating adults or adults commuting to and from a nest hole; adult birds carrying faecal sacs or food for young; or a nest with eggs or young present.

Wintering Birds

- 2.25 The Order limits has also been subject to ongoing wintering birds surveys to identify the levels of use of the Order limits by notable species of wintering birds, such as high numbers of farmland passerines, waders or wildfowl. Two visits per month were carried out between November 2021 to March 2022 and on each visit, an experienced ornithologist is surveying all onsite fields and adjoining fields, where possible, and recording the presence of any waders, any wildfowl, and notable passerines if present in significant numbers (e.g. over 30 individuals of a SPI). Each visit is either split over two days or two surveyors are covering approximately half of the survey area each (as on 14 December 2021). All survey visits were carried out in suitable weather conditions (i.e. avoiding high winds, rain or mist which would limit visibility). The Survey Area included the entire Order limits and adjacent fields, which were viewed from within the Order limits or Public Rights of Way.
- 2.26 The surveys have been undertaken on the following dates:
- 24 and 25 November 2021.
 - 29 and 30 November 2021
 - 6 and 7 December 2021.
 - 14 December 2021.
 - 10 and 11 January 2022.
 - 8 and 9 February 2022.
 - 22 and 23 February 2022.
 - 3 and 4 March 2022.
 - 21 and 22 March 2022

Great crested newt

HSI assessment

- 2.27 To determine the suitability of onsite and offsite ponds for great crested newt *Triturus cristatus* (GCN; see “*Amphibians*” under Results below) they were subject to a Habitat Suitability Index (HSI) assessment, with reference to industry standard guidance (Oldham, 2000; ARG UK, 2010) (Ref 6). The HSI assessment was carried out by Peter Newbold and Jamie Peacock on 21 May 2021 during the Phase 1 habitat survey visit. Both surveyors are experienced at carrying out HSI assessments.
- 2.28 The HSI assessment method involves allocating scores to features associated with a pond such as size, quality of surrounding habitat and presence of fish. These scores are then combined to calculate the overall HSI score for each pond as a number between 0 and 1, with 0 being the least suitable and 1 being the most suitable. The HSI score allows each pond to be placed in one of five pre-defined

categories defining its suitability for great crested newt as follows: <0.5: poor; 0.5–0.59: below average; 0.6–0.69: average; 0.7 – 0.79: good; >0.80: excellent.

eDNA survey

- 2.29 Following the HSI assessment and identification of suitable waterbodies onsite for GCN, an environmental DNA (eDNA) survey was conducted on 29 April 2021 by Peter Newbold (Natural England Licence 2015-18530-CLS-CLS) and Jamie Peacock (Natural England Licence 2016-20471-CLS-CLS) with reference to industry standard guidance (Biggs *et al.*, 2014) (Ref 7).
- 2.30 This survey involved collection of water samples from each suitable waterbody and subsequent analysis by an approved laboratory (Surescreen Scientifics Ltd). Online weather forecasts were monitored during the fortnight preceding the eDNA sample collection, which confirmed that the weather had been suitable for great crested newt survey throughout this period (i.e. overnight temperatures generally above 5°C). Following collection of the eDNA samples they were returned to the laboratory. The analysis was undertaken by Surescreen and the results returned on 06 May 2021.

Other protected species surveys

- 2.31 Surveys for foraging and commuting bats, roosting bats, hazel dormouse, reptiles, invertebrates and plants (detailed botanical survey) were not undertaken, despite some habitats onsite being suitable for these species (see “Results” below). The Proposed Development will retain all woody habitats (including scattered trees and hedgerows) with a buffer to include existing field margins, as well as trees, ponds, and ditches. Since the remaining habitats onsite (arable farmland) are of negligible value to these species, further protected species surveys were not considered proportionate.

Limitations to methods of field surveys

- 2.32 A total of 24 ponds were identified within the Order limits or within 500 m of the Order limits. Of the offsite ponds 13 (see Figure 7.2) were not accessed for eDNA survey. Two of these ponds (Ponds 12 and 24) are over 250 m from the Order limits boundary, and if great crested newt is present and breeding in these ponds, terrestrial newts are considered unlikely to be using the Order limits. The remaining 11 ponds range from 50 to 240 m from the Order limits boundary, and if GCN are present and breeding within these ponds, individual terrestrial-phase newts may be found within grassland (including field margins) and hedgerows in the nearby areas of the Order limits. Additional surveys of these ponds (eDNA) will be carried out in 2022 with additional surveys (population estimates) to be carried out if needed.
- 2.33 As part of the badger surveys, the inner parts of larger woodland parcels were not surveyed. This is not likely to be a significant limitation as the woodlands are all to be retained and no setts were present on the edges of the woodland, therefore no setts directly impacted on. Even if setts are present within these woodlands,

fragmentation will be avoided with measures intended to keep the proposed development permeable by creating gaps accessible by badgers in security fencing.

2.34 No other limitations were identified for the field surveys.

3 Results and Evaluation

Designated sites

- 3.1 No internationally important designated sites for bats are present within 30 km of the Order limits. The closest is Eversden and Wimpole Woods Special Areas of Conservation (SAC), located over 60 km to the south. This is designated for its population of barbastelle bat *Barbastella barbastellus*.
- 3.2 Four international designated sites are present within 10km of the Order limits, the Rutland Water Special Protection Area (SPA) and Ramsar Site, which are located approximately 5.6km to the south-west of the Order limits, but 8.65 km from the Solar PV Site, Baston Fen SAC is located 4.46 km north east of the Order limits boundary, Grimethorpe SAC is located 4.67 km north of the Order limits boundary and Barnack Hills and Holes SAC is located 6.8 km south of the Order limits boundary.
- 3.3 The Rutland Water SPA is designated primarily for its wintering population of shoveler *Anas clypeata*, teal *Anas crecca*, wigeon *Anas penelope*, gadwall *Anas strepera*, tufted duck *Aythya fuligula*, goldeneye *Bucephala clangula*, mute swan *Cygnus olor*, coot *Fulica atra*, merganser *Mergus merganser* and great crested grebe *Podiceps cristatus*. This Order limits is also designated as an SPA for its assemblage of water fowl including the species above.
- 3.4 It is also designated as a Ramsar site for its wintering population of gadwall and shoveler and the overall assemblage of waterfowl.
- 3.5 Grimsthorpe SAC and Barnack Hills and Holes SAC are designated for their calcareous grassland communities and are also orchid rich priority sites. Grimsthorpe is also designated for the presence of early gentian.
- 3.6 Baston Fen is designated for its population of spined loach fish. It is located on the Glen River, a tributary of which is the West Glen River.
- 3.7 A total of eight national statutory designated sites are present within 2 km of the Order limits. All these are Sites of Special Scientific Interest (SSSIs) (see Figure 7.1).
- 3.8 Ryhall Pasture and Little Warren Verges SSSI is directly adjacent to three parcels of land within the north-west of the Order limits. This SSSI includes an area of one of the semi-natural unimproved limestone grassland and features a characteristic calcareous plant community. This site also includes with adjacent species-rich roadside verges which fall within Lincolnshire.
- 3.9 Newell Wood SSSI is 340 m north-west of the Order limits. This SSSI comprises an area of semi-natural woodland on the site of former clay pits. The woodland is dominated by pedunculate oak *Quercus robur* and silver birch *Betula pendula* with

a predominantly acidic ground flora, although some open areas with distinctly calcareous plant species are also present.

- 3.10 Great Casterton Road Banks SSSI is located 915m from the Order limits. This comprises a small area of calcareous grassland with a mosaic of open grassland and scrub.
- 3.11 Toilethorpe Road Verges SSSI comprises the verges on both sides of Ryhall Road along the Order limits boundary north-east of Great Casterton. These verges support species-rich calcareous grassland.
- 3.12 Tickencote Marsh SSSI is located approximately 1.6 km west of the Order limits boundary and Great Casterton. This supports species rich grazing marsh.
- 3.13 Bloody Oaks Quarry SSSI is located approximately 430 m west of the Order limits at the junction included in the Order limits boundary on the A1. This supports species-rich calcareous grassland.
- 3.14 East Wood, Great Casterton SSSI is located approximately 1.3 km north west of the Order limits boundary. It supports ash-oak-wych elm woodland with a rich flora typical of ancient woodland.
- 3.15 A total of 71 non-statutory sites designated as Local Wildlife Sites (LWS) are present within 2 km of the Order limits. The majority of these are designated for habitats (predominantly hedgerows, grassland and woodland) with many also featuring locally or nationally scarce species. These LWS are listed in Table A in Annex 1.
- 3.16 Of these LWSs, 25 are located within or adjacent to the Order limits. Of these, 16 are located within the Order limits. These are:
 - Carlby/Essendine Verge
 - Essendine, Dismantled Railway Embankment
 - Hedge Near North Lodge Farm
 - Ryhall/Essendine SE of the Freewards (south side)
 - Ryhall RVNR: Crossroads to the Drift junction (west side)
 - Essendine, hedgerow S side MacMillan Way
 - Ryhall verge (B1176): from crossroads to Ryhall Farm Cott track (east side)
 - The Freewards Woodland Verge (N Side)
 - Essendine Roadside Verge Nature Reserve
 - Essendine Verge (NE Side) Near North Lodge Farm
 - Essendine, Hedgerow N Side Macmillan Way
 - Carlby to Aunby Road Verges
 - The Drift Verge, Ryhall (south side)

- Ryhall/Essendine hedge SE of the Freewards (south side)
- Ryhall Verge: The Drift jnctn to Ryhall Farm Cott track (west side)
- Belmesthorpe Railway

Habitats

- 3.17 The habitats present within the Solar PV Site and the Mitigation and Enhancement Areas are shown in Figure 7.3 and described in Table 2 below.
- 3.18 Some areas of woodland onsite, together with all the boundary and internal hedgerows, qualify as Habitats of Principal Importance (HPI)². Depending on hydrological characteristics and aquatic species present, the West Glen River and the onsite ponds have the potential to be HPI.

Table 2. Habitats present at the Order limits.

Habitat	Description/notes
Broadleaved semi-natural woodland	<p>There are multiple parcels of woodland distributed across the Order limits, some of which are semi-natural broadleaved woodland (see Photographs 1-2). These woodlands are dominated by pedunculate oak <i>Quercus robur</i> and ash <i>Fraxinus excelsior</i>, but silver birch <i>Betula pendula</i>, willow <i>Salix</i> sp., hybrid black poplar <i>Populus x euramericana</i> and alder <i>Alnus glutinosa</i> are present. Most woodland parcels feature a relatively dense understorey, consisting predominantly of hazel <i>Corylus avellana</i>, holly <i>Ilex aquifolium</i>, elder <i>Sambucus nigra</i> and hawthorn <i>Crataegus monogyna</i>.</p> <p>Ground flora is relatively diverse, with species including bluebell <i>Hyacinthoides non-scripta</i>, ground ivy <i>Glechoma hederacea</i>, dog's mercury <i>Mercurialis perennis</i>, lords and ladies <i>Arum maculatum</i>, wood sorrel <i>Oxalis acetosella</i>, ragged robin <i>Silene flos-cuculi</i>, spurge laurel <i>Daphne laureola</i>, wood anemone <i>Anemone nemorosa</i> and foxglove <i>Digitalis purpurea</i>.</p> <p>Some of these species are ancient woodland indicator species, however MAGIC does not identify any of the woodlands as ancient semi-natural woodland. This woodland meets the definition of the <i>Lowland mixed deciduous woodland</i> HPI (Maddock, 2011) (Ref 8).</p>
Hedgerows	<p>Most external boundaries and some internal boundaries of the Order limits feature native hedgerows (Photographs 3-4).</p> <p>Some species-rich sections (as shown in Figure 7.3) are present with over 5 woody species per 30 m section. These include hawthorn, blackthorn <i>Prunus spinosa</i>, field maple <i>Acer campestre</i>, holly, elder, hazel, cherry <i>Prunus</i> sp., bramble <i>Rubus fruticosus</i>, wych elm <i>Ulmus glabra</i>, field elm <i>Ulmus minor</i> with occasional dog rose <i>Rosa canina</i>. The majority of hedgerows</p>

² As defined under Section 41 of the Natural Environment and Rural Communities Act 2006. See Annex 2

	<p>onsite limits are species-poor, and formed by one to three woody species, usually blackthorn and/or hawthorn.</p> <p>Many hedgerows across the Order limits feature one or several standard trees, including mature pedunculate oak <i>Quercus robur</i>, beech <i>Fagus sylvatica</i>, ash, hybrid black poplar, and various willow species <i>Salix</i> spp. (Photograph 4).</p> <p>The hedgerow bases largely support common species such as lords and ladies, dog's mercury, common nettle <i>Urtica dioica</i>, cleavers <i>Galium aparine</i>, ground-ivy and common hogweed <i>Heracleum sphondylium</i>, however the first two species are indicative of older hedgerows and predominantly only present in the species rich hedgerows.</p> <p>Most hedgerows, particularly in the east of the Order limits, are intensively managed by cutting and show structural indicators of poor condition (abundant horizontal and vertical gaps), with some hedgerows defunct and/or left to grow out into scrubby treelines.</p> <p>All the hedgerows on Order limits are considered to meet the description of the <i>Hedgerows</i> HPI (Maddock, 2011).</p>
Ponds	<p>An analysis of aerial imagery and mapping revealed the presence of 24 ponds on Order limits or within 500 m of it. There are nine ponds on the Order limits or on its boundary, with an additional 13 ponds within 500 m of the Order limits boundary (see Figure 7.2).</p> <p>Of the nine ponds present within the Order limits or on its boundary, six held water (including Pond 3 in Photograph 5 – see Figure 7.2). The majority of these ponds are situated at the edge of pockets of woodland and are heavily shaded, although most ponds had aquatic and marginal vegetation present. These ponds are described in detail under “<i>Amphibians</i>” below. All the ponds onsite holding water have potential to meet the description of the <i>Ponds</i> HPI (Maddock, 2011) based on the presence of aquatic species and water quality parameters. With the exception of the eDNA survey (see below) these was not assessed in detail.</p>
Flowing water	<p>The West Glen River flows through the west of the Order limits (Photographs 6-7). This watercourse features a natural river channel dominated by marginal vegetation, predominantly common reed <i>Phragmites australis</i> and bulrush <i>Typha latifolia</i>. Emergent/submerged plants were also present in patches, but a detailed survey was not undertaken to identify these down to species level.</p>

	<p>The banks of the river comprise of a mosaic of species poor semi-improved grassland, semi-improved neutral grassland (see below), scattered scrub and tall ruderal.</p> <p>The river has the potential to meet the description of the <i>Rivers</i> HPI (Maddock, 2011) based on the presence of aquatic species and water quality and hydrological parameters. As a precaution this is considered to be an HPI,</p>
Arable farmland	<p>The majority of the Order limits consists of arable farmland (Photographs 8-9). This is largely in intensive agricultural management, with the majority of field margins measuring less than 1 m in width, particularly in the west and east of the Order limits. Many fields are very large (the largest being over 58 ha),. The fields supported a very low diversity of arable weed species.</p> <p>During the surveys, the fields were either bare having recently been ploughed, supported cereal stubble or young crops.</p> <p>The arable fields are of low intrinsic ecological value and are not HPIs. The intense nature of the agricultural practice and very limited margins mean they are not considered to be ecologically valuable.</p>
Improved grassland	<p>Areas of improved grassland are present across the Order limits, predominantly forming margins to arable fields. (All arable field margins are this habitat type or poor semi-improved grassland as described below; only margins over 1 m in width are mapped as grassland on Figure 7.3).</p> <p>Improved grassland areas are dominated by perennial rye grass <i>Lolium perenne</i> with very few herbs present (predominantly white clover <i>Trifolium repens</i> and creeping buttercup <i>Ranunculus repens</i>). At the time of the survey, these areas were unmanaged and had relatively long sward (averaging approximately 25 cm).</p> <p>This grassland does not meet the description of any HPIs.</p>
Poor semi-improved grassland	<p>Areas of species-poor semi-improved grassland are present across the Order limits (Photograph 10), predominantly forming margins to arable fields (see above). These support a slightly higher plant species diversity, and in addition to the species described above, contain grasses such as cock's-foot <i>Dactylis glomerata</i>, false oat grass <i>Arrhenatherum elatius</i> and red fescue <i>Festuca rubra</i>. Herbaceous species include greater plantain <i>Plantago major</i>, broadleaved dock <i>Rumex obtusifolium</i>, chickweed <i>Stellaria media</i>, dandelion <i>Taraxacum</i> agg., groundsel <i>Senecio vulgaris</i>, spear thistle <i>Cirsium vulgare</i>, yarrow <i>Achillea millefolium</i>, ragwort <i>Jacobaea vulgaris</i>, and</p>

	<p>common mouse-ear <i>Cerastium fontanum</i> and creeping thistle <i>Cirsium arvense</i>.</p> <p>This grassland does not meet the description of any HPis.</p>
Semi-improved neutral grassland	<p>More diverse grassland is present in the Order limits along certain arable field margins, road verges and adjacent to the river and in two small fields either side of the Essendine Dismantled Railway Embankment LWS. This has been assessed as being semi-improved neutral grassland. In addition to the grassland species listed above, additional grass species such as common bent <i>Agrostis capillaris</i>, crested dog's-tail <i>Cynosurus cristatus</i>, rough meadow grass <i>Poa trivialis</i> and tor grass <i>Brachypodium pinnatum</i> are also present. Additional herbaceous species include ribwort plantain <i>Plantago lanceolata</i>, meadow buttercup <i>Ranunculus acris</i>, bladder campion <i>Silene vulgaris</i>, field scabious <i>Knautia arvensis</i>, common knapweed <i>Centaurea nigra</i>, greater knapweed <i>Centaurea scabiosa</i> and red clover <i>Trifolium pratense</i>. Species indicative of underlying calcareous conditions are present, but nowhere do these become abundant to determine any given location or parcel is calcareous in nature. Due to the relatively low species richness and absence of indicator species for lowland meadows, this grassland does not meet the description of the <i>Lowland Meadows</i> HPI (Maddock, 2011).</p>
Dense scrub	<p>A former railway embankment in the west of the Order limits (designated as the Essendine Dismantled Railway Embankment LWS) features dense mixed scrub of comparative high species richness (Photograph 13). Woody species include hawthorn, blackthorn, field maple, holly, elder, hazel, cherry <i>Prunus</i> sp., bramble, wych elm <i>Ulmus glabra</i>, and occasional dog rose <i>Rosa canina</i> all present. The ground flora was diverse with bluebell, dog's mercury, lords and ladies, wood sorrel, and foxglove all present.</p> <p>Other patches of dense scrub were also present across the western half of the Order limits, these were all species-poor and often dominated by a single species, generally either bramble, hawthorn or blackthorn. The ground flora within these patches was either non-existent or very sparse and lacking in diversity.</p>
Tall ruderal vegetation	<p>Small pockets of tall ruderal vegetation are present, particularly in the western half of the Order limits. These are too small to map (and are not shown on Figure 7.3) and often form transitional areas between other habitat types. Species noted included common nettle, broad-leaved dock and common hogweed. This habitat does not meet the description of any HPis.</p>

Ditches	A mixture of dry and wet field ditches are present across the Order limits (Photograph 14). These generally did not feature aquatic vegetation, with any vegetation present reflecting the surrounding habitat (generally species-poor grassland field margins as described above). This habitat does not meet the description of any HPis.
Scattered trees	A variety of scattered mature trees are located across the Order limits. These are dominated by pedunculate oak and ash, and often indicate the lines of former hedgerows. In one location in the east of the Order limits two lines of planted oaks form an avenue each side of a farm track (Photograph 18). Many of these trees have suitability for roosting bats as discussed below.
Bare ground	Some access tracks and an area around farm buildings in the east of the Order limits are compacted gravel with little or no vegetation and are classified as bare ground. This habitat does not meet the description of any HPis.
Buildings	Nine farm buildings are present in the Order limits. These are discussed in detail under “Bats” below”. This habitat does not meet the description of any HPis.
Hardstanding	Parts of the area around the buildings in the east of the Order limits and short sections of metalled road within the Order limits boundary are classed as hardstanding. This habitat does not meet the description of any HPis.

- 3.19 The Order limits does not include woodland, though woodland plots are present adjacent to the Order limits and within parcels excluded from the Order limits boundary,
- 3.20 Ancient woodland is present in parcels outside the Order limits on the north-eastern Order limits boundary (replanted ancient woodland at Braceborough Little Wood) and north-western Order limits boundary (ancient woodland and replanted ancient woodland at Newell Wood).

Protected species

- 3.21 The relevant legislation and policy on protected and notable species is set out in Annex 2.

Bats

- 3.22 All bats and their roosts are a European Protected Species (see Annex 2). Seven species area also SPis and local BAPs exist for these species in Lincolnshire, Leicestershire and Rutland.

- 3.23 Combined, the records centres returned 205 records of at least eight bat species from within 2 km of the Order limits. Of these, 96 were identified to species level. These comprised brown long-eared bat *Plecotus 17octule* (28 records), common pipistrelle *Pipistrellus pipistrellus* (19), soprano pipistrelle *Pipistrellus pygmaeus* (17), Daubenton's bat *Myotis 17octule17niid* (ten), noctule *Nyctalus 17octule* (nine), Natterer's bat *Myotis nattereri* (five), Leisler's bat *Nyctalus leisleri* (four), barbastelle (three) and whiskered bat *Myotis mystaciunus* (one).
- 3.24 The remaining records comprised unknown bat species (79 records), unidentified *Pipistrellus* species (18) and unidentified *Myotis* species (11).
- 3.25 The closest record of a bat to the Order limits was a roost of an unknown bat species recorded from droppings 120 m west of Order limits boundary near Essendine Church in 2005. All bats are European protected species (see Annex2) while soprano pipistrelle, Barbastelle and brown long-eared bat are additionally Species of Principal Importance (SPI)³.

Roosting

- 3.26 The southern group of three buildings in the east of the Order limits are agricultural barns built around a steel frame with corrugated asbestos cement and/or corrugated steel cladding. These barns were not accessed internally during the Phase 1 habitat survey, however no PRFs were visible externally and given the structure of the buildings they are considered unlikely to present any roosting opportunities internally. These buildings have Negligible suitability for roosting bats.
- 3.27 A total of 163 field and hedgerow trees across the Order limits were assessed as having at least Low suitability for roosting bats, although due to the scale of the Order limits and the fact that all mature trees are proposed for retention in the development, detailed identification of potential roost features and grading of suitability was not carried out. Trees with bat suitability are shown in Figure 7.4. Additionally, mature patches of woodland on Order limits are likely to contain further trees with roosting opportunities for bats.

Foraging and commuting

- 3.28 The intensively-managed arable fields which make up the great majority of the Order limits are likely to be of very low value for foraging bats.
- 3.29 The parcels of woodland (particularly areas of mature woodland with large trees) have suitability for foraging, as do hedgerows, scrub and lines of trees, especially where mature trees and other features such as ponds are present and the boundary features are reasonably continuous. Small pockets of semi-improved neutral grassland also have moderate suitability for foraging, especially where these are associated with hedgerows or other woody features.
- 3.30 Hedgerows and lines of trees (as well as linear scrub features such as the Essendine Dismantled Railway Embankment LWS) may also provide important commuting routes for bats, especially where they form continuous corridors across

³ As defined under Section 41 of the Natural Environment and Rural Communities Act 2006. See Annex 2.

the Order limits or between woodland patches, and/or have wide grassland margins. The West Glen River represents a High Suitability feature for both foraging and commuting bats.

- 3.31 Due to the likely retention in the proposed development of all buildings, mature trees, woodland, scrub and hedgerows and the likely enhancements associated with conversion of intensively-managed arable land to grazed grassland around the PV Arrays plus additional landscaping and planting, further survey for bats was not considered proportionate.

Badger

- 3.32 Badger is protected under the Protection of Badgers Act 1992 (see Annex 2).
- 3.33 Combined, the records centres returned 98 records of badger *Meles meles* from within 2 km of the Order limits. Seven records originated from the Order limits, five of which relate to sets within the Essendine Dismantled Railway Embankment LWS in the centre of the Order limits.
- 3.34 The intensively-managed arable fields which make up the great majority of the Order limits are of low value for foraging badgers. However, the woodland, hedgerows, scrub and other woody features have suitability for foraging and sett-building this species, and patches of non-woody, semi-natural habitats such as grassland field margins and tall ruderal vegetation provide additional suitable habitat.
- 3.35 A total of 19 badger setts were located across the Order limits (see Confidential Figure 7.7). The details are given in Confidential Annex 4.

Hazel Dormouse

- 3.36 Hazel dormouse is a European Protected Species (see Annex 2) as well as an SPI and local BAP species in Leicestershire and Rutland.
- 3.37 The records centres returned no records of hazel dormouse *Muscardinus avellanus* from within 2 km of the Order limits. This species is rare but present in Rutland and Lincolnshire. The hedgerows and woodland patches provide suitable habitat for this species, although the relatively poor connectivity of hedgerows (particularly in the eastern part of the Order limits where hedgerows have frequent gaps) limit the suitability of the Order limits at a landscape level. It is therefore possible that this species is present on Order limits.

Water vole

- 3.38 Water voles and their burrows are fully protected under the Wildlife and Countryside Act 1981 (as amended - see Annex 2) and are an SPI and a local BAP species in Lincolnshire and Leicestershire and Rutland.

- 3.39 The records centres returned 12 records of water vole *Arvicola amphibius* from within 2 km of the Order limits. The closest record of this species to the Order limits was approximately 40 m west of the Order limits boundary in the West Glen River near Essendine and dates from 1996.
- 3.40 During the water vole survey visit, the field ditches on site were found to be unsuitable for water vole. Most of those which held water during the extended Phase 1 habitat survey were dry at the time of the water vole survey visit and all ditches are intensively managed, with only narrow margins of short semi-improved grassland and an absence of suitable dense aquatic or marginal vegetation (such as rushes, sedges or reeds) that could provide cover either for feeding water voles, or for water vole burrows. The arable farmland and woodland that comprises the majority of the Order limits is not suitable for water vole.
- 3.41 The West Glen River does feature extensive cover of aquatic and marginal plants and is suitable habitat for water vole. During the survey visit, evidence of the presence of water voles was found along a stretch of the West Glen River measuring approximately 180 m where it crosses the Order limits. This comprised six burrows, five latrines and four feeding stations (see Figure 7.5).

Otters

- 3.42 Otter is a European protected species (see Annex 2) and a local BAP species in Lincolnshire and Leicestershire and Rutland.
- 3.43 The records centres returned 20 records of otter. The closest record of an otter to the Order limits was an observation approximately 15 m north of the Order limits boundary on the West Glen River west of Carlby in 2009.
- 3.44 The West Glen River has suitability for this species, with areas of dense cover for holt-building. No evidence of otter was returned from the West Glen River during the otter and water vole survey visits, however this species may be present along this water course.

Other mammals

- 3.45 Combined, the records centres returned 82 records of three other protected and notable mammal species from within 2 km of the Order limits. These comprise brown hare *Lepus europaeus* (41 records), hedgehog *Erinaceus europaeus* (38), and harvest mouse *Micromys minutus* (three).
- 3.46 One record of brown hare from 1977 was returned within the Order limits, although this record was only returned to 2 km precision and may or may not correspond to this species onsite. The next closest record of a brown hare to the Order limits was 250 m south-west of the Order limits in 1977. The arable land comprising the majority of the Order limits, as well as smaller parcels of grassland, are suitable habitat for this species and it was recorded during all breeding bird survey visits with

a peak count of 17 individuals on 09 July. Brown hare is an SPI and a local BAP species in Lincolnshire.

- 3.47 The closest record of a hedgehog to the Order limits was 30 m north, to the east of Braceborough Grange, in 2015. The Order limits has some suitable habitat for hedgehog in the hedgerows, woodland, and grassland therefore this species may be present on Order limits. Hedgehog is an SPI.
- 3.48 The closest record of a harvest mouse originates from 1.0 km west of the Order limits in 1977, and all three records are over 40 years old. The intensive arable farmland which dominates the Order limits represents sub-optimal habitat for this species, with the poor semi-improved grassland patches and field margins providing habitat of a higher suitability. No evidence of harvest mouse was detected during the extended Phase 1 habitat survey, although this species is hard to detect and may be present on Order limits. Harvest mouse is an SPI.
- 3.49 No records of polecat *Mustela putorius* were returned by the LRC or LRERC but this species is reportedly present on the western edge of the Order limits along the Drift (information supplied by Tom Tew). This is an SPI.

Birds - breeding

- 3.50 All wild birds, their nests, eggs and young are protected under the Wildlife and Countryside Act 1981 (as amended; see Annex 2).
- 3.51 Combined, the records centres returned 1,775 records of birds from within 2 km of the Order limits, comprising 80 species.
- 3.52 Of these, the Order limits has suitability for breeding for three species specially protected under schedule 1 of the Act: red kite *Milvus milvus* (116 records), kingfisher *Alcedo atthis* (66) and barn owl *Tyto alba* (30).
- 3.53 The woodland, farm buildings and mature trees are suitable for barn owl; the closest records of this species were onsite south-west and north-west of Essendine in 2001 and 2010 respectively. The woodland and mature trees are suitable for red kite, although this species is gradually expanding its range and is still scarce as a breeding species in Northamptonshire. The closest record of this species was onsite south-west of Essendine in 2019. The West Glen river corridor is suitable for kingfisher; the closest record of this species was 50 m east of the Order limits near Banthorpe Lodge in 2017.
- 3.54 In addition, the Order limits has suitability for 15 species listed as SPI: starling *Sturnus vulgaris* (189), lapwing *Vanellus vanellus* (93), skylark *Alauda arvensis* (73), house sparrow *Passer domesticus* (68), linnet *Linaria cannabina* (35), yellowhammer *Emberiza citrinella* (32), song thrush *Turdus philomenos* (27), yellow wagtail *Motacilla flava* (21), reed bunting *Emberiza schoeniclus* (19), turtle dove *Streptopelia turtur* (14), tree sparrow *Passer montanus* (12), bullfinch *Pyrrhula*

pyrrhula (10), cuckoo *Cuculus canorus* (10), corn bunting *Emberiza calandra* (nine) and grey partridge *Perdix perdix* (seven).

- 3.55 The arable farmland onsite is suitable for breeding by skylark, lapwing, yellow wagtail and grey partridge, which are ground nesting species. Suitable habitat for the remaining SPI species listed above is confined to the woodland, hedgerows and scrub.
- 3.56 Records of bullfinch, corn bunting, lapwing, linnet, skylark, turtle dove, yellow wagtail and yellowhammer were returned from onsite, although the majority of returned records were to 1km of 2km precision so these may or may not correspond to actual observation from within the Order limits boundary.

Breeding bird survey

- 3.57 A total of 48 bird species were recorded during the bird survey as either confirmed or likely breeding onsite. These are listed in Table 9. The indicative central point of each territory or location of individual bird records is shown in Figure 7.6.

Table 9: Summary results of breeding bird survey

Common name	Scientific name	Breeding Status		Total pairs
		Confirmed	Likely	
Blackbird	<i>Turdus merula</i>		✓	32
Blackcap	<i>Sylvia atricapilla</i>		✓	21
Blue tit	<i>Cyanistes caeruleus</i>	✓	✓	63
Carrion crow	<i>Corvus corone</i>	✓	✓	11
Chaffinch	<i>Fringilla coelebs</i>		✓	28
Chiffchaff	<i>Phylloscopus collybita</i>	✓	✓	42
Coal tit	<i>Periparus ater</i>		✓	11
Collared Dove	<i>Streptopelia decaocto</i>		✓	3
Dunnock	<i>Prunella modularis</i>		✓	20
Garden warbler	<i>Sylvia borin</i>		✓	1
Goldcrest	<i>Regulus regulus</i>		✓	4
Goldfinch	<i>Carduelis carduelis</i>		✓	15
Great spotted woodpecker	<i>Dendrocopos major</i>		✓	1
Great tit	<i>Parus major</i>		✓	24
Greenfinch	<i>Chloris chloris</i>		✓	3
Green woodpecker	<i>Picus viridis</i>		✓	3
Heron	<i>Ardea cinerea</i>		✓	1
House sparrow	<i>Passer domesticus</i>		✓	4
Jackdaw	<i>Coloeus monedula</i>	✓	✓	6
Jay	<i>Garrulus glandarius</i>		✓	1
Kestrel	<i>Falco tinnunculus</i>	✓	✓	4

Lapwing	<i>Vanellus vanellus</i>		✓	1
Lesser whitethroat	<i>Curruca curruca</i>		✓	1
Linnet	<i>Linaria cannabina</i>		✓	12
Little Egret	<i>Egretta garzetta</i>		✓	1
Long-tailed tit	<i>Aegithalos caudatus</i>	✓	✓	2
Magpie	<i>Pica pica</i>	✓	✓	8
Mistle thrush	<i>Turdus viscivorus</i>		✓	4
Nuthatch	<i>Sitta europaea</i>		✓	3
Pheasant	<i>Phasianus colchicus</i>		✓	10
Pied wagtail	<i>Motacilla alba</i>		✓	1
Raven	<i>Corvus corax</i>		✓	1
Red kite	<i>Milvus milvus</i>	✓	✓	3
Red-legged partridge	<i>Alectoris rufa</i>		✓	2
Reed bunting	<i>Emberiza schoeniclus</i>		✓	6
Robin	<i>Erithacus rubecula</i>		✓	37
Rook	<i>Corvus frugilegus</i>		✓	1
Skylark	<i>Alauda arvensis</i>	✓	✓	58
Song thrush	<i>Turdus philomelos</i>		✓	11
Starling	<i>Sturnus vulgaris</i>		✓	7
Stock dove	<i>Columba oenas</i>		✓	3
Treecreeper	<i>Certhia familiaris</i>		✓	1
Whitethroat	<i>Curruca communis</i>	✓	✓	36
Willow warbler	<i>Phylloscopus trochilus</i>		✓	1
Woodpigeon	<i>Columba palumbus</i>	✓	✓	31
Wren	<i>Troglodytes troglodytes</i>		✓	58
Yellow wagtail	<i>Motacilla flava</i>		✓	2
Yellowhammer	<i>Emberiza citrinella</i>		✓	35

- 3.58 In addition to the above, a further 12 bird species were recorded during the survey visits for which no evidence of breeding was noted. This included individuals flying over the Order limits or species which may breed locally but for which suitable nesting habitat either does not occur onsite, or where no behaviour suggesting breeding was recorded. These species are summarised in Table 10 below together with notes on use of the Order limits.

Table 10: Non-breeding bird species recorded during surveys.

Common name	Species name	Notes
Barn owl	<i>Tyto alba</i>	Pellets in a barn immediately adjacent to the Order limits boundary east of Ryhall, however this appears to be a roost with no indication of breeding.
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Occasional flyovers. No suitable breeding habitat.

Buzzard	<i>Buteo buteo</i>	Occasional hunting or roosting birds in eastern parts of the Order limits. Suitable breeding habitat (mature trees) but no breeding behaviour noted.
Grey partridge	<i>Perdix perdix</i>	Two flushed from the eastern part of the Order limits close to the railway on the April visit. Suitable habitat present and may breed but no breeding behaviour noted.
House martin	<i>Delichon urbicum</i>	Observed foraging close to the Order limits boundary south of Essendine village on the early July visit. Some suitable habitat present (old farm buildings) but no breeding behaviour noted.
Mallard	<i>Anas platyrhynchos</i>	Three flushed from pond in east of Order limits on April visit. Suitable breeding habitat present (river edges, ponds) and may breed but no breeding behaviour observed.
Moorhen	<i>Gallinula chloropus</i>	One individual calling from West Glen River on early July visit. Suitable breeding habitat present (river edges, ponds) and may breed but no breeding behaviour observed.
Siskin	<i>Spinus spinus</i>	One flyover during April visit. Small pockets of suitable habitat present (coniferous/mixed woodland) but no breeding behaviour noted.
Spotted flycatcher	<i>Muscicapa striata</i>	Observed in vicinity of farm buildings in east of Order limits on both July visit. Possibly breeds but no breeding behaviour observed.
Swallow	<i>Hirundo rustica</i>	Many foraging flyovers during later visits. Some suitable habitat present (old farm buildings) but no breeding behaviour noted.
Swift	<i>Apus apus</i>	One flyover during second July visit. Some suitable habitat present (old farm buildings) but no breeding behaviour noted.
Wheatear	<i>Oenanthe oenanthe</i>	Male observed on April visit in east of Order limits. No suitable habitat and probably a migrant.

- 3.59 Of the 48 species of bird recorded as breeding within or adjacent to the Order limits, 15 appear on one or more schedules or lists of species of conservation importance (see Table 11).

Table 11: Birds of conservation importance breeding onsite.

Species	WCA Schedule 1	SPI	Red List ¹	Amber List ¹
Dunnock		✓		✓
Greenfinch			✓	
House sparrow		✓	✓	
Kestrel				✓
Lapwing		✓	✓	
Linnet		✓	✓	
Mistle thrush			✓	
Moorhen				✓

Species	WCA Schedule 1	SPI	Red List ¹	Amber List ¹
Red kite	✓			
Reed bunting		✓		✓
Skylark		✓	✓	
Song thrush		✓		✓
Starling		✓	✓	
Stock dove				✓
Whitethroat				✓
Willow warbler				✓
Woodpigeon				✓
Wren				✓
Yellow wagtail		✓	✓	
Yellowhammer		✓	✓	

¹ Species of high (red list) and medium (amber list) conservation concern included in Birds of Conservation Concern 4 (Eaton *et al.*, 2015)

- 3.60 The surveys have recorded several breeding bird species listed as SPIs, and species which are local BAP species in Lincolnshire and Leicestershire and Rutland.

Birds-wintering

- 3.61 Of the 1775 birds of 80 species returned by the records centres, the arable farmland on Order limits has suitability to support some wintering waterbirds. Due to the relatively dry, undulating topography of the Order limits and lack of low-lying areas prone to flooding, suitability is likely to be confined to wader species preferring open dry ground such as lapwing (93 records) and golden plover (no records). One record of lapwing from 2019 was onsite south of Essendine. The Order limits is also suitable for loafing gulls such as herring gull *Larus argentatus*, lesser black-backed gull *Larus fuscus* and black-headed gull *Chroicocephalus ridibundus*, although no records were returned of these species.
- 3.62 The Order limits is not considered suitable supporting habitat for any of the species listed under the designation of the Rutland Water SPA and Ramsar site (see “Designated Sites” above) all of which require extensive areas of aquatic habitats not present onsite.
- 3.63 The Order limits supports a small number of larger fields, but these are largely in intensive arable use. Therefore, there is potential for wintering species to include species such as lapwing and golden plover *Apicaria pluvialis* as well as very small numbers of ducks. However, given that the larger fields are limited in number and that there are no SPAs for these species in the vicinity, the winter usage of the Order limits by waders and wildfowl is likely to be very limited.
- 3.64 The wintering bird surveys carried out have recorded a very limited number of species wintering on the Order limits, above the species listed above which are residents. Of note have been small flocks of yellowhammer with a peak of 50

individuals, skylark with a peak of 40 individuals, redwing with a peak of 200, fieldfare with a peak of 450 (but lower numbers at other times).

- 3.65 A larger flock of starling estimated at 3,000 individuals was noted feeding on 24 November 2021 in a field which was recently ploughed located in the centre of the Order limits, immediately east of the railway. It should be noted however that this large flock was mobile and only much smaller flocks have been recorded on other occasions (peaks of 500 and 200).
- 3.66 Waders have been observed very infrequently. Lapwing was recorded on four occasions, with a peak of 90 individuals on 27 January 2022 but this was in a field off site to the north-east. The remaining three occasions the birds were on the Order limits but these involved one and two birds only golden plover (11 individuals) recorded on one occasion on 10 January 2022 in an arable field in the northern part of the Order limits.
- 3.67 Wildfowl were noted very infrequently. One more sizeable flock of mallard *Anas platyrhynchos* was noted on 14 December 2021 with 60 individuals present in an arable field near the centre of the Order limits, but very low numbers of these species were recorded at other times (nine or fewer individuals). A small field at the centre of the Order limits immediately south of the West Glen River supported wigeon on one occasion (six individuals), gadwall (two individuals) on one occasion and tufted duck (three individuals) on one occasion. These individuals are likely to have been opportunistically using a small wet area and were not recorded here at other times. Mute swan was recorded very infrequently as well (one observation of two individuals).
- 3.68 Given the very low numbers and frequency of records of wildfowl and the distance from the Rutland Water SPA and Ramsar site, it is highly unlikely that the Order limits provides functionally linked land to these designated sites.

Reptiles

- 3.69 All reptiles are fully protected under the Wildlife and Countryside Act 1981 (as amended; see Annex 2) and all six species are also SPIs.
- 3.70 Combined, the records centres returned 43 records of three reptile species from within 2 km of the Order limits: common lizard *Zootoca vivipara* (22 records), grass snake *Natrix helvetica* (19) and slow worm *Anguis fragilis* (two). Two records of common lizard originate from within the Order limits, one adjacent to an isolated patch of woodland in the east of the Order limits in 2020, and one adjacent to a road in the north-west of the Order limits in 1996.
- 3.71 The Order limits has some suitable habitat for reptiles, predominantly longer and less-managed grassland forming field margins to arable fields. The riparian vegetation along the banks of the West Glen River are also suitable for grass snake.

Amphibians

- 3.72 GCN is a European protected species and an SPI as well as a local BAP species in Lincolnshire, while common toad is an SPI.
- 3.73 Combined, the records centres returned 34 records of amphibians from within 2 km of the Order limits. These included 10 records of great crested newt *Triturus cristatus* (GCN) and five records of common toad *Bufo bufo*. The closest record of a GCN to the Order limits was 470 m north-east of the Order limits in Braceborough during 2013. The closest record of a common toad was 350 m from the Order limits boundary in Essendine during 2000. The remaining records related to the common and widespread common frog *Rana temporaria* and smooth newt *Lissotriton vulgaris*.
- 3.74 An analysis of aerial imagery and mapping revealed the presence of nine ponds onsite, with an additional 13 ponds offsite but within 500 m of the Order limits (see Figure 7.2). Of the on site ponds, three were found to be dry or absent altogether (ponds 18, 19 and 20) during the extended Phase 1 habitat survey. The remaining six onsite ponds (Ponds 3, 4, 5, 6, 7 and 8) held water and these, plus two offsite ponds which were immediately adjacent to the Order limits boundary and accessible from the Order limits (Ponds 1 and 2), were surveyed using HSI and eDNA.
- 3.75 Of these ponds, six were scored as “poor” or “below average” using the Habitat Suitability Indicators, while one scored “average” and another scored “good” (see Table 3)

Table 3. Description and HSI results of onsite and adjacent ponds

Pond	Description	HSI score	HSI classification
1	Small isolated field pond surrounded by scrub, trees and grassland, heavily shaded and likely to dry frequently. No wildfowl or fish present. Moderate water quality and 75% aquatic vegetation cover.	0.48	Poor
2	Large pond or small lake (old flooded pit). Minimal shading, moderate terrestrial habitat surrounding the pond. Abundant wildfowl and fish likely to impede survival of GCN. Good water quality, 5% aquatic vegetation cover.	0.32	Poor
3	Moderately-sized pond in woodland near edge. Completely shaded and likely to dry frequently. Good terrestrial habitat around pond. No fish and low numbers of wildfowl but water quality poor and minimal aquatic vegetation.	0.37	Poor

Pond	Description	HSI score	HSI classification
4	Large pond in woodland near edge. 50% shaded, likely to dry occasionally. Good terrestrial habitat around pond. No fish and low numbers of wildfowl, water quality moderate. 25% aquatic vegetation cover.	0.77	Good
5	Small pond at edge of wooded strip at field boundary with minimal shading. Likely to dry frequently. Some surrounding grassland and other nearby woodland (good terrestrial habitat surrounding pond). No wildfowl or fish, water quality good. 75% aquatic vegetation cover.	0.56	Below average
6	Moderate to large pond in small pocket of woodland by farm buildings used for rearing of captive wildfowl. Heavily shaded, unlikely to dry. Poor terrestrial habitat surrounding (small amount of surrounding woodland heavily disturbed by wildfowl and game rearing, minimal cover). Fish likely absent but abundant wildfowl. Water quality very poor and no aquatic vegetation.	0.24	Poor
7	Small to moderate pond at edge of hedgerow otherwise surrounded by arable field. 45% shaded, likely to dry occasionally. Moderate terrestrial habitat surrounding (hedgerow, arable margin, small pocket of scrub/grassland). Fish and wildfowl absent, water quality moderate. 45% aquatic vegetation cover.	0.63	Average
8	Small pond at edge of woodland strip. Heavily shaded, likely to dry occasionally. Good terrestrial habitat surrounding (adjacent woodland). Fish and wildfowl absent, water quality moderate. Negligible aquatic vegetation cover.	0.48	Poor

3.76 Ponds 1-8 were accessed for eDNA survey. The results for all eight ponds were negative (Annex 3) indicating that GCN are likely absent from these ponds.

3.77 Ponds 9 and 10 are located over 250 m from the Solar PV Site and were therefore not subject to further surveys due to the distance involved and the very low likelihood of individuals from these ponds being present in areas to be subject to works.

- 3.78 Pond 11 is located within an extensive area of woodland over 770 m from the nearest proposed works, and has therefore not been subject to further work.
- 3.79 Pond 12 is 430 m from the Order limits and surrounded by good terrestrial habitat. GCN from both these ponds (if present) are unlikely to be using the Order limits.
- 3.80 Pond 16 was found to be dry in June 2022, but a pond not present on online mapping was located during this visit and named Pond 21. Pond 15 was also found to not be a pond, but an area used for compost storage and rotting.
- 3.81 In total, eDNA surveys were carried out at four offsite ponds in 2022 (Ponds 13, 14, 17, 21) as these varied between 50m and 250m from the Order limits. The pond locations are indicated on Figure 7.2. During the sampling work for these surveys, a great crested newt larva was found in Pond 13. The remaining four ponds returned a negative result of the sample analysis.
- 3.82 Two new ponds were also located in a garden adjacent to the western extent of the Order limits, and these have been named Ponds 22 and 23. These were located after the survey season had finished in 2022, but due to the distance to the nearest proposed works (over 250 m), no additional surveys are required.
- 3.83 Overall therefore presence of great crested newt has been confirmed at Pond 13 only, located 80 m from the Order limits.

Invertebrates

- 3.84 Combined, the records centres returned 681 records of 47 invertebrate species from within 2 km of the Order limits. The Order limits generally offers poor or very poor habitat for invertebrates due to the intensive management of the arable land, and the majority of habitats are unlikely to support any notable populations or assemblages of invertebrates. The more mature woodland areas and veteran trees within field boundary features may support some saproxylic (dead wood-reliant) species, while the aquatic habitats (particularly the West Glen River) may support notable aquatic species.

Plants

- 3.85 The LRC and LRERC returned 1,200 records of 251 plant species within 2km of the Order limits. This includes a range of notable species which are typical of more diverse grassland such as bee orchid *Ophrys apifera*, man orchid *Orchis anthropophora*, and arable weeds including corn chamomile *Anthemis arvensis*, hound's -tongue *Cynoglossum officinale*, night-flowering catchfly *Silene noctiflora*, sharp-leaved fluellen *Kickxia elatine*, sulphur clover *Trifolium ochroleucon* and venus' looking-glass *Triodanis perfoliata*.
- 3.86 The majority of the Order limits comprises intensively managed, species-poor habitats of low or very low value for plant diversity, and is unlikely to support any

notable populations or assemblages of plants. The more mature woodland areas and aquatic habitats may support some notable species.

4 References

- Ref 1 JNCC (2010). *Handbook for Phase One Habitat Survey* [online]
<http://jncc.defra.gov.uk/page-2468>
- Ref 2 Collins, J. (ed.) 2016. *Bat surveys for professional ecologists: Good practice guidelines*. The Bat Conservation Trust, London
- Ref 3 Strachan, R., Moorhouse, T. and Gelling, M. (2011) *Water Vole Conservation Handbook*. Third Edition. Wildlife Conservation Research Unit, Oxford.
- Ref 4 Neal, E., and Cheeseman, C.L. (1996). *Badgers*. T & AD Poyser Natural History Ltd, London
- Ref 5 Harris, S., Cresswell, P. and Jeffries, D. (1989). *Surveying Badgers. Occasional publication of Mammal Society, number 9*. Mammal Society.
- Ref 6 Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). *Herpetological Journal* **10** (4): 143-155.
- Ref 7 Biggs, J., Ewald, N., Valentini, A., Gaboriaud, C., Griffiths, RA., Foster, J., Wilkinson, J., Arnett, A., Williams, P., and Dunn, F. (2014). *Analytical and methodological development for improved surveillance of the Great Crested Newt. Appendix 5. Technical advice note for field and laboratory sampling of great crested newt (Triturus cristatus) environmental DNA*. Freshwater Habitats Trust, Oxford.
- Ref 8 Maddock, A. (ed) (2011). UK Biodiversity Action Plan Priority Habitat Descriptions (updated Dec. 2011). Joint Nature Conservation Committee, Peterborough.

5 Figures

Figure 7.1: Order limits boundary and location of designated sites

Figure 7.2: Ponds within 500 m of the Order limits

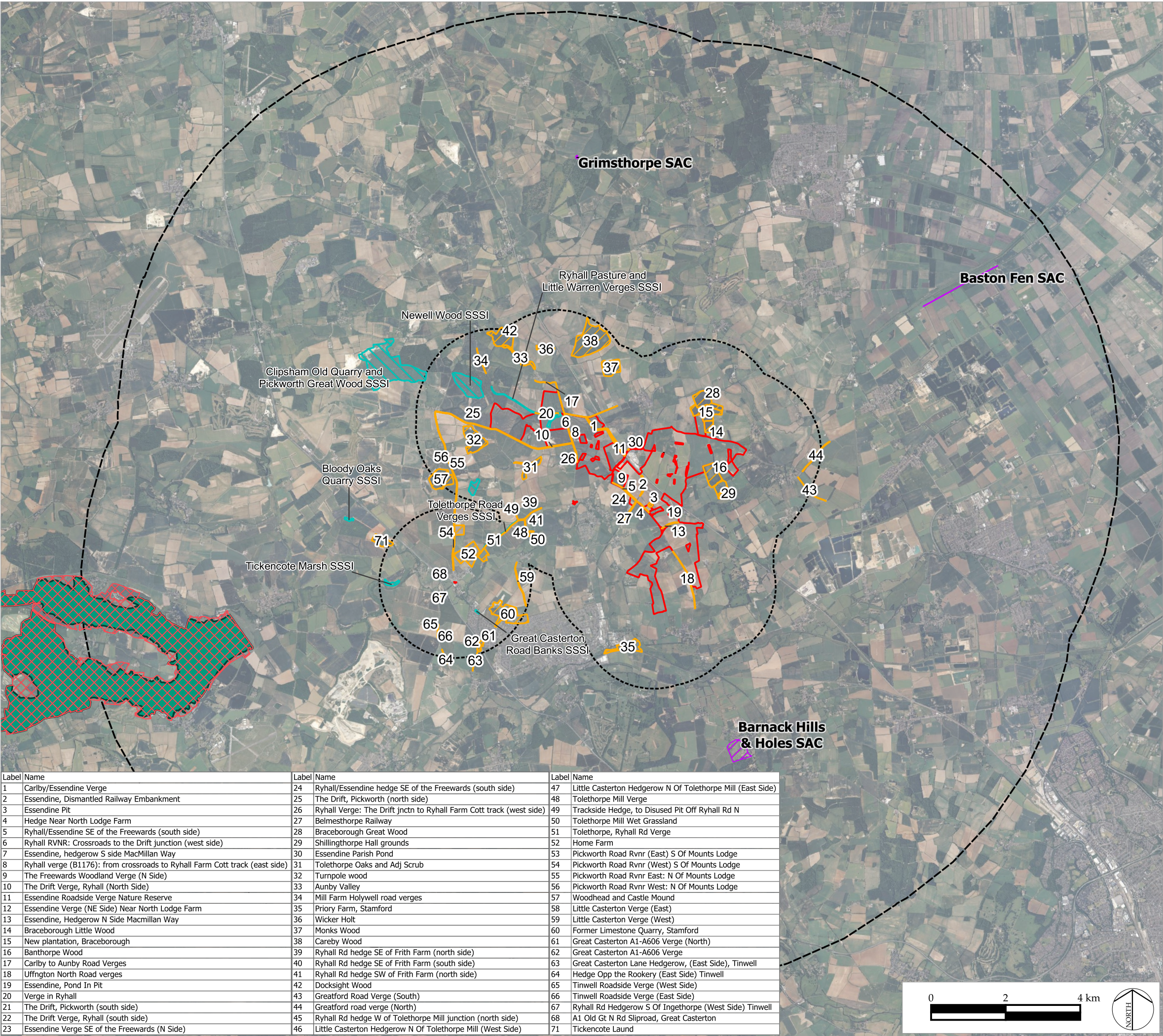
Figure 7.3: Phase 1 habitats plan

Figure 7.4: Trees with bat roost suitability

Figure 7.5: Water vole evidence

Figure 7.6: Breeding bird indicative territory map

Figure 7.7: Confidential: locations of badger setts



Label	Name	Label	Name	Label	Name
1	Carlby/Essendine Verge	24	Ryhall/Essendine hedge SE of the Freewards (south side)	47	Little Casterton Hedgerow N Of Tolethorpe Mill (East Side)
2	Essendine, Dismantled Railway Embankment	25	The Drift, Pickworth (north side)	48	Tolethorpe Mill Verge
3	Essendine Pit	26	Ryhall Verge: The Drift jcnctn to Ryhall Farm Cott track (west side)	49	Trackside Hedge, to Disused Pit Off Ryhall Rd N
4	Hedge Near North Lodge Farm	27	Belmesthorpe Railway	50	Tolethorpe Mill Wet Grassland
5	Ryhall/Essendine SE of the Freewards (south side)	28	Braceborough Great Wood	51	Tolethorpe, Ryhall Rd Verge
6	Ryhall RVNR: Crossroads to the Drift junction (west side)	29	Shillingthorpe Hall grounds	52	Home Farm
7	Essendine, hedgerow S side MacMillan Way	30	Essendine Parish Pond	53	Pickworth Road Rvnr (East) S Of Mounts Lodge
8	Ryhall verge (B1176): from crossroads to Ryhall Farm Cott track (east side)	31	Tolethorpe Oaks and Adj Scrub	54	Pickworth Road Rvnr (West) S Of Mounts Lodge
9	The Freewards Woodland Verge (N Side)	32	Turnpole wood	55	Pickworth Road Rvnr East: N Of Mounts Lodge
10	The Drift Verge, Ryhall (North Side)	33	Aunby Valley	56	Pickworth Road Rvnr West: N Of Mounts Lodge
11	Essendine Roadside Verge Nature Reserve	34	Mill Farm Holywell road verges	57	Woodhead and Castle Mound
12	Essendine Verge (NE Side) Near North Lodge Farm	35	Priory Farm, Stamford	58	Little Casterton Verge (East)
13	Essendine, Hedgerow N Side Macmillan Way	36	Wicker Holt	59	Little Casterton Verge (West)
14	Braceborough Little Wood	37	Monks Wood	60	Former Limestone Quarry, Stamford
15	New plantation, Braceborough	38	Careby Wood	61	Great Casterton A1-A606 Verge (North)
16	Banthorpe Wood	39	Ryhall Rd hedge SE of Frith Farm (north side)	62	Great Casterton A1-A606 Verge
17	Carlby to Aunby Road Verges	40	Ryhall Rd hedge SE of Frith Farm (south side)	63	Great Casterton Lane Hedgerow, (East Side), Tinwell
18	Uffngton North Road verges	41	Ryhall Rd hedge SW of Frith Farm (north side)	64	Hedge Opp the Rookery (East Side) Tinwell
19	Essendine, Pond In Pit	42	Docksight Wood	65	Tinwell Roadside Verge (West Side)
20	Verge in Ryhall	43	Greatford Road Verge (South)	66	Tinwell Roadside Verge (East Side)
21	The Drift, Pickworth (south side)	44	Greatford road verge (North)	67	Ryhall Rd Hedgerow S Of Ingethorpe (West Side) Tinwell
22	The Drift Verge, Ryhall (south side)	45	Ryhall Rd hedge W of Tolethorpe Mill junction (north side)	68	A1 Old Gt N Rd Sliproad, Great Casterton
23	Essendine Verge SE of the Freewards (N Side)	46	Little Casterton Hedgerow N Of Tolethorpe Mill (West Side)	71	Tickencote Laund

Infrastructure Planning (Applications:
Prescribed Forms and Procedure) Regulations 2009
APFP Regulation: 5(2)(a) and Regulation: 5 (2)(l).

PINS REFERENCE NUMBER
EN010127

LEGEND

Internationally designated sites within 10 km

Special Area of conservation (SAC)

Special Protection Area (SAP)

RAMSAR sites

Nationally designated sites within 2 km

Site of Special Scientific Interest (SSSI)

Local Wildlife Site (LWS)

Order limits

Order limits

2km from order limits

10km from order limits

REV.
P0

DESCRIPTION
DO Submission

APP.
RP

DATE
22/11/22

Mallard
Pass

Solar Farm

PROJECT TITLE

MALLARD PASS SOLAR FARM

DRAWING TITLE

Figure 7.1: Statutory and Non-Statutory Nature Conservation Designations Plan (Map 1 of 2)

ISSUED BY

Oxford

T:

01865 887050

DATE

22 Nov 2022

DRAWN

CS

SCALE @ A3

1 : 100000

CHECKED

JB

STATUS

Final

APPROVED

RP

DWG. NO.

7863_SK_311

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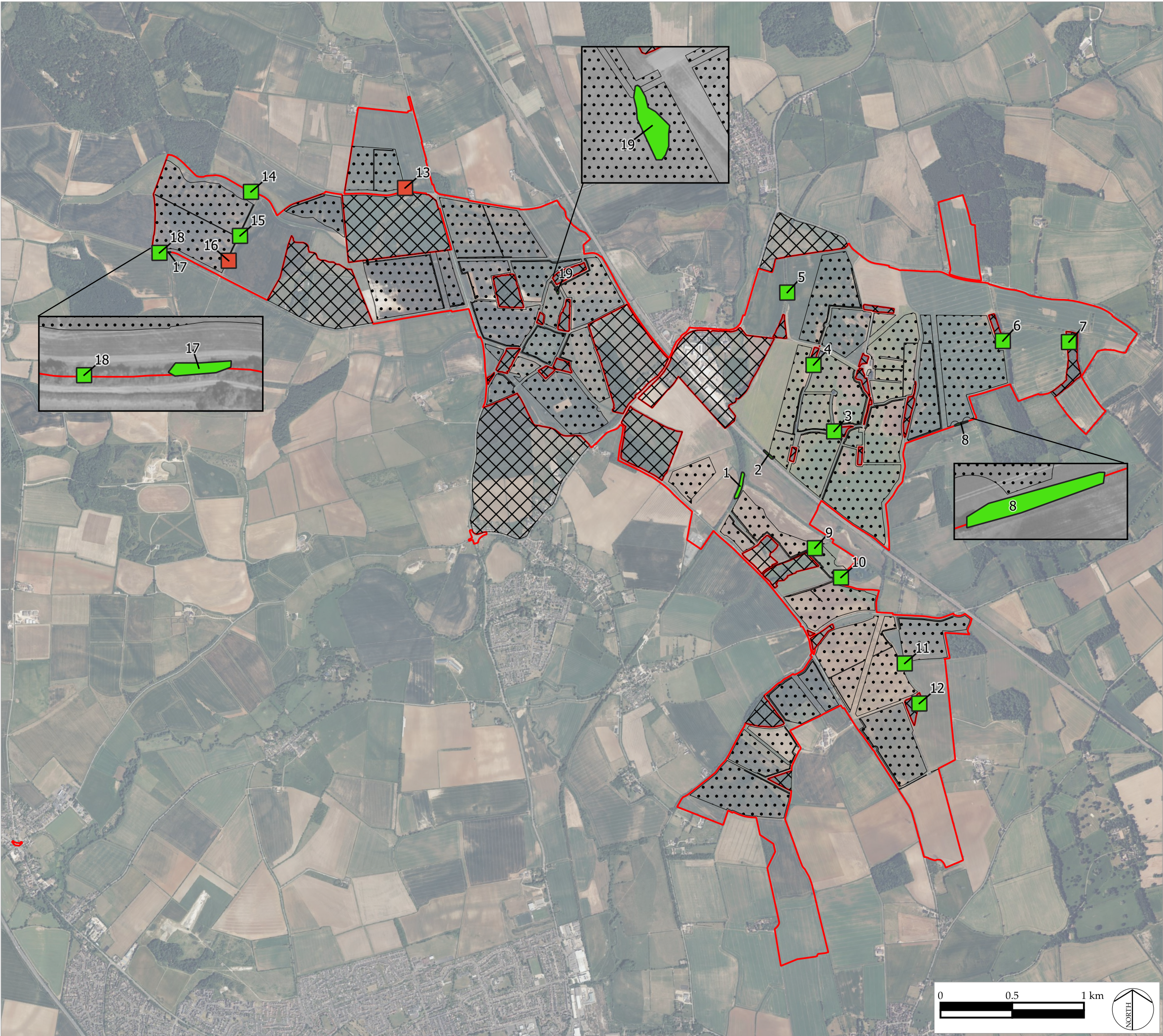
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LEGEND

Essendine set status:

- Active
- Disused
- Solar PV Locations
- Order limits
- Areas outside order limits

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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.7: CONFIDENTIAL - Locations of
badger setts

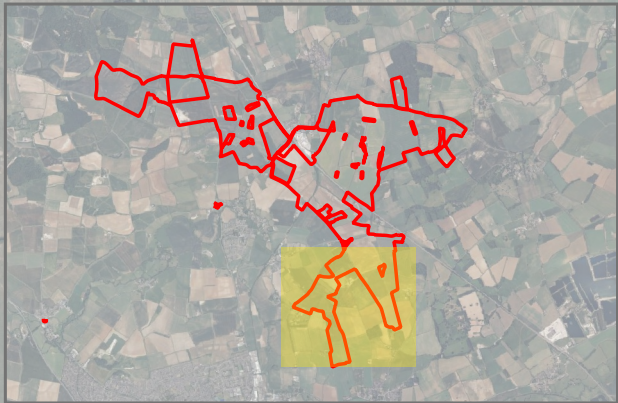
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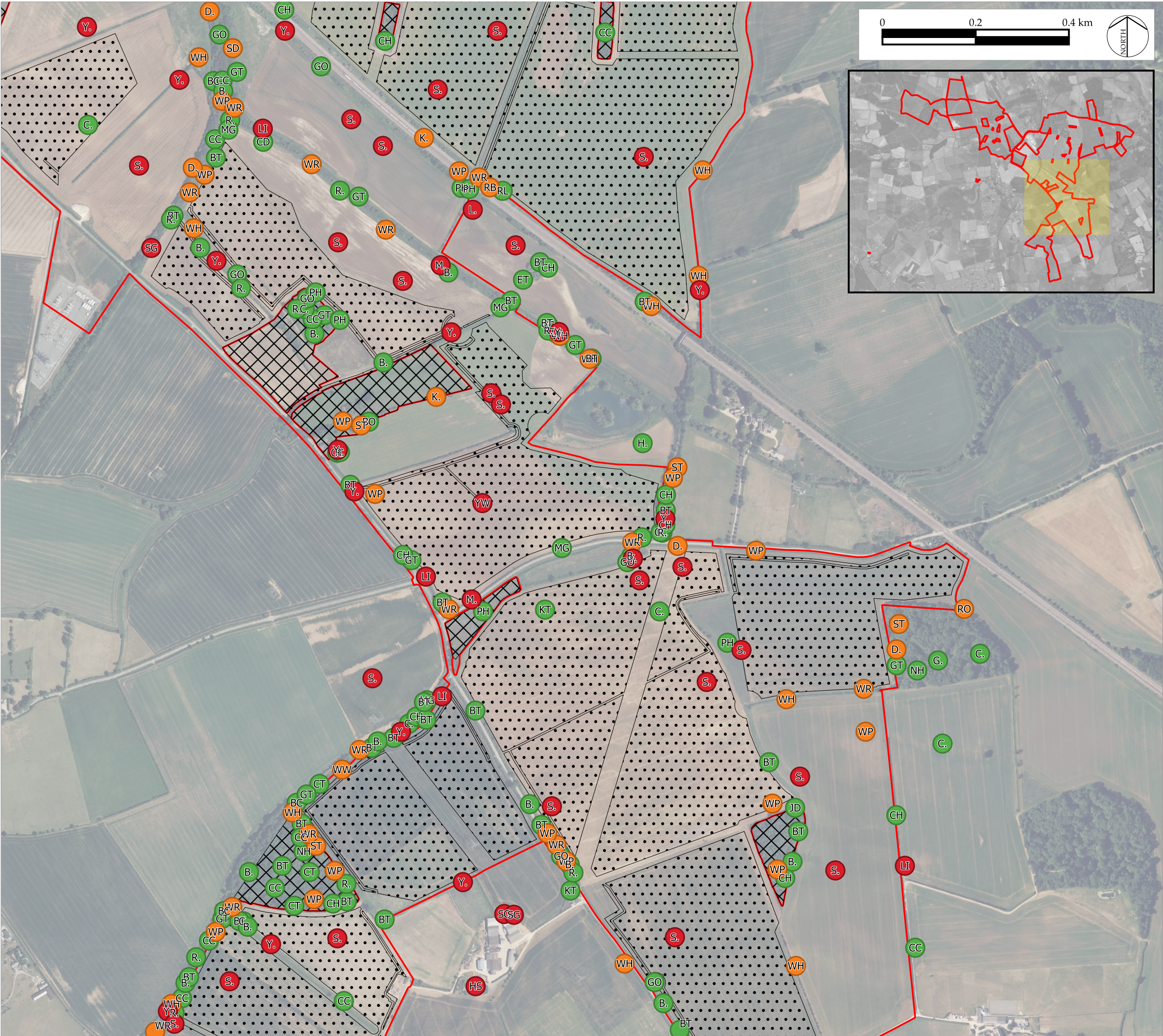
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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a)

PINS REFERENCE NUMBER
EN010127

LEGEND

Birds of Conservation Concern (BoCC) Status:

Red

Amber

Green

•••

Solar PV Locations

Order limits

Areas outside order limits

BTO Code	Common Name	BTO Code	Common Name
B.	Blackbird	LI	Linnet
BC	Blackcap	LT	Long-tailed Tit
BO	Barn Owl	M.	Mistle Thrush
BT	Blue Tit	MG	Magpie
C.	Carrion Crow	NH	Nuthatch
CC	Chiffchaff	PH	Pheasant
CD	Collared Dove	R.	Robin
CH	Chaffinch	RB	Reed Bunting
CT	Coal Tit	RL	Red-legged Partridge
D.	Dunnock	RO	Rook
ET	Little Egret	S.	Skylark
G.	Green Woodpecker	SD	Stock Dove
GO	Goldfinch	SG	Starling
GT	Great Tit	ST	Song Thrush
H.	Grey Heron	WH	Whitethroat
HS	House Sparrow	WP	Woodpigeon
JD	Jackdaw	WR	Wren
K.	Kestrel	WW	Willow Warbler
KT	Red Kite	Y.	Yellowhammer
L.	Lapwing	YW	Yellow Wagtail

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PROJECT TITLE
MALLARD PASS SOLAR FARM

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Figure 7.6: Breeding bird indicative territories
(Map 5 of 6)

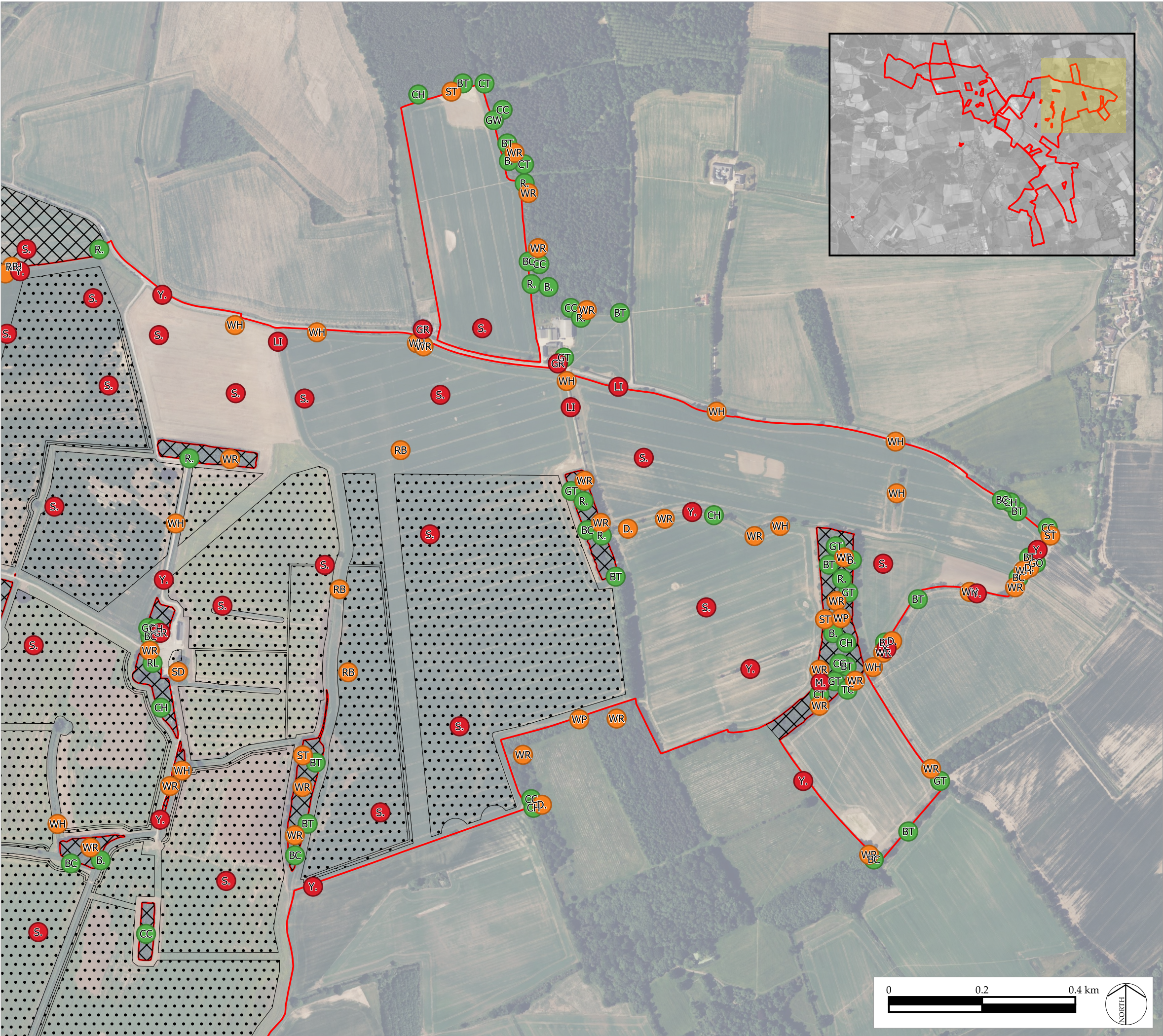
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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a)
PINS REFERENCE NUMBER
EN010127

LEGEND

Birds of Conservation Concern (BoCC) Status:

- Red
- Amber
- Green
- Solar PV Locations
- Order limits
- Areas outside order limits

BTO Code	Common Name	BTO Code	Common Name
B.	Blackbird	M.	Mistle Thrush
BC	Blackcap	R.	Robin
BT	Blue Tit	RB	Reed Bunting
CC	Chiffchaff	RL	Red-legged Partridge
CH	Chaffinch	S.	Skylark
CT	Coal Tit	SD	Stock Dove
D.	Dunnock	ST	Song Thrush
GC	Goldcrest	TC	Tree Creeper
GO	Goldfinch	WH	Whitethroat
GR	Greenfinch	WP	Woodpigeon
GT	Great Tit	WR	Wren
GW	Garden Warbler	Y.	Yellowhammer
LI	Linnet		

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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.6: Breeding bird indicative territories
(Map 4 of 6)

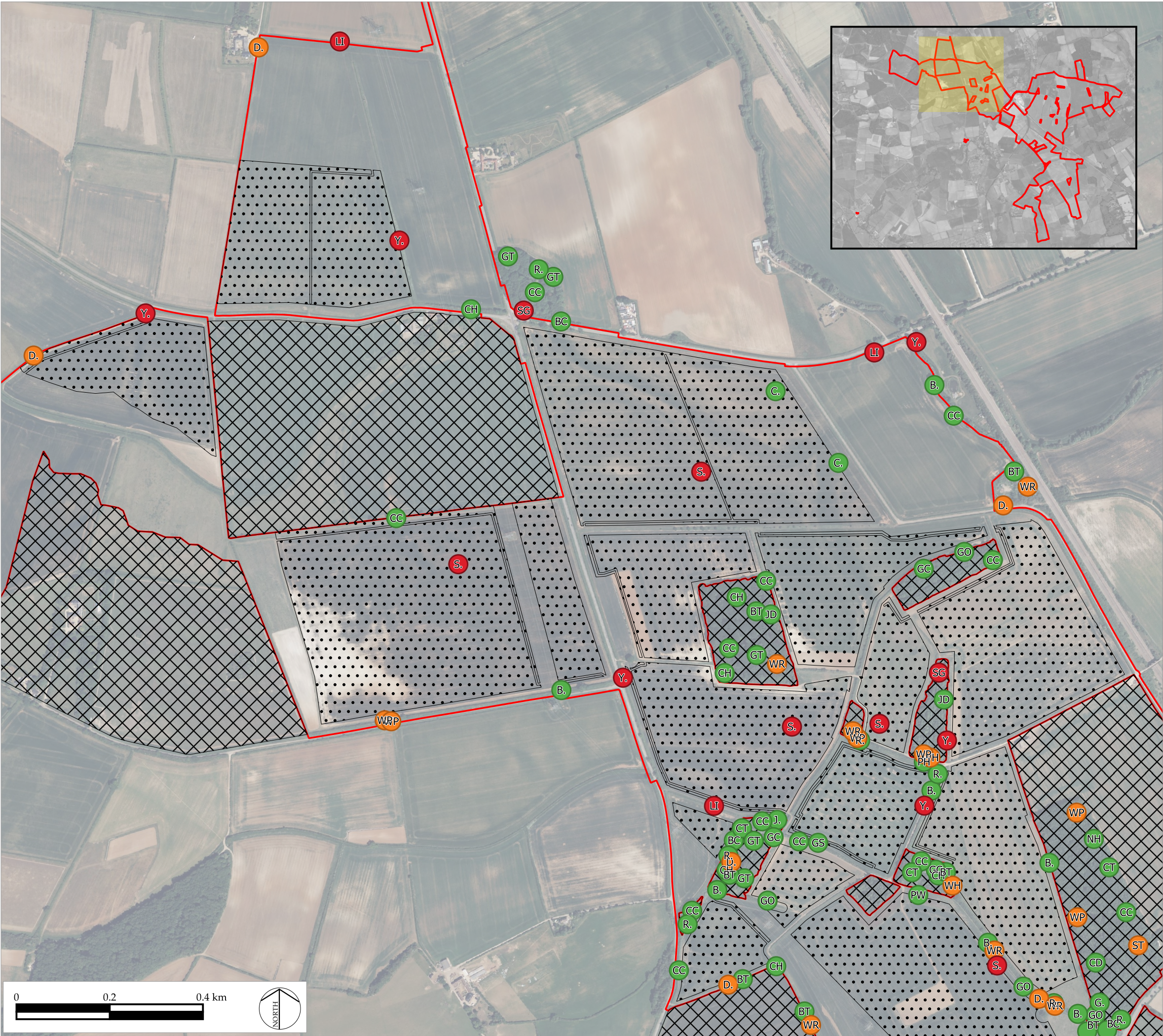
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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a)

PINS REFERENCE NUMBER
EN010127

- LEGEND
- Birds of Conservation Concern (BoCC) Status:
- Red
 - Amber
 - Green
 - Solar PV Locations
 - Order limits
 - Areas outside order limits

BTO Code	Common Name	BTO Code	Common Name
B.	Blackbird	NH	Nuthatch
BC	Blackcap	PH	Pheasant
BT	Blue Tit	PW	Pied Wagtail
C.	Carrion Crow	R.	Robin
CC	Chiffchaff	S.	Skylark
CD	Collared Dove	SG	Starling
CH	Chaffinch	ST	Song Thrush
CT	Coal Tit	WH	Whitethroat
D.	Duncock	WP	Woodpigeon
G.	Green Woodpecker	WR	Wren
GC	Goldcrest	Y.	Yellowhammer
GO	Goldfinch		
GS	Great Spotted Woodpecker		
GT	Great Tit		
J.	Jay		
JD	Jackdaw		
LI	Linnet		

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PROJECT TITLE
MALLARD PASS SOLAR FARM

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Figure 7.6: Breeding bird indicative territories
(Map 2 of 6)

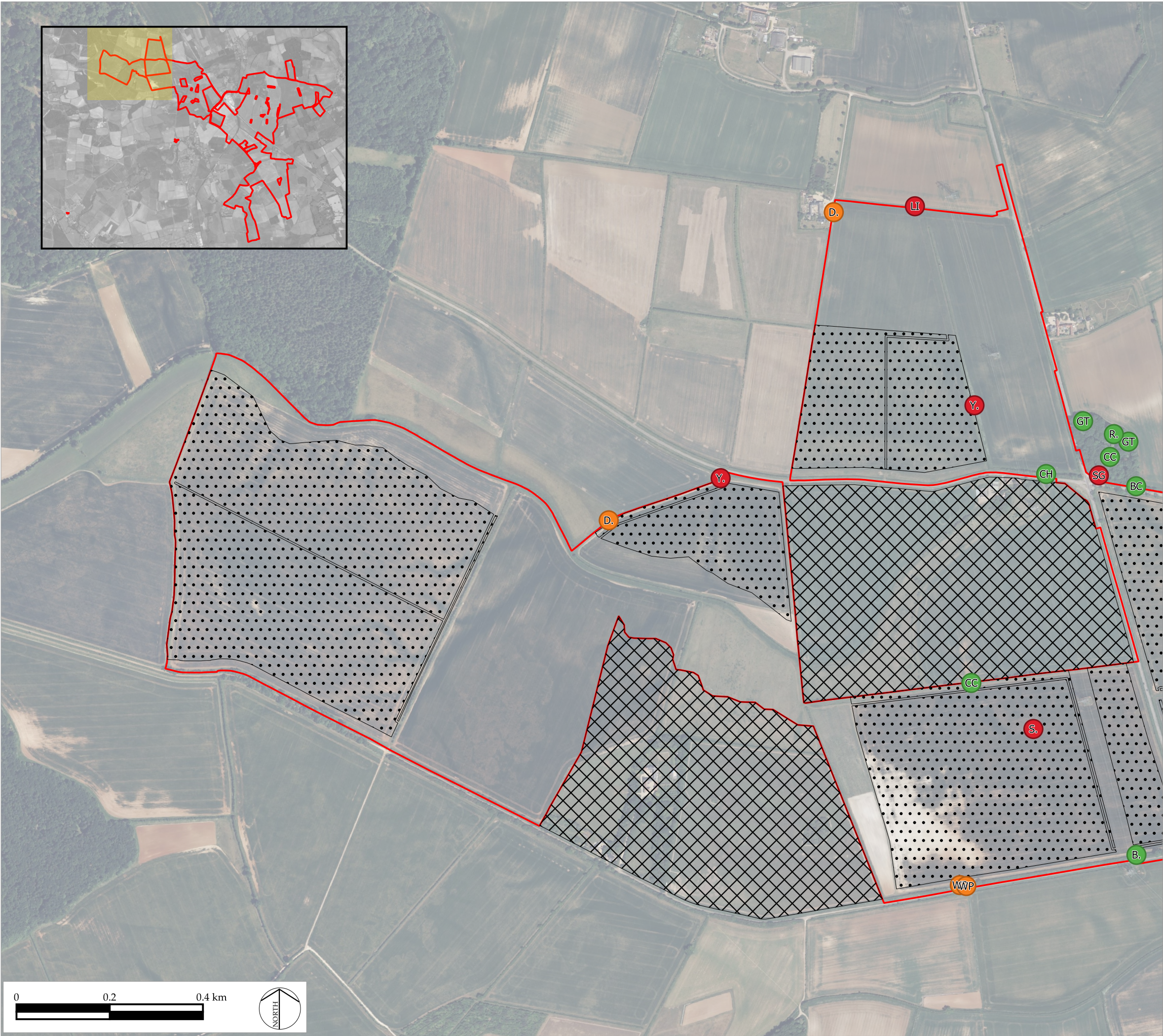
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APFP Regulation: 5(2)(a)

PINS REFERENCE NUMBER
EN010127

- LEGEND
- Birds of Conservation Concern (BoCC) Status:
- Red
 - Amber
 - Green
 - Solar PV Locations
 - Order limits
 - Areas outside order limits

BTO Code	Common Name
B.	Blackbird
BC	Blackcap
CC	Chiffchaff
CH	Chaffinch
D.	Dunnock
GT	Great Tit
LI	Linnet
R.	Robin
S.	Skylark
SG	Starling
WP	Woodpigeon
Y.	Yellowhammer

REV.	DESCRIPTION	APP.	DATE
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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.6: Breeding bird indicative territories
(Map 1 of 6)

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Sources: BSG Ecology survey data, Ordnance survey



LEGEND

Water vole evidence:

- Feeding station
- Burrow
- Latrine
- River surveyed for water vole
- River not surveyed for water vole
- Potential highways works
- Solar PV Locations
- Order limits
- Areas outside order limits

REV. P0 DESCRIPTION DO Submission

APP. RP DATE 07/11/22



PROJECT TITLE
MALLARD PASS SOLAR FARM

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Figure 7.5: Water vole evidence

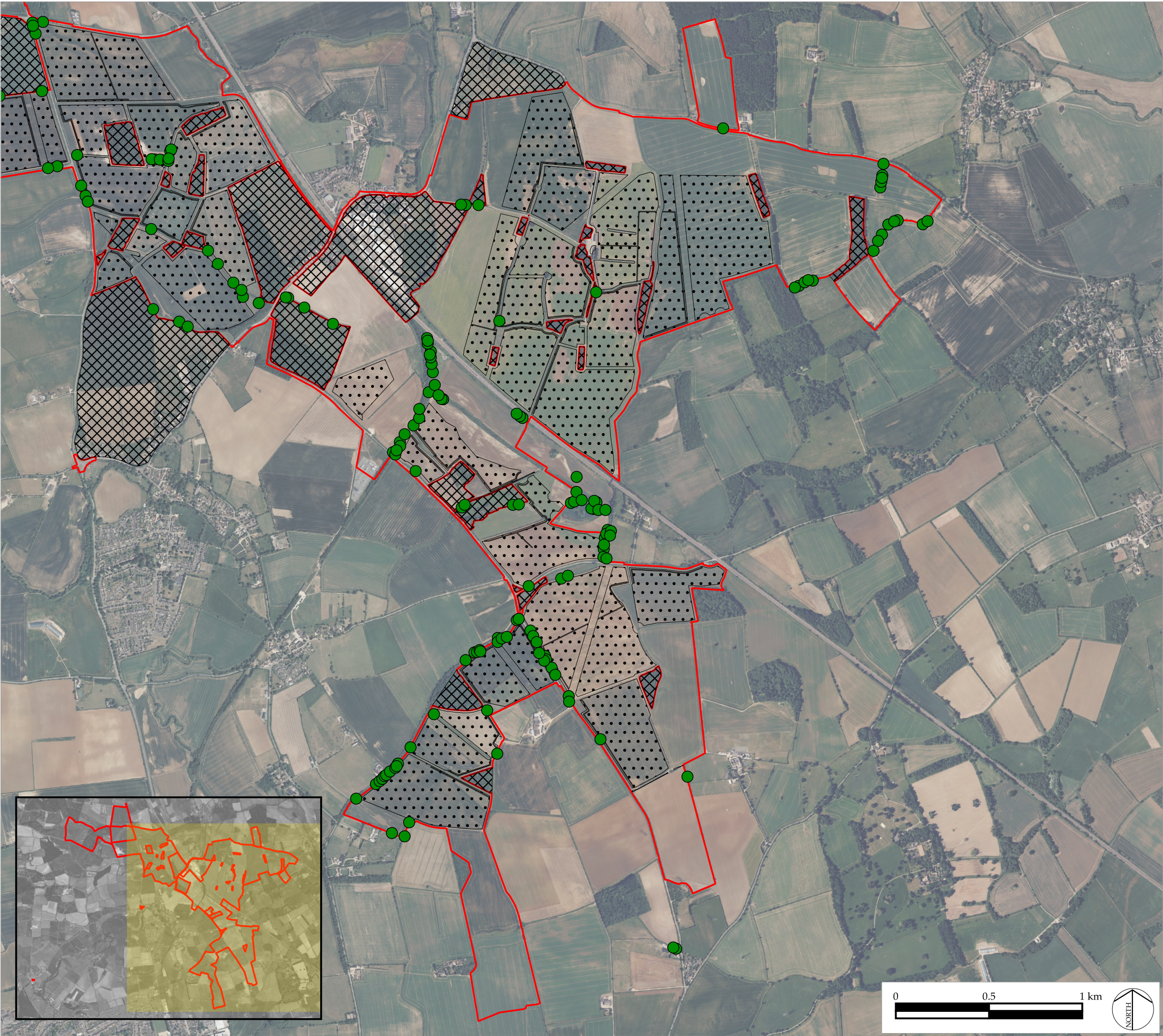
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STATUS	Final	APPROVED	RP

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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a)
PINS REFERENCE NUMBER
EN010127

- LEGEND
- Trees with bat roost suitability
 - Solar PV Locations
 - Order limits
 - Areas outside order limits

REV.	DESCRIPTION	APP.	DATE
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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.4: Trees with bat roost suitability (Map
2 of 2)

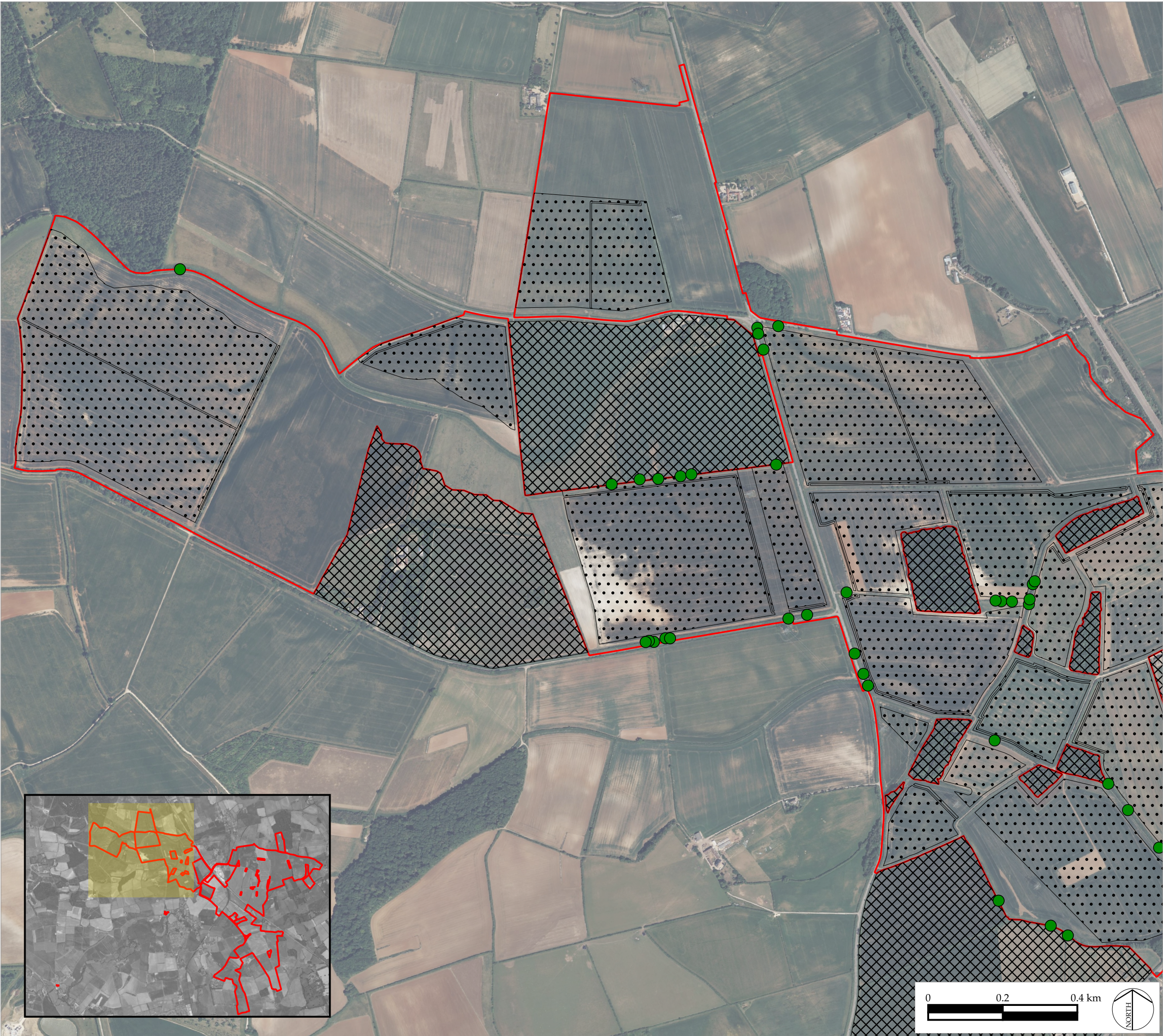
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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a)

PINS REFERENCE NUMBER
EN010127

LEGEND

- Trees with bat roost suitability
- Solar PV Locations
- Order limits
- Areas outside order limits

REV.	DESCRIPTION	APP.	DATE
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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.4: Trees with bat roost suitability (Map 1 of 2)

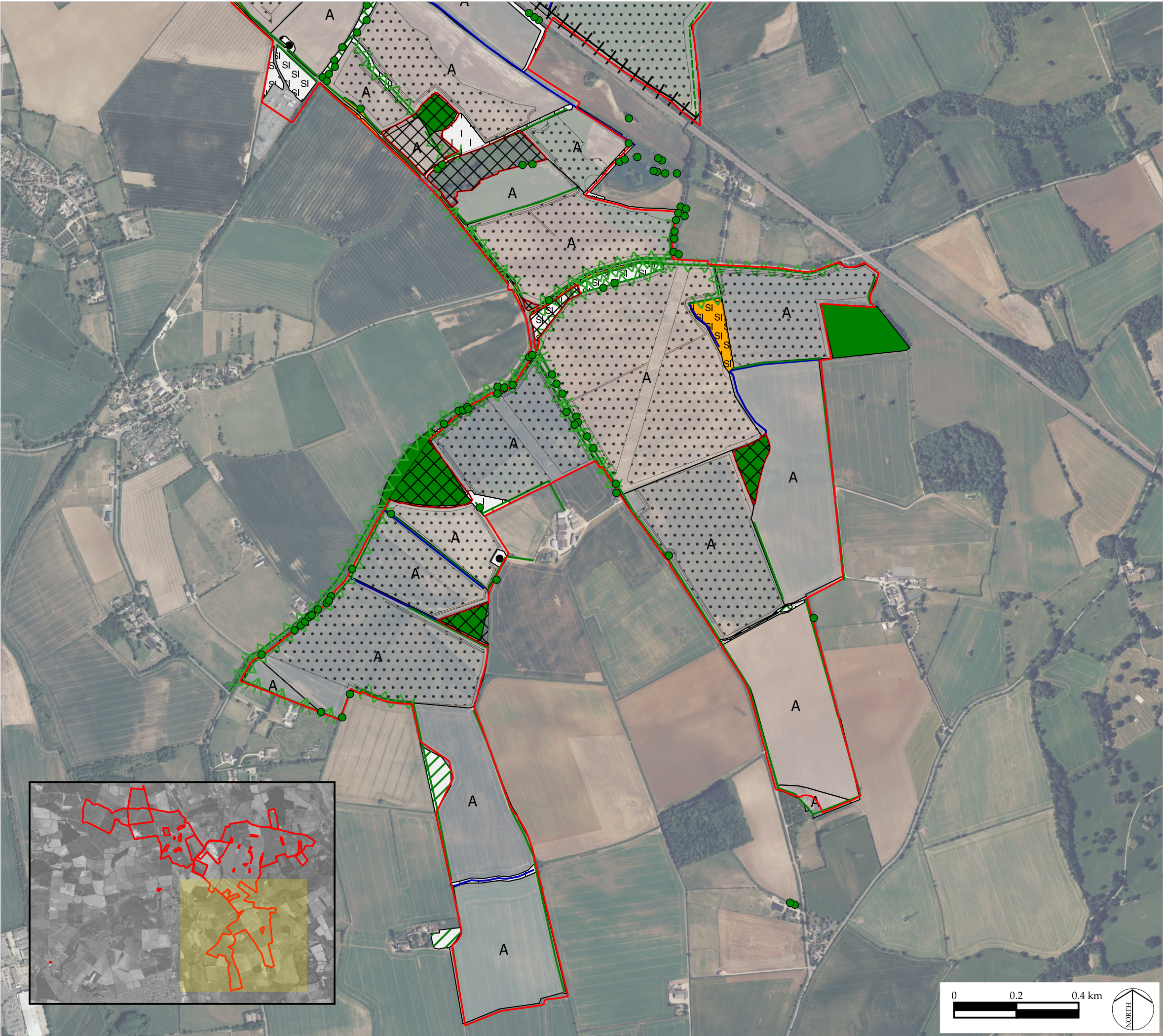
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Infrastructure Planning (Applications:
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APFP Regulation: 5(2)(a) and Regulation: 5 (2)(l).

PINS REFERENCE NUMBER
EN010127

- LEGEND
- Scattered trees
 - G2 - Running water
 - J2.1.1 - Intact hedge - native species-rich
 - J2.1.2 - Intact hedge - species-poor
 - J2.2.2 - Defunct hedge - species-poor
 - J2.3.1 - Hedge with trees - native species-rich
 - J2.3.2 - Hedge with trees - species-poor
 - J2.4 - Fence
 - Broadleaved woodland - semi-natural
 - Broadleaved woodland - plantation
 - Scrub - dense/continuous
 - Neutral grassland - semi-improved
 - Improved grassland
 - Poor semi-improved grassland
 - Cultivated/disturbed land - arable
 - Bare ground
 - Solar PV Locations
 - Order limits
 - Areas outside order limits

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PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.3: Phase 1 habitats plan (Map 3 of 3)

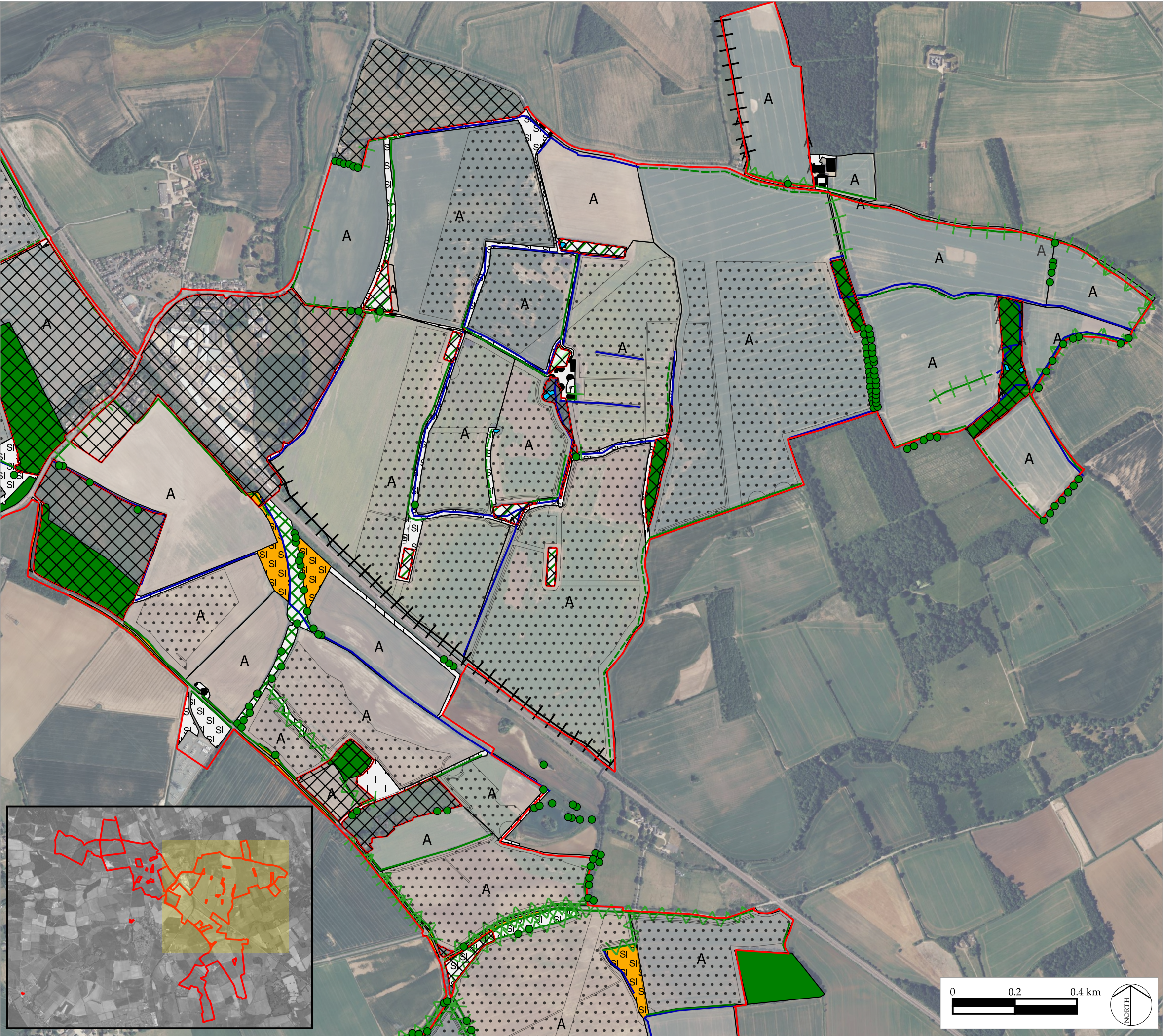
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Infrastructure Planning (Applications:
Prescribed Forms and Procedure) Regulations 2009
APFP Regulation: 5(2)(a) and Regulation: 5 (2)(l).

PINS REFERENCE NUMBER
EN010127

LEGEND

- Scattered trees
- G2 - Running water
- J2.1.1 - Intact hedge - native species-rich
- J2.1.2 - Intact hedge - species-poor
- J2.2.2 - Defunct hedge - species-poor
- J2.3.1 - Hedge with trees - native species-rich
- J2.3.2 - Hedge with trees - species-poor
- J2.4 - Fence
- Broadleaved woodland - semi-natural
- Broadleaved woodland - plantation
- Coniferous woodland - plantation
- Scrub - dense/continuous
- Neutral grassland - semi-improved
- Improved grassland
- Poor semi-improved grassland
- Standing water
- Cultivated/disturbed land - arable
- Buildings
- Bare ground
- Solar PV Locations
- Order limits
- Areas outside order limits

REV.	DESCRIPTION	APP.	DATE
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**Mallard Pass**
Solar Farm

PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.3: Phase 1 habitats plan (Map 2 of 3)

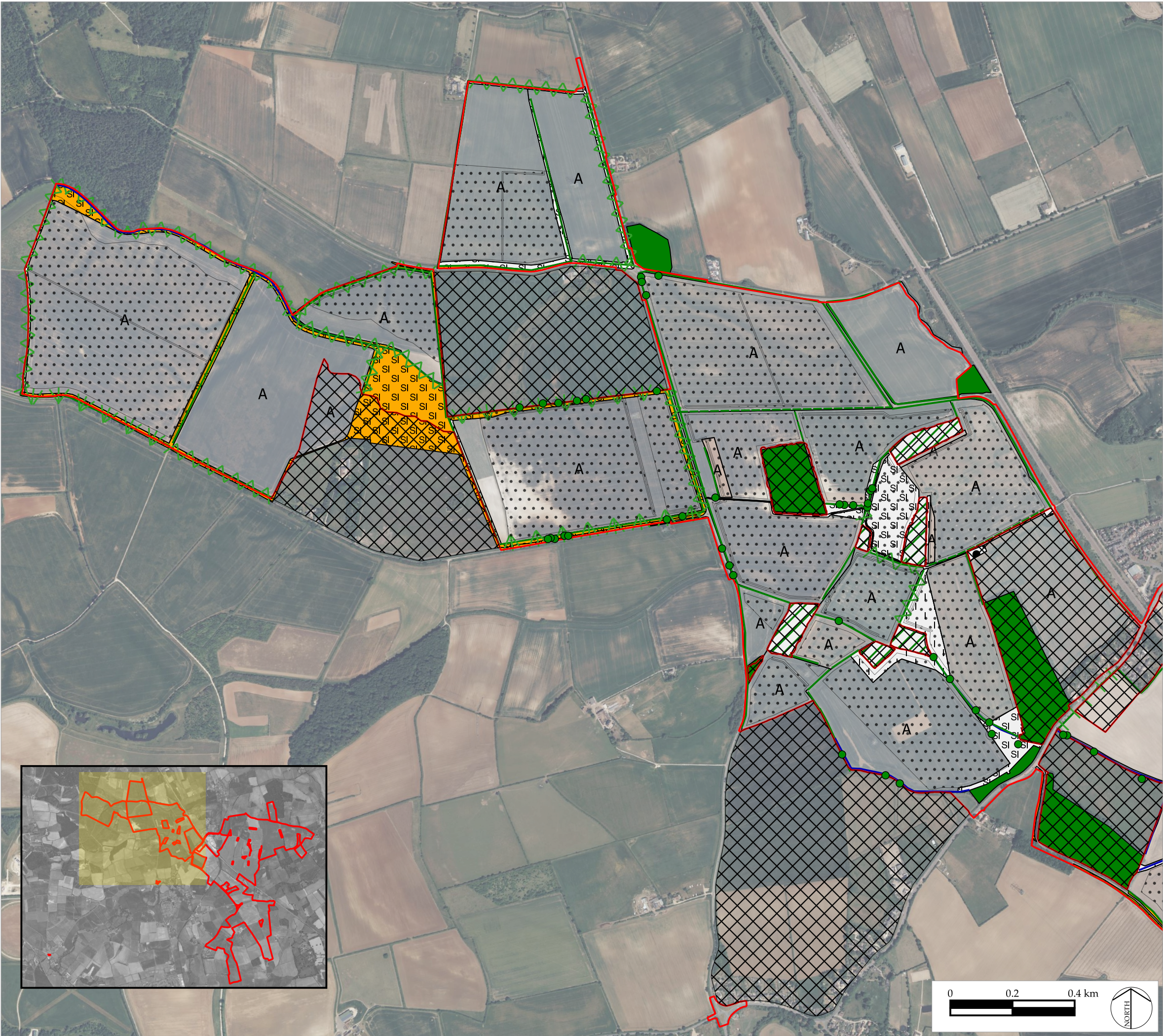
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SCALE @ A3	1 : 12000	CHECKED	JB
STATUS	Final	APPROVED	RP

DWG. NO. 7863_SK_311 REV: P0

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

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Sources: BSG Ecology survey data, Ordnance survey



Infrastructure Planning (Applications:
Prescribed Forms and Procedure) Regulations 2009
APFP Regulation: 5(2)(a) and Regulation: 5 (2)(l).

PINS REFERENCE NUMBER
EN010127

LEGEND

- Scattered trees
- G2 - Running water
- ▲▲ J2.1.1 - Intact hedge - native species-rich
- J2.1.2 - Intact hedge - species-poor
- - J2.2.2 - Defunct hedge - species-poor
- ▲▲ J2.3.1 - Hedge with trees - native species-rich
- ++ J2.3.2 - Hedge with trees - species-poor
- Broadleaved woodland - semi-natural
- ▨ Broadleaved woodland - plantation
- Neutral grassland - semi-improved
- Improved grassland
- Poor semi-improved grassland
- Cultivated/disturbed land - arable
- Bare ground
- Solar PV Locations
- Order limits
- ▨ Areas outside order limits

REV.	DESCRIPTION	APP.	DATE
P0	DO Submission	RP	22/11/22



PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.3: Phase 1 habitats plan (Map 1 of 3)

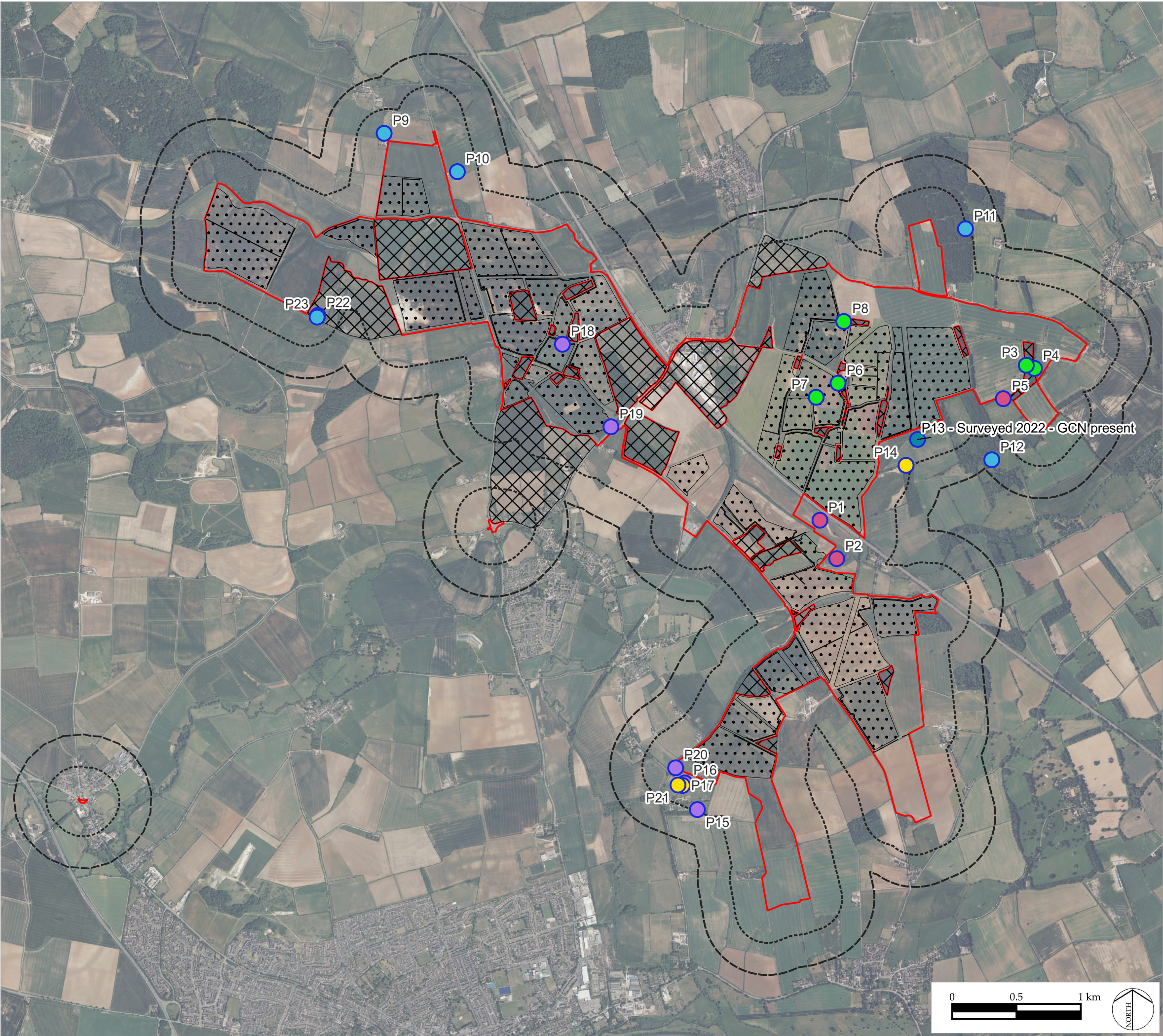
ISSUED BY	Oxford	T:	01865 887050
DATE	22 Nov 2022	DRAWN	CS
SCALE @ A3	1 : 12000	CHECKED	JB
STATUS	Final	APPROVED	RP

DWG. NO. 7863_SK_311 REV: P0

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Sources: BSG Ecology survey data, Ordnance survey



LEGEND

- Pond not sampled for eDNA
- Offsite pond sampled for eDNA
- Onsite pond sampled for eDNA
- Pond dry or absent
- Pond Surveyed 2022 - GCN Absent
- Pond Surveyed 2022 - Ponds Present
- Solar PV Locations
- 250m from order limits
- 500m from order limits
- Order limits
- Areas outside Order limits

REV.	DESCRIPTION	APP.	DATE
P0	DO Submission	RP	07/11/22



PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.2: Ponds within 500m of the Order limits

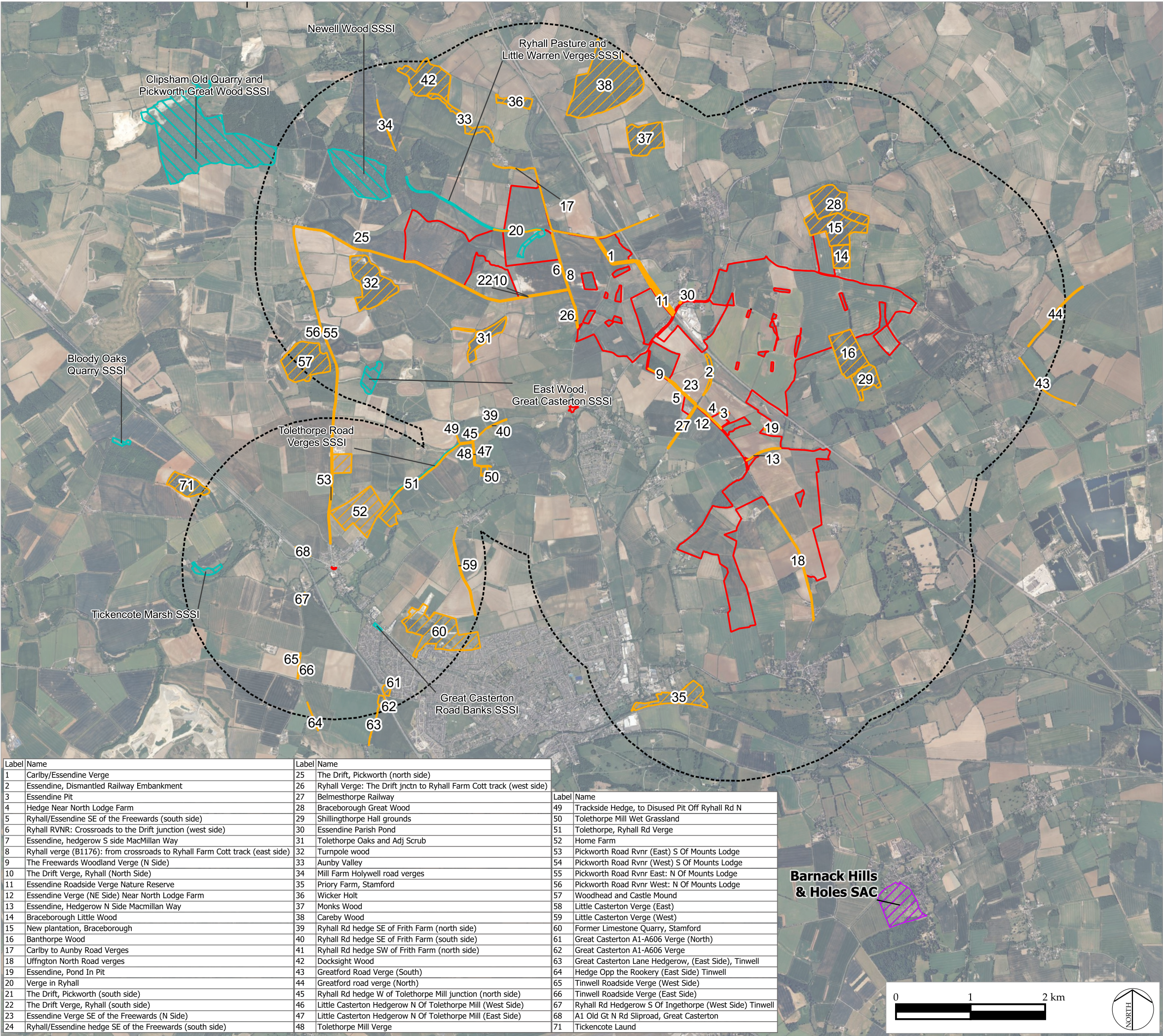
ISSUED BY	Oxford	T:	01865 887050
DATE	07 Nov 2022	DRAWN	CS
SCALE @ A3	1 : 29000	CHECKED	JB
STATUS	Final	APPROVED	RP

DWG. NO. 7863_SK_311 REV: P0

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Sources: BSG Ecology survey data, Ordnance survey



Infrastructure Planning (Applications:
Prescribed Forms and Procedure) Regulations 2009
APFP Regulation: 5(2)(a) and Regulation: 5 (2)(l).

PINS REFERENCE NUMBER
EN010127

LEGEND

Nationally designated sites within 2 km

- Site of Special Scientific Interest (SSSI)
- Local Wildlife Site (LWS)

Internationally Designated sites

- SACs 10 km

Order limits

- Order limits
- 2 km from order limits

REV.	DESCRIPTION	APP.	DATE
P0	DO Submission	RP	22/11/22



PROJECT TITLE
MALLARD PASS SOLAR FARM

DRAWING TITLE
Figure 7.1: Statutory and Non-Statutory Nature
Conservation Designations Plan (Map 2 of 2)

ISSUED BY	Oxford	T:	01865 887050
DATE	22 Nov 2022	DRAWN	CS
SCALE @ A3	1 : 50000	CHECKED	JB
STATUS	Final	APPROVED	RP

DWG. NO. 7863_SK_311 REV: P0

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Area measurements for indicative purposes only.

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Sources: BSG Ecology survey data, Ordnance survey

Label	Name	Label	Name
1	Carlby/Essendine Verge	25	The Drift, Pickworth (north side)
2	Essendine, Dismantled Railway Embankment	26	Ryhall Verge: The Drift jcnctn to Ryhall Farm Cott track (west side)
3	Essendine Pit	27	Belmesthorpe Railway
4	Hedge Near North Lodge Farm	28	Braceborough Great Wood
5	Ryhall/Essendine SE of the Freewards (south side)	29	Shillingthorpe Hall grounds
6	Ryhall RVNR: Crossroads to the Drift junction (west side)	30	Essendine Parish Pond
7	Essendine, hedgerow S side MacMillan Way	31	Tolethorpe Oaks and Adj Scrub
8	Ryhall verge (B1176): from crossroads to Ryhall Farm Cott track (east side)	32	Turnpole wood
9	The Freewards Woodland Verge (N Side)	33	Aunby Valley
10	The Drift Verge, Ryhall (North Side)	34	Mill Farm Holywell road verges
11	Essendine Roadside Verge Nature Reserve	35	Priory Farm, Stamford
12	Essendine Verge (NE Side) Near North Lodge Farm	36	Wicker Holt
13	Essendine, Hedgerow N Side Macmillan Way	37	Monks Wood
14	Braceborough Little Wood	38	Careby Wood
15	New plantation, Braceborough	39	Ryhall Rd hedge SE of Frith Farm (north side)
16	Banthorpe Wood	40	Ryhall Rd hedge SE of Frith Farm (south side)
17	Carlby to Aunby Road Verges	41	Ryhall Rd hedge SW of Frith Farm (north side)
18	Uffngton North Road verges	42	Docksight Wood
19	Essendine, Pond In Pit	43	Greatford Road Verge (South)
20	Verge in Ryhall	44	Greatford road verge (North)
21	The Drift, Pickworth (south side)	45	Ryhall Rd hedge W of Tolethorpe Mill junction (north side)
22	The Drift Verge, Ryhall (south side)	46	Little Casterton Hedgerow N Of Tolethorpe Mill (West Side)
23	Essendine Verge SE of the Freewards (N Side)	47	Little Casterton Hedgerow N Of Tolethorpe Mill (East Side)
24	Ryhall/Essendine hedge SE of the Freewards (south side)	48	Tolethorpe Mill Verge

Label	Name
49	Trackside Hedge, to Disused Pit Off Ryhall Rd N
50	Tolethorpe Mill Wet Grassland
51	Tolethorpe, Ryhall Rd Verge
52	Home Farm
53	Pickworth Road Rvnr (East) S Of Mounts Lodge
54	Pickworth Road Rvnr (West) S Of Mounts Lodge
55	Pickworth Road Rvnr East: N Of Mounts Lodge
56	Pickworth Road Rvnr West: N Of Mounts Lodge
57	Woodhead and Castle Mound
58	Little Casterton Verge (East)
59	Little Casterton Verge (West)
60	Former Limestone Quarry, Stamford
61	Great Casterton A1-A606 Verge (North)
62	Great Casterton A1-A606 Verge
63	Great Casterton Lane Hedgerow, (East Side), Tinwell
64	Hedge Opp the Rookery (East Side) Tinwell
65	Tinwell Roadside Verge (West Side)
66	Tinwell Roadside Verge (East Side)
67	Ryhall Rd Hedgerow S Of Ingethorpe (West Side) Tinwell
68	A1 Old Gt N Rd Sliproad, Great Casterton
71	Tickencote Laund

6 Photographs

Photograph 1: Patch of broadleaved semi-natural woodland in the west of the Site.



Photograph 2: Typical understorey and ground vegetation in broadleaved woodland in south of the Site.



Photograph 3: Hedgerow in the west of the Site.



Photograph 4: Typical hedgerow with standard trees.









Photograph 5: Pond 3, located in the east of the Site.



Photograph 6: West Glen River in the centre and west of the Site showing well-vegetated banks suitable for water vole.



<p>Photograph 7: Photograph 6: West Glen River in the centre and west of the Site.</p>	<p>Photograph 8: Intensively managed arable farmland.</p>
	
<p>Photograph 9: Intensively-managed arable farmland.</p>	<p>Photograph 10: Poor semi-improved grassland forming an arable field margin.</p>
	
<p>Photograph 11: Good semi-improved neutral grassland adjacent to the Essendine Dismantled Railway Embankment LWS.</p>	<p>Photograph 12: Broadleaved plantation woodland in the west of the Site.</p>
	

Photograph 13: Dense scrub along Essendine Dismantled Railway Embankment LWS.



Photograph 14: Typical dry ditch in south of the Site.



Annex 1. Local Wildlife Sites within 2 km of the Site boundary

Number on Figure 1	Site name	Note/reasons for designation ⁴
1	Carlby/Essendine Verge	Calcareous grassland and Red Data Book species.
2	Essendine, Dismantled Railway Embankment	Stream and Red Data Book species, with scrub and calcareous grassland.
3	Essendine Pit	Red Data Book species present in mesotrophic grassland.
4	Hedge Near North Lodge Farm	Species-rich hedgerow
5	Ryhall/Essendine SE of the Freewards (south side)	Mesotrophic grassland.
6	Ryhall RVNR: Crossroads to the Drift junction (west side)	Transitional calcareous/mesotrophic grassland.
7	Essendine, hedgerow S side MacMillan Way	Species-rich hedgerow.
8	Ryhall verge (B1176): from crossroads to Ryhall Farm Cott track (east side)	Calcareous grassland.
9	The Freewards Woodland Verge (N Side)	Red Data Book species present in mesotrophic grassland.
10	The Drift Verge, Ryhall (North Side)	Calcareous grassland.
11	Essendine Roadside Verge Nature Reserve	Mesotrophic grassland and Red Data Book species.
12	Essendine Verge (NE Side) Near North Lodge Farm	Mesotrophic grassland and Red Data book species.
13	Essendine, Hedgerow N Side Macmillan Way	Species-rich hedgerow.
14	Braceborough Little Wood	

⁴ From information provided by LRERC and LERC

Number on Figure 1	Site name	Note/reasons for designation ⁴
15	New plantation, Braceborough	
16	Banthorpe Wood	
17	Carlby to Aunby Road Verges	
18	Uffington North Road verges	
19	Essendine, Pond In Pit	Pond in disused pit with <i>Potamogeton crispus</i> and <i>Myriophyllum</i> sp.
20	Verge in Ryhall	Calcareous grassland
21	The Drift, Pickworth (south side)	Transitional mesotrophic/calcareous grassland.
22	The Drift Verge, Ryhall (south side)	Calcareous grassland and Red Data Book species.
23	Essendine Verge SE of the Freewards (N Side)	Mesotrophic grassland
24	Ryhall/Essendine hedge SE of the Freewards (south side)	Species-rich hedgerow.
25	The Drift, Pickworth (north side)	Transitional mesotrophic/calcareous grassland and Red Data Book species.
26	Ryhall Verge: The Drift jcnctn to Ryhall Farm Cott track (west side)	Calcareous grassland.
27	Belmesthorpe Railway	Red Data Book species present in scrub, adjacent to other LWS.
28	Braceborough Great Wood	
29	Shillingthorpe Hall grounds	
30	Essendine Parish Pond	Red Data Book species present in pond.
31	Tolethorpe Oaks and Adj Scrub	No recent survey information
32	Turnpole wood	No recent survey information

Number on Figure 1	Site name	Note/reasons for designation ⁴
33	Aunby Valley	
34	Mill Farm Holywell road verges	
35	Priory Farm, Stamford	
36	Wicker Holt	
37	Monks Wood	
38	Careby Wood	
39	Ryhall Rd hedge SE of Frith Farm (north side)	Species-rich hedgerow.
40	Ryhall Rd hedge SE of Frith Farm (south side)	Species-rich hedgerow.
41	Ryhall Rd hedge SW of Frith Farm (north side)	Species-rich hedgerow.
42	Docksight Wood	
43	Greatford Road Verge (South)	
44	Greatford road verge (North)	
45	Ryhall Rd hedge W of Toilethorpe Mill junction (north side)	Species-rich hedgerow.
46	Little Casterton Hedgerow N Of Toilethorpe Mill (West Side)	Species-rich hedgerow.
47	Little Casterton Hedgerow N Of Toilethorpe Mill (East Side)	Species-rich hedgerow.
48	Toilethorpe Mill Verge	Calcareous grassland
49	Trackside Hedge, to Disused Pit Off Ryhall Rd N	Species-rich hedgerow.

Number on Figure 1	Site name	Note/reasons for designation ⁴
50	Tolethorpe Mill Wet Grassland	Wet grassland, with pond.
51	Tolethorpe, Ryhall Rd Verge	Calcareous grassland.
52	Home Farm	Arable plant community and Red Data Book species.
53	Pickworth Road Rvnr (East) S Of Mounts Lodge	Calcareous grassland and Red Data Book species.
54	Pickworth Road Rvnr (West) S Of Mounts Lodge	Calcareous grassland.
55	Pickworth Road Rvnr East: N Of Mounts Lodge	Transitional mesotrophic/calcareous grassland.
56	Pickworth Road Rvnr West: N Of Mounts Lodge	Mesotrophic grassland.
57	Woodhead and Castle Mound	No recent survey information
58	Little Casterton Verge (East)	Transitional mesotrophic/calcareous grassland.
59	Little Casterton Verge (West)	Transitional mesotrophic/calcareous grassland.
60	Former Limestone Quarry, Stamford	Mesotrophic and wet grassland, ponds, woodland scrub and early successional communities in former quarry; Great Crested Newt; Orchids, Sulphur clover, Narrow-lvd Birdsfoot Trefoil, Grass Vetchling
61	Great Casterton A1-A606 Verge (North)	Calcareous grassland.
62	Great Casterton A1-A606 Verge	Calcareous grassland.
63	Great Casterton Lane Hedgerow, (East Side), Tinwell	Species-rich hedgerow
64	Hedge Opp the Rookery (East Side) Tinwell	Species-rich hedgerow
65	Tinwell Roadside Verge (West Side)	Transitional mesotrophic/calcareous grassland and Red Data Book species

Number on Figure 1	Site name	Note/reasons for designation ⁴
66	Tinwell Roadside Verge (East Side)	Transitional mesotrophic/calcareous grassland and Red Data Book species
67	Ryhall Rd Hedgerow S Of Ingethorpe (West Side) Tinwell	Species-rich hedgerow
68	A1 Old Gt N Rd Sliproad, Great Casterton	Calcareous grassland
69	Field East Of Chapel Field Spinney	Arable field margin; Valerianella dentata, Legousia hybrida
70	Field West Of Chapel Lane Spinney	Arable Field margin; Valerianella dentata, Viola tricolor
71	Tickencote Laund	No recent survey information

Annex 2: Summaries of Relevant Policy, Legislation and Other Instruments

This section briefly summarises the legislation, policy and related issues that are relevant to the main text of the report. The following text does not constitute legal or planning advice.

Overarching National Policy Statement for Energy (EN-1)

The Overarching National Policy Statement for Energy (EN-1) contains several sections specific to ecological impact assessments as pertain to new infrastructure proposals. Text excerpts are included below relevant to this Application Site.

International Sites

“The most important sites for biodiversity are those identified through international conventions and European Directives. The Habitats Regulations provide statutory protection for these sites but do not provide statutory protection for potential Special Protection Areas (pSPAs) before they have been classified as a Special Protection Area. For the purposes of considering development proposals affecting them, as a matter of policy the Government wishes pSPAs to be considered in the same way as if they had already been classified. Listed Ramsar sites should, also as a matter of policy, receive the same protection.”

There is no further policy guidance on addressing impacts on International Sites, therefore the Habitats Regulations process will be applied as appropriate.

Sites of Special Scientific Interest (SSSIs)

“Many SSSIs are also designated as sites of international importance and will be protected accordingly. Those that are not, or those features of SSSIs not covered by an international designation, should be given a high degree of protection. All National Nature Reserves are notified as SSSIs.

Where a proposed development on land within or outside an SSSI is likely to have an adverse effect on an SSSI (either individually or in combination with other developments), development consent should not normally be granted. Where an adverse effect, after mitigation, on the site’s notified special interest features is likely, an exception should only be made where the benefits (including need) of the development at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of SSSIs. The IPC should use requirements and/or planning obligations to mitigate the harmful aspects of the development and, where possible, to ensure the conservation and enhancement of the site’s biodiversity or geological interest.”

Regional and Local Sites (including LWS)

“Sites of regional and local biodiversity and geological interest, which include Regionally Important Geological Sites, Local Nature Reserves and Local Sites, have a fundamental role to play in meeting overall national biodiversity targets; contributing to the quality of life and the well-being of the community; and in supporting research and education. The IPC should give due consideration to such regional or local designations. However, given the

need for new infrastructure, these designations should not be used in themselves to refuse development consent."

Ancient Woodland and Veteran Trees

"Ancient woodland is a valuable biodiversity resource both for its diversity of species and for its longevity as woodland. Once lost it cannot be recreated. The IPC should not grant development consent for any development that would result in its loss or deterioration unless the benefits (including need) of the development, in that location outweigh the loss of the woodland habitat. Aged or 'veteran' trees found outside ancient woodland are also particularly valuable for biodiversity and their loss should be avoided. Where such trees would be affected by development proposals the applicant should set out proposals for their conservation or, where their loss is unavoidable, the reasons why."

Biodiversity within Developments

"Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, the IPC should maximise such opportunities in and around developments, using requirements or planning obligations where appropriate."

Protection of Habitats and Other Species

"Many individual wildlife species receive statutory protection under a range of legislative provisions.

Other species and habitats have been identified as being of principal importance for the conservation of biodiversity in England and Wales and thereby requiring conservation action¹⁰⁶.

The IPC should ensure that these species and habitats are protected from the adverse effects of development by using requirements or planning obligations. The IPC should refuse consent where harm to the habitats or species and their habitats would result, unless the benefits (including need) of the development outweigh that harm. In this context the IPC should give substantial weight to any such harm to the detriment of biodiversity features of national or regional importance which it considers may result from a proposed development."

Mitigation

"The applicant should include appropriate mitigation measures as an integral part of the proposed development. In particular, the applicant should demonstrate that:

- during construction, they will seek to ensure that activities will be confined to the minimum areas required for the works;*
- during construction and operation best practice will be followed to ensure that risk of disturbance or damage to species or habitats is minimised, including as a consequence of transport access arrangements;*
- habitats will, where practicable, be restored after construction works have finished; and*

- *opportunities will be taken to enhance existing habitats and, where practicable, to create new habitats of value within the site landscaping proposals.”*

National Policy Statement for Renewable Energy Infrastructure (EN-3)

National Policy Statement for Renewable Energy Infrastructure EN3 has some high level recommendations on good design and refers back to EN1, but section 2.4.2 states: *“Proposals for renewable energy infrastructure should demonstrate good design in respect of landscape and visual amenity, and in the design of the project to mitigate impacts such as noise and effects on ecology.”*

National Planning Policy Framework (England)

The Government issued the National Planning Policy Framework (NPPF) in July 2021. Text excerpts from the NPPF are shown where they may be relevant to planning applications and biodiversity including protected sites, habitats and species.

The Government sets out the three objectives for sustainable development (economy, social and environmental) at paragraphs 8-10 to be delivered through the plan preparation and implementation level and ‘are not criteria against which every decision can or should be judged’ (paragraph 9). The planning system’s environmental objective is ‘to protect and enhance our natural, built and historic environment; including making effective use of land, improving biodiversity...’(paragraph 8c).

In conserving and enhancing the natural environment, the NPPF (Paragraph 174) states that ‘planning policies and decisions should contribute to and enhance the natural and local environment’ by:

- Protecting and enhancing...sites of biodiversity value... ‘(in a manner commensurate with their statutory status or identified quality in the development plan)’.
- Recognising the wider benefits from natural capital and ecosystem services including trees and woodland.
- Minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability.

In respect of protected sites, at paragraph 175, the NPPF requires local planning authorities to distinguish, at the plan level, ‘...between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value...take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.’ A footnote to paragraph 175 refers to the preferred

use of agricultural land of poorer quality if significant development of agricultural land is to take place.

Paragraph 179 refers to how plans should aim to protect and enhance biodiversity. Plans should: 'identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity [a footnote refers to ODPM Circular 06/2005 for further guidance in respect of statutory obligations for biodiversity in the planning system], wildlife corridors and stepping stones that connect them and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;' and to 'promote the conservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'

Paragraph 180 advises that, when determining planning applications, '...local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments) should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- development resulting in the loss or deterioration of irreplaceable habitats, (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and
- development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'

In paragraph 181, the following should be given the same protection as habitats sites:

- potential Special Protection Areas and possible Special Areas of Conservation;
- listed or proposed Ramsar sites; and

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

In paragraph 182 the NPPF refers back to sustainable development in relation to appropriate assessment and states: 'the presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site'.

In paragraph 183, the NPPF refers to planning policies and decisions taking account of ground conditions and risks arising from land instability and contamination at sites. In relation to risks associated with land remediation account is to be taken of 'potential impacts on the natural environment' that arise from land remediation.

In paragraph 185 the NPPF states that planning policies and decisions should ensure that development is appropriate to the location and take into account likely effects (including cumulative) on the natural environment and, in doing so, they 'should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation' (paragraph 185c).

Government Circular ODPM 06/2005 Biodiversity and Geological Conservation (England only)

Paragraph 98 of Government Circular 06/2005 advises that "the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat. Local authorities should consult Natural England before granting planning permission. They should consider attaching appropriate planning conditions or entering into planning obligations under which the developer would take steps to secure the long-term protection of the species. They should also advise developers that they must comply with any statutory species' protection provisions affecting the site concerned..."

Paragraph 99 of Government Circular 06/2005⁵ advises that "it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted".

Standing Advice (GOV.UK - England only)

The GOV.UK website provides information regarding protected species and sites in relation to development proposals: 'Local planning authorities should take advice from Natural England or the Environment Agency about planning applications for developments that may affect protected species.' GOV.UK advises that 'some species have standing advice which

you can use to help with planning decisions. For others you should contact Natural England or the Environment Agency for an individual response.'

The standing advice (originally from Natural England and now held and updated on GOV.UK⁶) provides advice to planners on deciding if there is a 'reasonable likelihood' of protected species being present. It also provides advice on survey and mitigation requirements.

When determining an application for development that is covered by standing advice, in accordance with guidance in Government Circular 06/2005, Local planning authorities are required to take the standing advice into account. In paragraph 82 of the aforementioned Circular, it is stated that: 'The standing advice will be a material consideration in the determination of the planning application in the same way as any advice received from a statutory consultee...it is up to the planning authority to decide the weight to be attached to the standing advice, in the same way as it would decide the weight to be attached to a response from a statutory consultee.'

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

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act require the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The list has been drawn up in consultation with Natural England as required by the Act. In accordance with the Act the Secretary of State keeps this list under review and will publish a revised list if necessary, in consultation with Natural England.

The S41 list is used to guide decision-makers such as public bodies, including local authorities and utilities companies, in implementing their duty under Section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions, including development control and planning. This is commonly referred to as the 'Biodiversity Duty.'

Guidance for public authorities on implementing the Biodiversity Duty⁷ has been published by Defra. One of the key messages in this document is that 'conserving biodiversity includes restoring and enhancing species populations and habitats, as well as protecting them.' In England the administration of the planning system and licensing schemes are highlighted as having a 'profound influence on biodiversity conservation.' Local authorities are required to take measures to "promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species. The guidance states that 'the duty aims to raise the profile and visibility of biodiversity, clarify existing commitments with regard to biodiversity, and to make it a natural and integral part of policy and decision making.'

In 2007, the UK Biodiversity Action Plan (BAP) Partnership published an updated list of priority UK species and habitats covering terrestrial, freshwater and marine biodiversity to focus conservation action for rarer species and habitats in the UK. The UK Post-2010 Biodiversity Framework⁸, which covers the period from 2011 to 2020, now succeeds the UK BAP. The UK priority list contained 1150 species and 65 habitats requiring special protection

⁶ <https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications#standing-advice-for-protected-species>

⁷ Defra, 2007. *Guidance for Public Authorities on Implementing The Biodiversity Duty*. (<http://www.defra.gov.uk/publications/files/pb12585-pa-guid-english-070516.pdf>)

⁸ JNCC and Defra (on behalf of the Four Countries' Biodiversity Group). 2012. *UK Post-2010 Biodiversity Framework*. July 2012. (<http://jncc.defra.gov.uk/page-6189>)

and has been used as a reference to draw up the lists of species and habitats of principal importance in England.

In England, there are 56 habitats of principal importance and 943 species of principal importance on the S41 list. These are all the habitats and species found in England that were identified as requiring action in the UK BAP and which continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

European protected species (Animals)

The Conservation of Habitats and Species Regulations 2017 (as amended) consolidates various amendments that have been made to the original (1994) Regulations which transposed the EC Habitats Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Council Directive 92/43/EEC) into national law.

“European protected species” (EPS) of animal are those which are shown on Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). They are subject to the provisions of Regulation 43 of those Regulations. All EPS are also protected under the Wildlife and Countryside Act 1981 (as amended). Taken together, these pieces of legislation make it an offence to:

- a. Intentionally or deliberately capture, injure or kill any wild animal included amongst these species
- b. Possess or control any live or dead specimens or any part of, or anything derived from a these species
- c. deliberately disturb wild animals of any such species
- d. deliberately take or destroy the eggs of such an animal, or
- e. intentionally, deliberately or recklessly damage or destroy a breeding site or resting place of such an animal, or obstruct access to such a place

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

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

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

- a. The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a

social or economic nature and beneficial consequences of primary importance for the environment'

- b. 'There is no satisfactory alternative'
- c. The proposals 'will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

Definition of breeding sites and resting places

Guidance for all European Protected Species of animal, including bats and great crested newt, regarding the definition of breeding and of breeding and resting places is provided by The European Council (EC) which has prepared specific guidance in respect of the interpretation of various Articles of the EC Habitats Directive.⁹ Section II.3.4.b) provides definitions and examples of both breeding and resting places at paragraphs 57 and 59 respectively. This guidance states that 'The provision in Article 12(1)(d) [of the EC Habitats Directive] should therefore be understood as aiming to safeguard the ecological functionality of breeding sites and resting places.' Further the guidance states: 'It thus follows from Article 12(1)(d) that such breeding sites and resting places also need to be protected when they are not being used, but where there is a reasonably high probability that the species concerned will return to these sites and places. If for example a certain cave is used every year by a number of bats for hibernation (because the species has the habit of returning to the same winter roost every year), the functionality of this cave as a hibernating site should be protected in summer as well so that the bats can re-use it in winter. On the other hand, if a certain cave is used only occasionally for breeding or resting purposes, it is very likely that the site does not qualify as a breeding site or resting place.'

Competent authorities

Under Regulation 7 of the Conservation of Habitats and Species Regulations 2017 (as amended) a "competent authority" includes "any Minister of the Crown..., government department, statutory undertaker, public body of any description or person holding a public office.

In accordance with Regulation 9, "a competent authority must exercise their functions which are relevant to nature conservation, including marine conservation, so as to secure compliance with the requirements of the [Habitats and Birds] Directives. This means for instance that when considering development proposals a competent authority should consider whether EPS or European Protected Sites are to be affected by those works and, if so, must show that they have given consideration as to whether derogation requirements can be met.

Birds

All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

⁹ Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC. (February 2007), EC.

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

In relation to the duties placed on competent authorities under the 2017 Regulations, Regulation 10 (8) states: 'So far as lies within their powers, a competent authority in exercising any function [including in relation to town and country planning] in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (except habitats beyond the outer limits of the area to which the new Wild Birds Directive applies).'

Badger

Badger is protected under the Protection of Badgers Act 1992. It is not permitted to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as "a structure or place, which displays signs indicating current use by a badger".

ODPM Circular 06/2005¹¹ provides further guidance on statutory obligations towards badger within the planning system. Of particular note is paragraph 124, which states that "The likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory, or links between them, or significantly increasing the likelihood of road or rail casualties amongst badger populations, are capable of being material considerations in planning decisions."

Natural England provides Standing Advice¹², which is capable of being a material consideration in planning decisions. Natural England recommends mitigation to avoid impacts on badger setts, which includes maintaining or creating new foraging areas and maintaining or creating access (commuting routes) between setts and foraging/watering areas.

Reptiles

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

¹⁰ 2009/147/EC Birds Directive (30 November 2009. European Parliament and the Council of the European Union.

¹¹ ODPM Circular 06/2005. *Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impacts within the Planning System* (2005). HMSO Norwich.

¹² <http://www.naturalengland.org.uk/ourwork/planningdevelopment/spatialplanning/standingadvice/specieslinks.aspx>

All six native species of reptile are included as 'species of principal importance' for the purpose of conserving biodiversity under Section 41 (England) of the NERC Act 2006 and Section 7 of the Environment (Wales) Act 2016.

Current Natural England Guidelines for Developers¹³ states that 'where it is predictable that reptiles are likely to be killed or injured by activities such as site clearance, this could legally constitute intentional killing or injuring.' Further the guidance states: 'Normally prohibited activities may not be illegal if 'the act was the incidental result of a lawful operation and could not reasonably have been avoided'. Natural England 'would expect reasonable avoidance to include measures such as altering development layouts to avoid key areas, as well as capture and exclusion of reptiles.'

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

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

Water vole

Water vole is protected under the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to kill, injure or take any water vole, damage, destroy or obstruct access to any place of shelter or protection that the animals are using, or disturb voles while they are using such a place. Water vole is listed as a Species of Principal Importance under the provisions of the NERC Act 2006 in England and under the provisions of the Environment (Wales) Act 2016.

Wild mammals in general

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

Invasive non-native species

An invasive non-native species is any non-native animal or plant that has the ability to spread causing damage to the environment.

Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to release, or to allow to escape into the wild, any animal which is not ordinarily resident in and is not a regular visitor to Great Britain in a wild state or is listed under Schedule 9 of the Act.

It is an offence to plant or otherwise cause to grow in the wild invasive non-native plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

¹³ English Nature, 2004. *Reptiles: guidelines for developers*. English Nature, Peterborough. <https://webarchive.nationalarchives.gov.uk/20150303064706/http://publications.naturalengland.org.uk/publication/76006>

Hedgerows

Article 10 of the Habitats Directive¹⁴ requires that 'Member States shall endeavour...to encourage the management of features of the landscape which are of major importance for wild fauna and flora. Such features are those which, by virtue of their linear and continuous structure...or their function as stepping stones...are essential for the migration, dispersal and genetic exchange of wild species'. Examples given in the Directive include traditional field boundary systems (such as hedgerows).

The aim of the Hedgerow Regulations 1997¹⁵, according to guidance produced by the Department of the Environment¹⁶, is "to protect important hedgerows in the countryside by controlling their removal through a system of notification. In summary, the guidance states that the system is concerned with the removal of hedgerows, either in whole or in part, and covers any act which results in the destruction of a hedgerow. The procedure in the Regulations is triggered only when land managers or utility operators want to remove a hedgerow. The system is in favour of protecting and retaining 'important' hedgerows.

The Hedgerow Regulations set out criteria that must be used by the local planning authority in determining which hedgerows are 'important'. The criteria relate to the value of hedgerows from an archaeological, historical, wildlife and landscape perspective.

¹⁴ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

¹⁵ Statutory Instrument 1997 No. 1160 – The Hedgerow Regulations 1997. HMSO: London

¹⁶ The Hedgerow Regulations 1997: a guide to the law and good practice, HMSO: London

Annex 3. GCN eDNA results

[overleaf]

Folio No: E9927
Report No: 1
Purchase Order: P21-135
Client: BSG ECOLOGY LTD
Contact: Jamie Peacock

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 05/05/2021
Date Reported: 06/05/2021
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
4261	Pond 3, Essendine	TF0733 1248	Pass	Pass	Pass	Negative	0
4263	Pond 4, Essendine	TF0735 1245	Pass	Pass	Pass	Negative	0
4264	Pond 5, Essendine	TF0713 1225	Pass	Pass	Pass	Negative	0
4266	Pond 6, Essendine	TF0588 1239	Pass	Pass	Pass	Negative	0
4267	Pond 8, Essendine	TF0590 1287	Pass	Pass	Pass	Negative	0
4268	Pond 1, Essendine	TF0571 1131	Pass	Pass	Pass	Negative	0
4269	Pond 7, Essendine	TF0570 1227	Pass	Pass	Pass	Negative	0



location at the time the sample was taken or within the recent past at the sampling location.

Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.

Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.



4270	Pond 2, Essendine	TF0595 1079	Pass	Pass	Pass	Negative	0
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If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Chris Troth

Approved by: Chris Troth

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]

When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]

Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]

The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]

Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling



Confidential Annex 4. Badger survey results

The setts recorded within the Site are shown on Confidential Figure 7. A total of 18 setts were recorded, predominantly in field boundaries, at the edges of woodland and in scrub. Of these two are likely to be inactive.

The following table provides a description and likely status for the setts shown in Confidential Figure 7.

Sett Reference (Confidential Figure 7)	Description	Sett type and status
1	A large sett with a minimum of ten open entrances spread over a stretch of the Dismantled Railway LWS.	Active. Likely to be a main sett.
2	Large sett in north-eastern face of railway adjacent to field. Open.	Active. Possible annex sett to Sett 1.
3	Single entrance sett. Open.	Active. Outlier.
4	Single entrance sett. Open.	Active. Outlier.
5	Four entrance sett. Open.	Active. Potential subsidiary or annex sett.
6	Large sett with six entrances. Open with large fresh spoil mounds.	Active. Likely to be a main sett.
7	Large sett with seven entrances. Open but few fresh spoil mounds.	Active. Possible annex sett to Sett 6 or a main sett.
8	Sett with four entrances spread along hedgerow. Open.	Active. Possible large subsidiary.
9	Single entrance sett. Open.	Active. Outlier.
10	Sett with five entrances. Open.	Active. Likely to be subsidiary or annex sett
11	Single entrance sett. Open.	Active. Outlier.

12	Single entrance sett. Open.	Active. Outlier.
13	Part blocked sett entrance.	Likely disused.
14	Minimum of two open entrances in very dense vegetation with runs and latrines.	Active. Subsidiary or Annex.
15	Two entrances. Open with fresh spoil.	Active. Outlier or subsidiary.
16	Minimum of four entrances of a type and size attributable to badger but all recent sign indicates use by rabbits. Additional rabbit type entrances extending to the north.	Likely to be a disused subsidiary.
17	A total of seven entrances with one open and nine partly blocked.	Active. Likely to be a subsidiary.
18	A minimum of four open entrances in hedgerow with potentially more in hedgerow. Fresh bedding noted.	Active. Subsidiary or main sett.
19	A sett located on a slope in a meadow with eleven open entrances and fresh spoil outside four entrances.	Active. Likely to be a main sett.

