

ECOLOGICAL APPRAISAL REPORT

Stansted Solar Farm, Uttlesford, Essex



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STANSTED SOLAR FARM ECOLOGICAL APPRAISAL REPORT

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EXECUTIVE SUMMARY

- RPS were commissioned by MAG and Stansted Airport Limited to undertake a suite of ecological surveys and full Ecological Appraisal of land at Stansted Airport, Essex. This followed the production of a Preliminary Ecological Appraisal (RPS, 2019) which identified a number of potential ecological constraints requiring further survey work.
- The proposals for the site include the development of a ground-mounted solar PV system with associated access, cable route and landscaping.
- The site is approximately 22 ha in size and comprises primarily arable farmland, with hedgerows, scattered trees, tall ruderal vegetation, grassland, and scattered scrub.
- Initial proposals for the site covered a wider area, approximately 45 ha of mainly arable habitat was surveyed for the Preliminary Ecological Appraisal, however, this was since reduced to the 22 ha this report describes and assesses.
- There are two statutorily designated sites and eight non-statutorily designated sites within 2 km. The site falls within two Impact Risk Zones for Sites of Special Scientific Interest and the Local Planning Authority should contact Natural England regarding the proposals. Pollution prevention measures should be adhered to in order to avoid potential impacts, with a construction environmental management plan required to ensure all construction and operational impacts are reduced and mitigated for.
- Surveys have been undertaken for great crested newts (GCN), reptiles, bat activity and roost potential, breeding birds, invasive species and badger.
- Great crested newt surveys for all ponds within 500 m returned negative results meaning that it is unlikely that GCN are present in these ponds, and therefore unlikely that they will be on site or impacted during the proposed works. No further surveys or mitigation measures are required.
- Common lizard was recorded within the site boundary. It is considered that the site contains a 'low' population of common lizard of importance at the local level. Mitigation measures are therefore outlined.
- Bat activity and static surveys across the site showed that the site was used by low numbers of foraging and commuting bats. Mitigation measures in relation to night working and lighting are provided.
- Several hedgerow trees with bat roost potential were identified and assessed. These trees were considered to have a range of roosting potential for bats but are to be retained under the final scheme submitted for planning and therefore further surveys will not be required. Mitigation measures are provided.
- A breeding bird assemblage of 32 species was recorded in 2021 with 13 species meeting at least one of a range of criteria relating to conservation importance and or special statutory protection. None of the breeding species were present in any significant numbers, i.e. approaching 1% of the UK population. The diversity of species present within the survey area is at a level indicative of local importance to breeding birds. Mitigation measures are provided.
- The hedgerows, scattered trees and arable land on site were considered to offer potential nesting habitat for a range of bird species.
- No nesting bird surveys will be required if any habitat removal / construction is undertaken outside the nesting bird season (March to August inclusive). However, if removal / construction is scheduled within the season, a nesting bird check by a suitably qualified ecologist prior to works will be required and, in the case of ground nesting birds, monitoring during the construction phase may also be required.
- Japanese Knotweed, a Schedule 9 invasive species (Wildlife & Countryside Act 1981, as amended) was found to be present in close proximity to the proposed works. It is considered that the Japanese knotweed is a sufficient distance from the works that it is unlikely to be spread as a result. However, a management plan has been developed (RPS, 2021) and a control programme should be implemented to control the spread of Japanese Knotweed onto site.
- The site provides habitat suitable for foraging and commuting badgers and the presence of badger setts within and directly adjacent to the site has been confirmed. The current proposals incorporate an avoidance approach with all setts to be retained with no works scheduled to take place within 30 m of an active sett.

- The possibility of new sett building in the future cannot be entirely ruled out. Mitigation and monitoring measures are outlined.
- To achieve biodiversity net gain across the site, areas of habitat that score highly within the biodiversity metric will be retained, and enhanced. The habitats of most value within the site consist of the hedgerows, tall ruderal habitats and scrub that runs along the boundaries. Under the scheme submitted for planning these habitats are to be retained with additional wildflower, scrub, trees and hedgerows also planned to contribute to a biodiversity net gain for the site.
- Under the scheme submitted for planning the development has the potential to provide a net gain of 163.48% for habitats and 29.57% net gain for hedgerows.

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- Appendix D Bat Transect Routes
- Appendix E Badger Activity Survey
- Appendix F Bird Species Data
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1 INTRODUCTION

1.1 Purpose and scope of this report

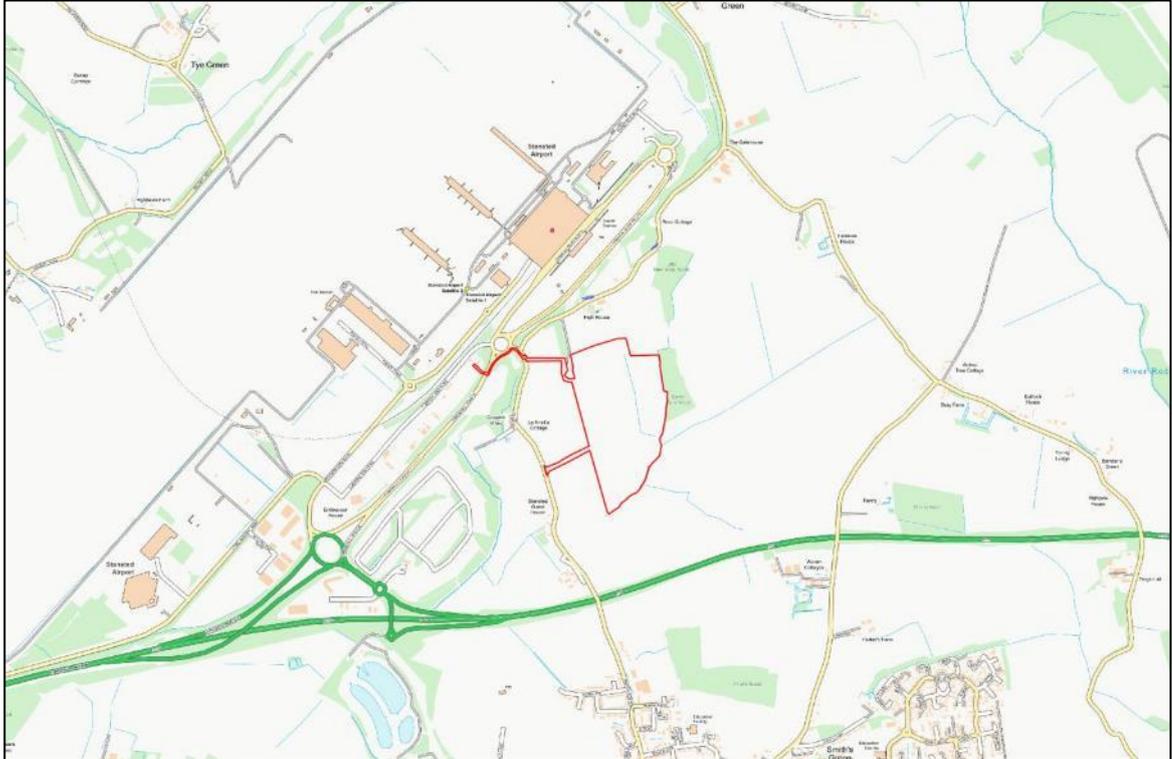
- 1.1.1 RPS was commissioned by MAG and Stansted Airport Limited to undertake an Ecological Appraisal (EA) and full suite of ecological surveys of land at Stansted Airport, Essex.
- 1.1.2 This followed the production of a Preliminary Ecological Appraisal (RPS, 2019) which identified a number of potential ecological constraints requiring further survey work. Those covered in this report are:
- Great crested newt (GCN) surveys;
 - reptiles;
 - bats (activity & roost potential);
 - breeding birds;
 - invasive species; and
 - badgers.
- 1.1.3 To undertake an assessment of the potential ecological impact of the proposals, a desk study, Phase 1 Habitat Survey, and protected species assessments were carried out. This is termed as an Ecological Appraisal Report (EAR) in accordance with CIEEM (2017) and could support a planning application.
- 1.1.4 The EA aims to:
- undertake a desk-based review of designated sites and records of protected species and other species that could present a constraint;
 - map and assess the habitats present on site;
 - assess the site for potential to support protected species or other species that could present a constraint, and make appropriate recommendations for mitigation if necessary;
 - provide the results of species-specific surveys; and
 - make recommendations for potential biodiversity enhancements in line with national and local planning policy.
- 1.1.5 This report pertains to these results only; recommendations included within this report are the professional opinion of an experienced ecologist and therefore the view of RPS. The surveys and desk-based assessments undertaken as part of this review and subsequent report including the Ecological Appraisal Notes are prepared in accordance with the British Standard for Biodiversity Code of Practice for Planning and Development (BS42020:2013).

1.2 Study area and Zone of Influence

- 1.2.1 The site is located to the east of Stansted Airport, Uttlesford, Essex and is approximately 22 ha in size. The National Grid coordinates for the centre of the site are TL 55958 22820.
- 1.2.2 The site primarily comprises arable farmland, with some tall ruderal vegetation, semi-improved grassland, hedgerows, and ditches. Surrounding land use includes Stansted Airport and arable farmland.
- 1.2.3 The site location is shown on Figure 1.1. Aerial imaging available via Google Earth Pro was also reviewed to assess the site in relation to its context in the wider landscape. The site is reasonably connected to the wider habitats through hedgerows, woodland blocks and ditches.
- 1.2.4 The term Zone of Influence is used to describe the geographic extent of potential impacts of a proposed development. The Zone of Influence is determined by the nature of the development and also in relation to designated sites, habitats or species which might be affected by the proposals.

- 1.2.5 For this site the Zone of Influence is considered to be land on and immediately adjacent to the site and 500m and 30m from the site, with specific reference to great crested newts and badgers, respectively.

Figure 1.1: Site location in a wider context



1.3 Development proposals

- 1.3.1 The proposals for the site include involve the development of a ground-mounted solar PV system with associated access, cable route and landscaping.
- 1.3.2 See Appendix C for the current proposals.

1.4 Legislation and policy

- 1.4.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate. Their context and application is explained in the relevant sections of this report.
- 1.4.2 The relevant articles of legislation are:
- The National Planning Policy Framework (NPPF, 2021);
 - Local planning policies (Essex Green Infrastructure Strategy; Uttlesford Climate Crisis Strategy);
 - The Conservation of Habitats and Species Regulations 2017, as amended by the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019;
 - The Wildlife and Countryside Act 1981 (as amended);
 - The Protection of Badgers Act 1992;
 - The Countryside and Rights of Way Act 2000;
 - The Natural Environment and Rural Communities Act 2006;
 - Essex Biodiversity Action Plan.

- 1.4.3 A summary of legislation relevant to protected or other species identified as potential constraints in this report is provided in Appendix A.

2 METHODS

2.1 Desk Study

- 2.1.1 Ecological records within a 2 km radius of the site were requested from Essex Wildlife Trust and Essex Field Club. Data requests were limited to records for protected species recorded within the last ten years and sites of nature conservation interest within 2 km of the site. This included a review of existing statutory sites of nature conservation interest, such as Sites of Special Scientific Interest (SSSIs), Special Protection Areas (SPAs), Special Area of Conservation (SACs) and National Nature Reserves (NNRs), and non-statutory sites, such as Sites of Importance for Nature Conservation (SINCs) and Local Wildlife Sites (LWSs).
- 2.1.2 Locations of statutory designated sites were accessed via the government 'MAGIC' website (MagicMap, 2019).
- 2.1.3 A 1:25,000 OS map was used to identify nearby features such as ponds or green corridors that could provide habitat or connectivity to other areas.

2.2 Ecological Appraisal

- 2.2.1 The initial ecological appraisal consisted of two components: a Phase 1 Habitat survey and scoping surveys for protected species and other species of conservation concern which could present a constraint to development.
- 2.2.2 Initial proposals for the site covered a wider area, approximately 45 ha of mainly arable habitat was surveyed for the Preliminary Ecological Appraisal. This was reduced to the 22 ha this report describes and assesses.
- 2.2.3 The Phase 1 Habitat surveys followed the standard methodology (JNCC, 2010), and as described in the Guidelines for Preliminary Ecological Assessment (IEEM, 2012). In summary, this comprised walking over the survey area and recording the habitat types and boundary features present.
- 2.2.4 A protected species scoping survey was carried out in conjunction with the Phase 1 Habitat survey. The site was assessed for its suitability to support protected species, in particular great crested newts (GCN) *Triturus cristatus*, reptiles, birds, badgers *Meles meles*, bats, and other species of conservation importance that could pose a planning constraint.
- 2.2.5 The surveyor looked for evidence of use including signs such as burrows, droppings, footprints, paths, hairs, refugia and particular habitat types known to be used by certain groups such as ponds. Any mammal paths were also noted down and where possible followed. Fence boundaries were walked to establish any entry points or animal signs such as latrines. Areas of bare earth were inspected for mammal prints. Areas of habitat considered suitable for protected species or those of conservation interest were recorded.

2.3 Further Surveys

- 2.3.1 Further surveys for GCN, reptiles, bats, breeding birds, invasive species, and badgers were carried out as a result of the initial scoping survey. Specific methodologies are outlined below.

2.4 Great Crested Newt

Great Crested Newts – Habitat Suitability Index (HSI)

- 2.4.1 The location of ponds surveyed for GCN are shown on Figure 2.1.
- 2.4.2 Five waterbodies were assessed for their potential to support Great Crested Newts (GCN), using the Habitat Suitability Index (HSI) on the 28th April 2021. This instrument assesses the ponds against ten pre-determined criteria, producing a score which indicates the degree of suitability for occupation by GCN. The HSI's were conducted by Peter Watson MCIEEM, (RPS Principal Ecologist) and Gemma Kitchin (RPS Assistant Ecologist).

2.4.3 All accessible waterbodies within 500 m of connected, suitable habitat were evaluated against the great crested newt (GCN) Habitat Suitability Index (HSI) (Oldham *et al*, 2000). One additional waterbody just outside the 500 m buffer was included in the survey effort as it fell within the 500 m buffer for the previous proposal. The assessment comprised a combination of field survey (where access was available) and review of aerial view and Ordnance Survey (OS) maps to identify ponds outside of the site boundary.

2.4.4 The HSI provides a measure of the suitability of a waterbody for supporting great crested newts by assigning an overall score of between 0 and 1, which is based on ten key criteria as follows:

SI ₁	Geographic location	SI ₆	Presence of water-fowl
SI ₂	Pond area	SI ₇	Presence of fish
SI ₃	Pond drying	SI ₈	Number of local ponds
SI ₄	Water quality	SI ₉	Terrestrial habitat quality
SI ₅	Shade	SI ₁₀	Plant coverage

2.4.5 In general, ponds with a higher score are more likely to support GCN than those with lower score and suitability for GCN is determined according to the scale outlined in Table 2.1 below. For reference, each waterbody that was assessed was numbered P1, P2, P3 etc. Values close to 0 indicate unsuitable habitat; 1 represents optimal habitat. Research has shown that there is a positive correlation between HSI scores and the number of GCN observed in a pond.

Table 2.1: HSI scoring criteria

HSI score	Habitat suitability
<0.5	Poor
0.5 - 0.59	Below Average
0.6 – 0.69	Average
0.7 – 0.79	Good
>0.8	Excellent

Great Crested Newts – Population Assessment

2.4.6 The surveys were undertaken by Peter Watson MCIEEM (NE licence holder no. 2015-17829-CLS-CLS) and Andrew Seth (RPS Ecologist), both of whom have at least three years’ experience of surveying for GCN.

2.4.7 The population size class estimate survey follows standard presence absence survey methods extended to include an additional two survey visits (six in total) where GCN are found to be present within the first four visits to gather sufficient information to estimate the size class of the population.

2.4.8 The surveys followed the survey methods set out in the Great Crested Newt Mitigation Guidelines (English Nature, 2001).

2.4.9 The four survey visits were carried out on 30th / 31st March 20th / 21st April, 27th / 28th April and 11th / 12th May 2021. Each visit included a torch survey, a bottle trapping and an egg search (see Survey Techniques below).

2.4.10 In accordance with the guidelines, surveys were undertaken during suitable weather conditions (i.e. when night-time air temperatures are above 5°C and avoiding heavy rain or strong winds that could constrain torchlight surveys).

Survey Techniques

Torch Survey

2.4.11 Torch surveying was conducted at least 30 minutes after dusk using 1,000,000 candlepower torches. The pond was systematically surveyed searched by shining the torch into the water column from all the accessible margins.

- 2.4.12 Other aquatic amphibian fauna seen during the survey was also recorded, along with details of water clarity and weather conditions that could impact upon the effectiveness of the search such as rain or wind disturbance of the water surface.

Bottle Trapping

- 2.4.13 Great crested newt bottle traps were set in shallow marginal water of the pond before sunset and were checked early the next morning. Each trap was placed in the pond partially below the water line and secured in place with a cane. The traps were positioned so that an air bubble was present within them, allowing any captured newts to breath. The traps were placed throughout all accessible areas of the pond margins spaced at approximately 2 m intervals.

Egg Searching

- 2.4.14 Visual searches were made for newt eggs which are laid singly on material that is then folded around the egg to provide protection from predation and UV light. Searches were made for aquatic vegetation on which great crested newts will often lay eggs if present (sweet grass *Glyceria* sp., water mint *Mentha aquatica* and water forget-me-not *Myosotis scorpioides*). When marginal vegetation was absent, visual searches were made for folded dead leaves and any suitable litter such as crisp packets in the edge of the pond as these materials can be used for egg laying where there is very limited suitable vegetation.
- 2.4.15 The inspections searched for characteristic folds indicative of great crested newt eggs; 'unwrapping' an egg to confirm species identification. Because exposed eggs can be prone to predation and the effects of UV radiation, where a great crested newt egg was identified the search was terminated with breeding confirmed.

Population Presence / Size Class Estimate

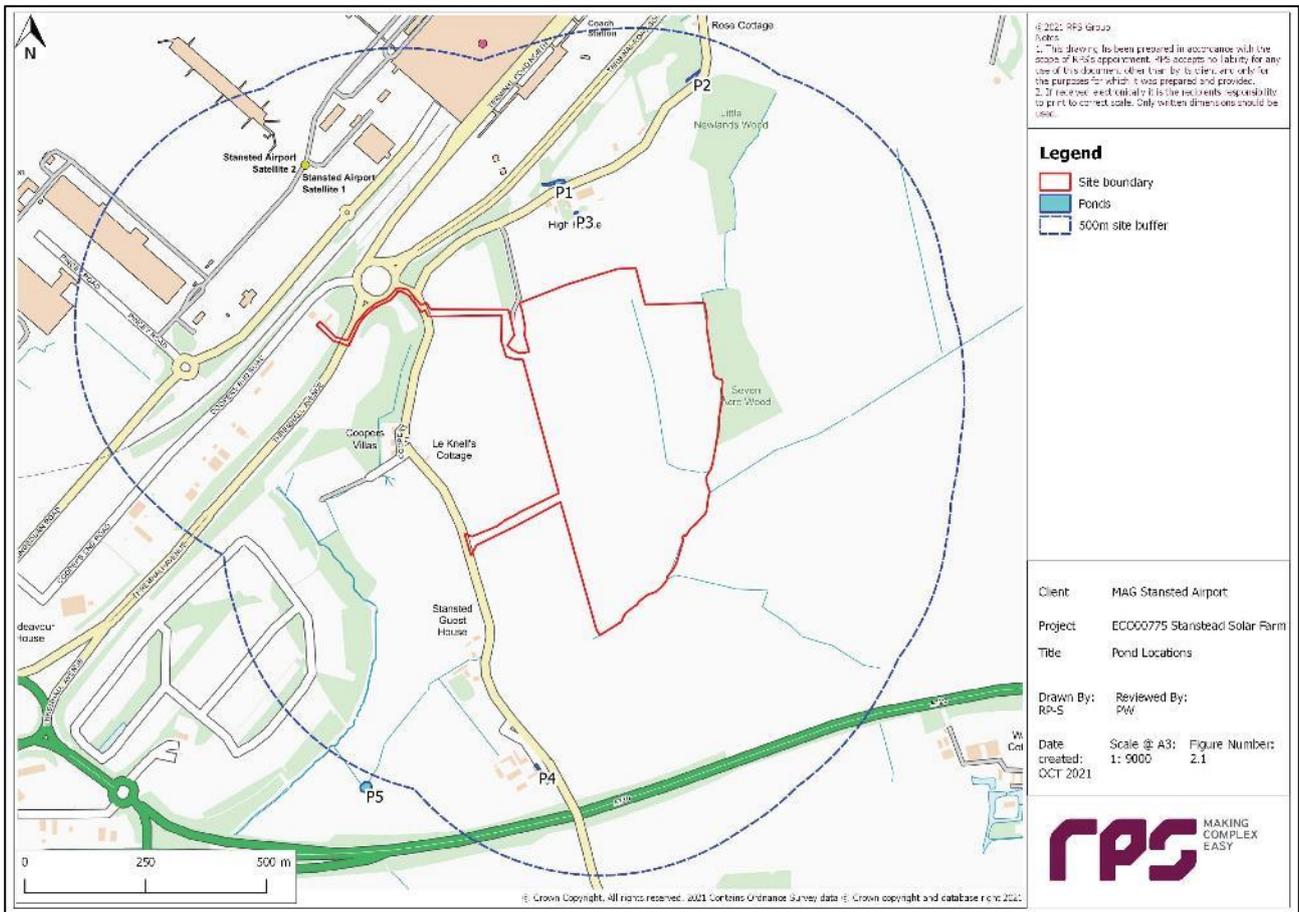
- 2.4.1 Population size class estimates are based on the maximum adult newt count in a single night through either torch survey or bottle-trapping. (English Nature, 2001).
- 2.4.2 Based on the peak counts, population size classes are classified as follows:
- 'small population' for peak counts up to 10;
 - 'medium population' for peak counts between 11 and 100;
 - 'large population' for peak counts over 100.

Limitations

General Survey Limitations

- 2.4.3 No significant limitations were encountered during any of the surveys. It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.
- 2.4.4 Approximately 50% of the margin of Pond 1 was inaccessible for bottle trapping due to dense scrub on the edge of the waterbody, torch count was also compromised at this location, although to a lesser extent. The sections that weren't covered were partially overhung by shrubs and survey limitations are unlikely to have affected the result. In this respect the constraint was not considered significant.

Figure 2.1: Pond locations



2.5 Reptiles

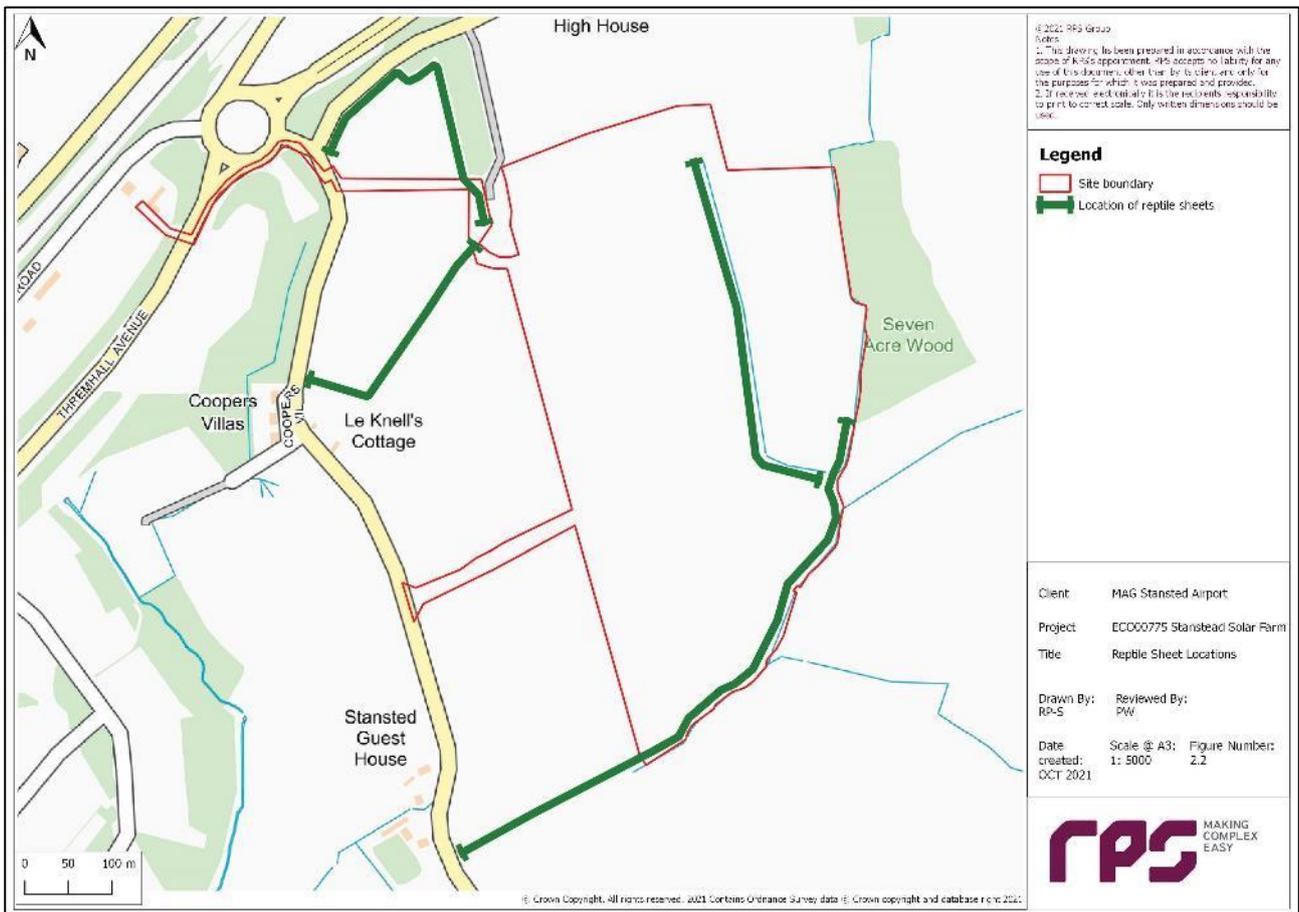
- 2.5.1 Artificial refugia in the form of sheets of roofing felt, approximately 0.5 m² in size, were placed in likely basking spots (for example, un-shaded patches next to cover, in areas of long grass and next to potential hibernation sites such as hedgerows, logs or disused rabbit burrows).
- 2.5.2 100 sheets were placed around site in the locations shown on Figure 2.2.
- 2.5.3 The site was visited on 7 days in May and June 2021 during suitable weather conditions. Reptile activity is greatly influenced by weather conditions, with reptiles most likely to use refugia in temperatures of between 10°C and 18°C (Froglife, 1999), in hazy or intermittent sunshine with light winds (Gent & Gibson, 1998).
- 2.5.4 The weather conditions and temperatures for each visit are set out in Table 2.2 below.

Table 2.2: Reptile survey dates and weather conditions

Visit Number	Date	Temperature (°C)	Weather	Wind
1	12/05/2021	14	Dry sunny spells	F2 SSW
2	18/05/2021	12	Dry, full sun	F1 W
3	21/05/2021	11	Overcast, dry	F5 SW
4	26/05/2021	12	Sunny spells, dry	F2 NW
5	28/05/2021	15	Sunny spells, dry	F1 SE
6	02/06/2021	14	Sunny, dry	F3 E
7	08/06/2021	14	Sunny spells, Dry	F1 W

2.5.5 Each visit involved walking slowly around the entire site, checking suitable reptile basking and refuge areas and checking all of the reptile sheets on site.

Figure 2.2: Reptile refugia locations.



2.6 Bats

Tree Assessment

- 2.6.1 The survey was conducted on 15th July 2021 by Peter Watson (RPS Principal Ecologist) following best practice as described by the Bat Conservation Trust (Collins, J., 2016), English Nature’s Bat Mitigation Guidelines (Mitchell-Jones, 2004) and the Joint Nature Conservation Committee’s Bat Worker’s Manual (Mitchell-Jones & McLeish, 2004). Peter Watson holds qualifications to access trees at height. Locations of the surveyed trees are shown on Figure 2.3.
- 2.6.2 Trees were assessed as having the potential to support bats roosts if they had features such as holes, cavities or splits, particularly if there was dark staining on the tree below the hole caused by the natural oils in the bats’ fur; scratch marks around the hole or droppings below.
- 2.6.3 The trees’ suitability for roosting bats was also assessed by examining the surrounding habitat. Important habitat features surrounding the structure which may influence roost potential include whether the structure is in a semi-rural or parkland location, its proximity to a significant linear habitat features such as a watercourse, mature hedgerow, wooded lane or an area of woodland.
- 2.6.4 Close focus binoculars (Bushnell H2O) and a powerful torch (Cluson CB2) were used to examine the trees from the ground, to search for potential roosting places for bats.
- 2.6.5 During the survey the weather remained dry with good visibility, 10% cloud cover, and an air temperature of 22°C with light wind (Beaufort 1).

Figure 2.3 Tree locations.

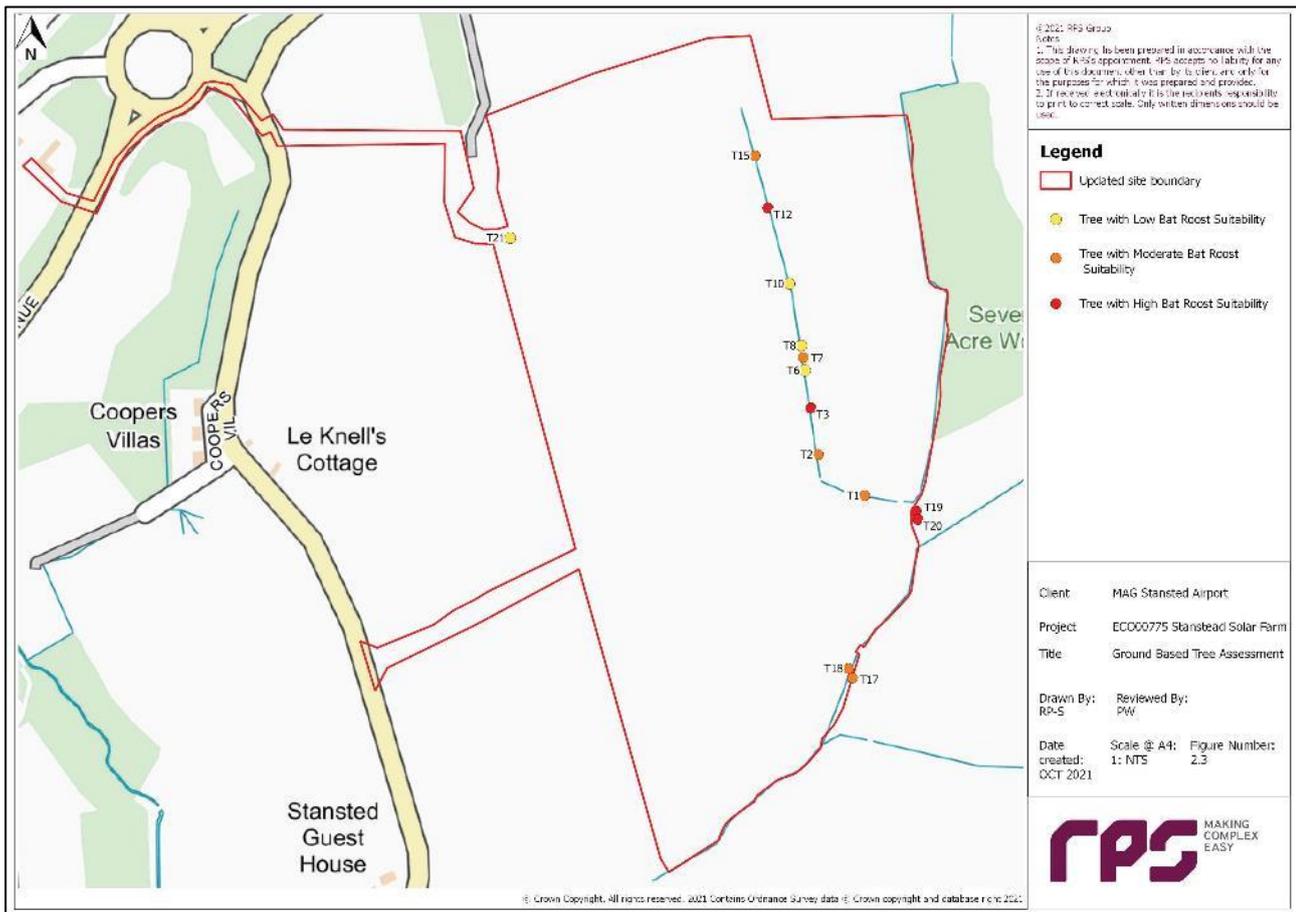


Table 2.3: Assessment of site value for bats, based on the occurrence of habitat features.

Value	Description of feature
Low	<ul style="list-style-type: none"> No features likely to be used by bats (for roosting, foraging or commuting) Small number of potential (opportunistic) roost sites (i.e. probably not maternity roosts or hibernacula). Isolated habitat that could be used by foraging bats (e.g. a lone tree or patch of scrub – not parkland) Isolated site not connected by prominent linear features to suitable adjacent or other foraging habitat
Increasing site value for bats	<ul style="list-style-type: none"> Several potential roost sites in buildings, trees or other structures Habitat could be used by foraging bats (e.g. trees, shrub, grassland or water) Site is connected with the wider landscape by linear features that could be used by commuting bats (e.g. lines of trees and scrub or linked gardens) Buildings, trees or other structures (e.g. mines, caves, tunnels, ice houses and cellars) of particular significance to roosting bats Site includes habitat of high quality for foraging bats (e.g. broadleaved woodland, tree-lined watercourses and grazed parkland)
High	<ul style="list-style-type: none"> Site is connected with the wider landscape by strong linear features that could be used by commuting bats (e.g. river valleys, streams, hedgerows) Site is close to known roosts Bats recorded or observed using an area for foraging or commuting close to a potential roost
Confirmed presence	<ul style="list-style-type: none"> Evidence indicates that a building, tree or other structure is used by bats (e.g. bats seen roosting or observed flying from a roost or freely in the habitat; droppings, carcasses, feeding remains etc. found; and/or bats heard ‘chattering’ inside a roost on a warm day or at dusk).

Bats – Activity (Transect & Static) Surveys

- 2.6.6 Seven surveys were conducted of the application site during the period of April to October (inclusive). Six surveys were completed at dusk, one survey at dawn.
- 2.6.7 The April to September transect routes were based on the original site proposals which were reduced September 2021. The October transect route reflects the reduced site boundary.
- 2.6.8 Due to an unseasonably cold spring the April transect was delayed until the overnight low temperatures recovered to levels suitable for bat activity.
- 2.6.9 The transect route was devised to cover as much of the site as practicable, whilst focussing on the habitats identified in the PEA as likely to be most important for foraging and commuting bats and including boundary features and linear habitats which are often favoured by bats. The routes are shown in Appendix D.
- 2.6.10 Two static bat detectors were employed at the site and rotated to different locations monthly, the locations are shown on Appendix D. These locations were chosen as they are habitats suitable for bat commuting and foraging which will be affected by the development. Both detectors were deployed simultaneously, on seven occasions (once per month during April to October) and on each occasion the detectors recorded for consecutive nights (except in August when no recordings were made by the No 2 detector in due to a technical fault, background noise also reduced the number of days on several occasions).
- 2.6.11 Bat detectors were used to record bat echolocation calls and identify species where possible. Surveyors used a combination of Wildlife Acoustics EMT2 Pro and Anabat Swift detectors. Anabat Swifts were also used for static recording. Calls were analysed using Analook and Kaleidoscope software to identify bat species recorded in each survey location.
- 2.6.12 The dusk surveys commenced at sunset, and typically lasted for 2 hours after sunset, in order to record the expected peak period of bat activity on the site.

- 2.6.13 All bat passes, including time and species, were recorded. Where possible the behaviour of the bat was also recorded, including foraging and commuting behaviour.
- 2.6.14 The surveys were carried out following current guidelines (Collins, 2016). The dates and weather conditions during the surveys are shown in Table 2.4.

Table 2.4. Bat activity survey dates and weather conditions

Survey Number	Date	Weather	Temperature (°C)	Sunset/Sunrise time	Start time	End time
1*	10/05/21	Dry, 1/8, B2	15-11	20:39	20:39	22:39
2	25/05/21	Dry, 6/8, F1	13-10	21:01	21:01	23:01
3	15/06/21	Dry, 3/8, F1	17-14	21:20	21:12	23:20
4	14/07/21	Dry, 1/8, No wind	19-17	21:13	21:13	23:13
5	10/08/21	Dry, 1/8, F1	20-18	20:31	20:31	22:31
6	02/09/21	Dry, 8/8, F2	17-14	19:43	19:43	21:43
7	01/10/21	Dry, 8/8, F4	16-15	06:57	04:57	06:57

* Low overnight temps delayed April Transect.

- 2.6.15 The overall conservation value of the site for foraging and / or commuting bats was assessed by consulting county and national distribution and rarity of each species of bat recorded within the site, results of the activity surveys and the guidelines provided in Table 2.3.

2.7 Breeding birds

- 2.7.1 The breeding bird survey undertaken was based on a standard territory mapping methodology as outlined in Gilbert et al. (1998) and Bibby et al. (2000).
- 2.7.2 This method is based on the principle that the majority of species are territorial during the breeding season. This results in birds occupying discrete territories and displaying various behaviours (e.g. conspicuous song, visual display and periodic disputes with neighbouring individuals) allowing their location and abundance to be estimated.
- 2.7.3 The survey area, as shown in Figure 1.1, was walked at a slow pace in order to locate and identify all individual birds. Visits were undertaken early in the morning, finishing before midday. All of the site was covered that was included in red line boundary where land access was granted. The surveys commenced spring 2021 prior to the reduction in the development plans, therefore some territories are now adjacent to the boundary rather than within. Suitable optical equipment was used to observe bird behaviour and all accessible parts of the survey area were approached to within 50-100m. Survey routes were mapped and the direction walked alternated on each visit, to ensure that all areas were covered at various times of morning across the duration of the survey. All species encountered within the survey area were recorded and mapped.
- 2.7.4 Surveys for breeding birds were undertaken in spring / summer 2021 with a total of five survey visits taking place. The dates of each survey visit, the ornithologist and weather conditions were as follows:
- Visit 1: 31st March 2021; (Andrew Seth) Dry, cold, 7-9 degrees c, overcast then sunny, 7/8, SW F3
 - Visit 2: 15th April 2021; (Andrew Seth) Dry cold with frost 0-3 degrees c, 3/8, N F3
 - Visit 3: 27th April 2021; (Andrew Seth) Dry, cold 4 degrees c, sunny spells, 7/8, SE F1
 - Visit 4: 12th May 2021; (Andrew Seth) Dry, overcast, mild 10-11 degrees c, 3/8, SW F3
 - Visit 5: 9th June 2021; (Andrew Seth) Dry, sunny, mild 17-18 degrees c, 2/8, SW F2

- 2.7.5 On each visit, registrations were recorded directly into ESRI GIS software loaded on handheld tablet devices. A fresh map was used for each survey. Registrations of birds were recorded using standard British Trust for Ornithology (BTO) two letter species codes (BTO 2009). Specific codes were also used to denote singing, calling, movement between areas, flight, carrying food, nest building, aggressive encounters and other behaviour.
- 2.7.6 The expected outcome of a territory mapping survey is that mapped registrations fall into clusters approximately coinciding with territories. A cluster is generally a spatially distinct group of registrations that represent the activity of not more than one territorial male or pair. Ideally, clusters include registrations of territorial behaviour across all visits and are clearly demarcated from adjacent clusters by simultaneous recording of neighbouring birds. Where a species exhibits high territory density, the mapping of simultaneously singing birds becomes essential. Territory boundaries are assumed to be between such birds.
- 2.7.7 Territory mapping methods produce analysis maps of non-overlapping ellipses encircling clusters of records thought to relate to separate territorial males or breeding pairs. These ellipses may not show the entire extent of a pairs' actual breeding territory, which may be significantly larger, however, they are likely to show those areas in which the pair is most active.
- 2.7.8 On completion of the surveys, analysis maps were produced for each species, consisting of all registrations recorded during the survey. From these species maps, the number of territories was calculated by identifying the number of clusters present.
- 2.7.9 Standard registration mapping techniques were also used to record non-breeding species.
- 2.7.10 The following definitions have been used to identify the breeding status of the species recorded:
- Confirmed breeding: includes species for which territories were positively identified as a result of the number of registrations, the location of an active nest, and the presence of recently fledged young or downy young.
 - Probable breeding: includes a pair observed in suitable nesting habitat in breeding season, or agitated behaviour / anxiety calls from adults indicating the presence of nest or young nearby. Behaviour was observed on insufficient occasions to confirm the presence of a territory.
 - Possible breeding: includes species observed in breeding season in suitable nesting habitats or singing male present (or breeding calls heard) in breeding season in suitable breeding habitat however records to determine a confirmed breeding either limited or sporadic.
 - Non-breeding: fly-over species observed but suspected to be on migration, or species observed but suspected to be summering non-breeder.

Assessment criteria

- 2.7.11 The assessment of the breeding bird community of the Stansted Solar study site includes a focus on species that are afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest, these include:
- Species listed on Annex 1 of the EC Birds Directive (Directive 2009/147/EC).
 - Species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).
 - Species included on the Section 41 list of Species of Principal Importance of the Natural Environment and Rural Communities (NERC) Act 2006.
 - Species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Eaton, et al. 2015).
 - Species occurring in nationally, regionally or locally important numbers.

- 2.7.12 Annex 1 species are those for which the UK Government are required to take special measures, including the designation of Special Protection Areas, to ensure the survival and reproduction of these species throughout their area of distribution.
- 2.7.13 Schedule 1 species are those which, along with their nests, eggs and dependant young, are afforded additional protection during the breeding season.
- 2.7.14 The NERC list of Species of Principal Importance is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the Natural Environment and Rural Communities Act 2006; under Section 40 every public authority (e.g. a local authority or local planning authority) must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. In addition, with regard to those species on the list of Species of Principal Importance prepared under Section 41, the Secretary of State must:
- “(a) take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section”, or*
- “(b) promote the taking by others of such steps.”*
- 2.7.15 Species listed on the BoCC Red List are those that have declined in numbers by 50% over the last 25 years, those that have shown an historical population decline between 1800 and 1995 and species that are of global conservation concern. The 67 species on the Red List are of the most urgent conservation concern.
- 2.7.16 Species listed on the BoCC Amber List, of which there are currently 96, include those that have shown a moderate decline in numbers (25%-49%) over the last 25 years and those with total populations of less than 300 breeding pairs. Also included are those species which represent a significant proportion (greater than 20%) of the European breeding or wintering population, those for which at least 50% of the British population is limited to 10 sites or less, and those of unfavourable conservation status in Europe.
- 2.7.17 The remaining species are placed on the Green List, indicating that they are of low conservation priority. These species still receive full protection through the provisions of the Wildlife and Countryside Act 1981, as amended.

Limitations

- 2.7.18 There were very few limitations to the Stansted Solar farm breeding bird surveys. There was some cold, very dry weather early this spring with at least two of earlier visits carried out after light frosts in morning but this is unlikely to affect results in a significant way. There was restricted access to the some of the off-site land immediately adjacent to the red line boundary. In these areas bird activity was recorded from the boundary of the site.

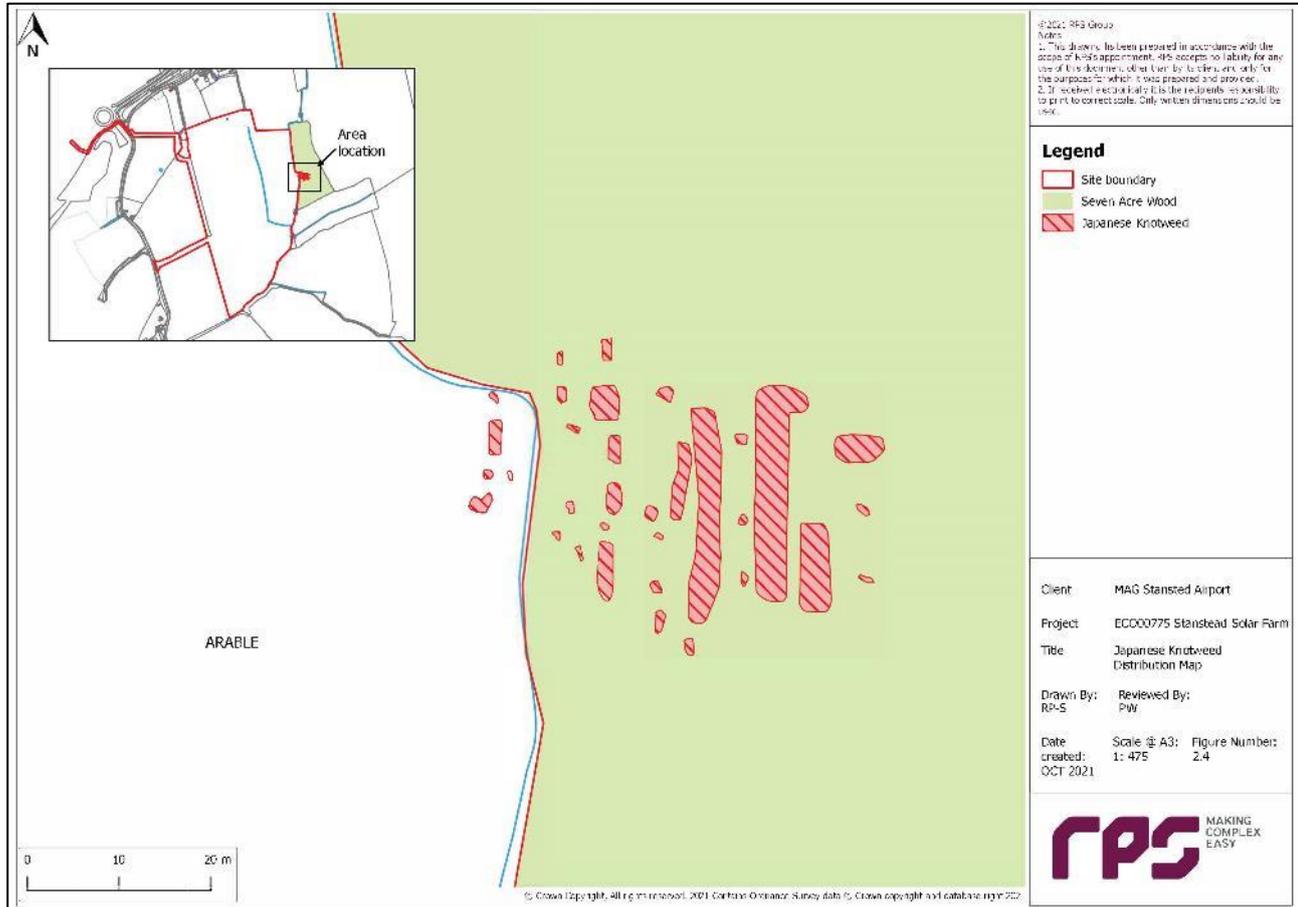
2.8 Invasive Species

- 2.8.1 An invasive species assessment was conducted on the 11th August 2021 by Peter Watson (RPS Principal Ecologist) following best practice as described by the Environment Agency (2006, amended in 2013), Royal Institute of Chartered Surveyors (RICS, 2015) and the Property Care Association (PCA, 2018).
- 2.8.2 Peter Watson is a Certificated Surveyor of Japanese Knotweed accredited by the PCA (Property Care Association). RPS is a full member of the PCA.
- 2.8.3 The survey entailed a detailed search within the boundary of the property including a search for signs of dead stems, old crowns or leaves along with a careful search of the immediate surrounding vicinity and what could be seen of neighbouring properties.
- 2.8.4 The location of any invasive species were recorded along with:
- the level of establishment;
 - the health of plants; and

- any other relevant information (e.g. presence of features that might impede control).

2.8.5 Figure 2.4 shows the location of all invasive species present on the Stansted site.

Figure 2.4: Japanese Knotweed distribution.



2.9 Badger Survey

- 2.9.1 The badger survey was carried out in line with industry standard methodology (Harris *et al* 1989).
- 2.9.2 Survey results and sett locations can be found in Appendix E. This information should be kept CONFIDENTIAL and not published. Location data should be removed prior to sharing in a public forum.
- 2.9.3 The survey was conducted by Peter Watson on the 31st March 2021. Peter Watson is a named ecologist on licenced sett closures for development purposes and is experienced in the use of various exclusion strategies including gating, badger proof fencing and the use of electric fences along with Stage 2 Badger activity surveys and Stage 3 Bait Marking Surveys: Social group interactions & territorial boundaries.
- 2.9.4 All suitable habitats within 30m of the site boundary were surveyed to search for evidence of badgers including latrines, footprints, badger hair caught on fences, snuffle holes and paths. Any badger setts discovered were categorised as follows:
- Main** - several holes with large piles of excavated soil and clear paths connecting sett entrances.
 - Annex** - normally less than 150m from main sett comprising several holes but may not be active all year round even if the main sett is very active.
 - Subsidiary** - usually at least 50m from main sett with no other obvious paths leading to other setts.

- **Outlier** - little spoil outside, no obvious paths leading to the sett entrances. Could be in use by foxes or rabbits.

2.9.5 Activity levels were assessed using the following criteria:

- **Active** - holes with one or more of the following features: well-worn entrance; freshly excavated soil; bedding material.
- **Partially used** - leaves or twigs in entrance and/or mosses and other plants growing in or around entrance, requiring little excavation before re-occupation.
- **Disused** - partially or completely blocked, with considerable amount of excavation required for reoccupation.

2.10 Biodiversity Net Gain

2.10.1 Biodiversity Net Gain (BNG) is defined as “an approach where developers work with local governments, wildlife groups, land owners and other stakeholders to support their priorities for nature conservation” and “development that leaves biodiversity in a better state than before” (CIRIA, 2019).

2.10.2 The requirement for developments to seek to achieve BNG arises from the National Planning Policy Framework (NPPF), which states in Para. 174 that:

“Planning policies and decisions should contribute to and enhance the natural and local environment by ... minimising impacts on and providing net gains for biodiversity.”

2.10.3 There is no single set method for quantifying the assessment of BNG but one method is the use of biodiversity calculators to assess the biodiversity value of habitats pre- and post-development based on habitat type, distinctiveness and condition.

2.10.4 A biodiversity index is derived for the baseline and for the proposed development. CIEEM (2019) describe a projects ecological baseline as:

‘Conditions existing in the absence of proposed activities.’

2.10.5 BNG is considered to be achieved where an increase in value is delivered (on or offsite), and where habitats of a higher value are not replaced exclusively with habitats of a lower value.

2.10.6 The methods of calculating BNG for this project followed the guidance produced by Natural England’s Biodiversity Metric 3.0 (JP039) (Crosher *et al.* 2019). Defra made available its beta test update of its BNG assessment tool in July 2019, which was subsequently updated in December 2019 and July 2021. This tool has been used for the assessment in this report. The tool and associated documents were downloaded from:

<http://publications.naturalengland.org.uk/publication/6049804846366720>

2.10.7 The baseline data and post development data such as habitat enhancement and creation, was imputed into the calculator to work out the total net percentage change of the site.

Condition Assessment

2.10.8 Using the data collected for the Phase 1 survey (RPS, 2019), habitat condition assessments were undertaken for the habitats present within the project boundary.

2.10.9 The appropriate ‘Condition sheet’ was first selected via the Table TS1-1 in the technical supplement provided by Crosher *et al.* (2019).

2.10.10 The condition sheet was then used to assess the individual habitats by comparing how they scored against pre-set condition assessment criteria. The criteria describe what components are needed for the habitat to be of good, moderate or poor value.

2.10.11 Each habitat was scored one of the following:

- 1 - Poor

- 2 - Moderate
- 3 - Good

2.10.12 The calculator allows these to be further divided and provides categories for fairly good and fairly poor. The ecologist undertaking the assessment used their professional judgement, considering the habitat condition assessment criteria, to decide when it was suitable to use these categories.

2.10.13 It should be noted that some habitats are given a fixed score and do not need assessing.

2.11 Limitations

Desk Based Assessment

2.11.1 The desk study data is third party controlled data, purchased for the purposes of this report only. RPS cannot vouch for its accuracy and cannot be held liable for any error(s) in these data.

Surveys

2.11.2 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

2.11.3 The protected / notable species assessment provides a preliminary view of the likelihood of these species occurring on the site, based on the suitability of the habitat, known distribution of the species in the local area provided in response to our enquiries and any direct evidence on the site. It should not be taken as providing a full and definitive survey of any protected/notable species group.

2.11.4 The initial Phase 1 habitat survey was carried out outside of the optimal survey season (April to October). However, as further surveys were carried out at the site during the appropriate season, this is not considered a limitation to the results within this report.

Accurate Lifespan of Ecological Data

2.11.5 The majority of ecological data remain valid for only short periods due to the inherently transient nature of the subject. The survey results contained in this report are considered accurate for two years, assuming no significant considerable changes to the site conditions.

3 RESULTS

3.1 Designated Sites

- 3.1.1 There are two statutory designated sites for nature conservation value within 2 km of the site. The closest of these is Elsenham Woods SSSI, located 1.4 km from the site.
- 3.1.2 Eight non-statutory sites are located within the 2 km search radius of the site. The closest of these is Stansted Airport Sewage Works Fen LWS, located 0.02 km from the site.
- 3.1.3 A summary of these sites is provided in Table 3.1 below and the location of each site is detailed in Figure 3.1.

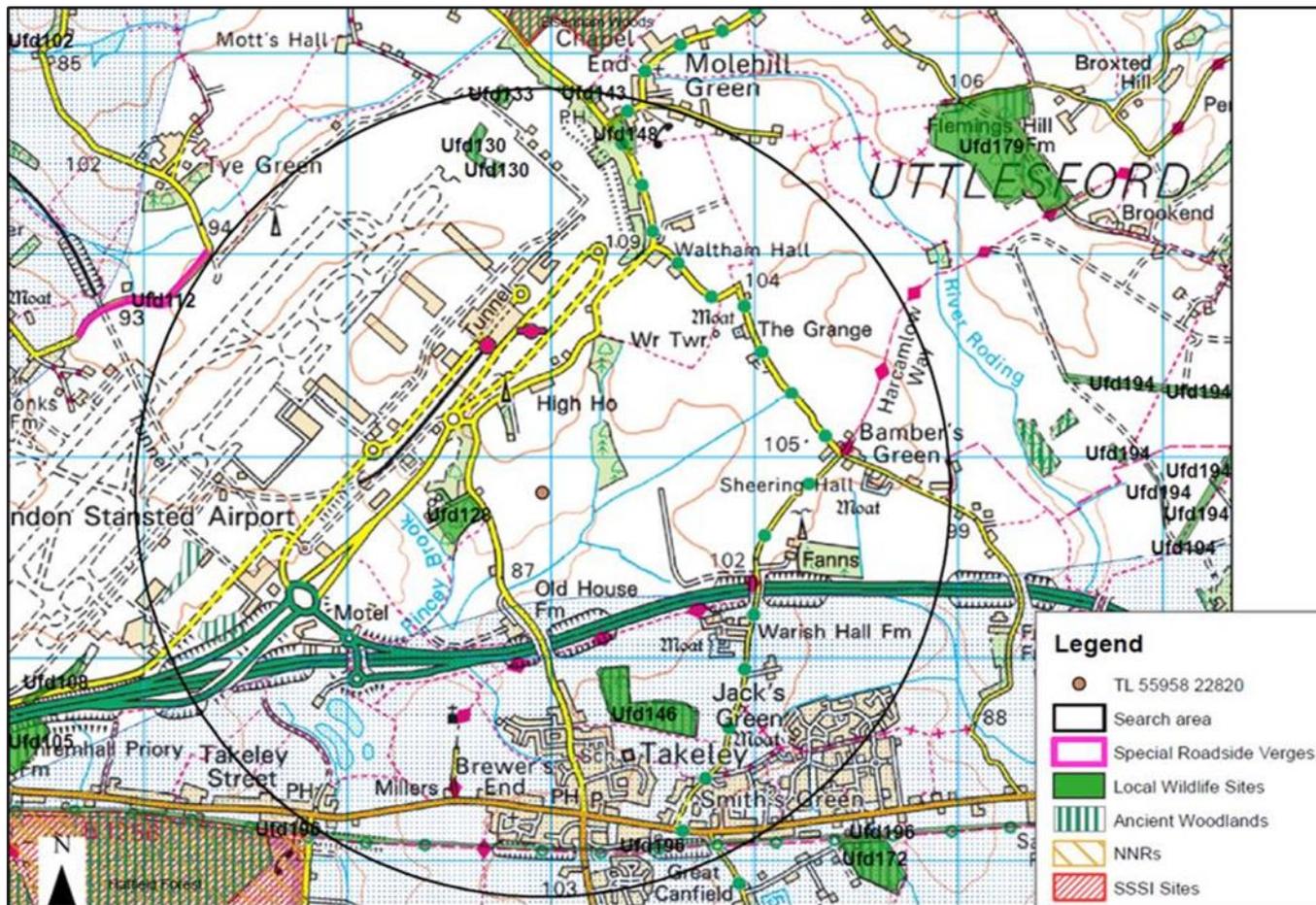
Table 3.1: Designated sites within 2 km of the study area

Site name	Type	Approx. area (ha)	Interest Features	Distance from site (km)
Statutory Sites				
Elsenham Woods	SSSI	44.4	Botanically diverse and well-maintained woodland	1.40km N
Hatfield Forest	NNR, SSSI, (CP)	392.6	A small Royal Forest that has survived since medieval times. The area is a mosaic of open grassland, coppiced woodland, and marshland	1.56km SW
Non-statutory Sites				
Stansted Airport Sewage Works Fen	LWS	3.6	Species-rich grassland, wet grassland, and fen.	0.02km W
Prior's Wood	LWS	8.0	Ancient Woodland	0.57km SSE
Molehill Green	LWS	1.4	Unimproved damp grassland; a rare Essex habitat type	0.92km NNE
Molehill Green Meadow	LWS	0.5	Species-rich meadow notable for its population of cowslip and other flora	1.15km NNE
Pritchett's Spring	LWS	0.5	Ancient copse	1.25km N
Flitch Way	LWS, CP	33.6	A disused railway line providing a mosaic habitat	1.26km S
Runnels Hey	LWS	5.1	Ancient Woodland	1.99km SE
Philipland/ Middlefield Wood	LWS	22.4	Ancient Woodland	1.98km NE

Abbreviations used in Table 3.1: SSSI: Site of Special Scientific Interest; NNR: National Nature Reserve; LWS: Local Wildlife Site; CP: Country Park; ha: hectare.

- 3.1.4 The closest NERC Habitat of Principal Importance is deciduous woodland. The site also sits within the SSSI Impact Risk Zones for both of the SSSIs. This is explained and discussed further in Section 4 of this report.

Figure 3.1: Designated sites within 2 km



3.2 Species Records

- 3.2.1 Records of protected species were obtained from the Essex Wildlife Trust and Essex Field Club. A number of species of conservation importance or otherwise notable were recorded within the 2 km search radius of the site. None of the records provided fall within the application site boundary. A summary of these records is provided in Table 3.2.
- 3.2.2 In order to simplify the results, only records of species from the last 10 years are shown. In addition, only data with a 6-figure grid reference resolution or higher are provided, since locations given at a lower resolution do not allow accurate calculation of distance to the site boundary.

Table 3.2: Species records from the last 10 years within 2 km of the site

Common name	Scientific name	Nearest distance from site (km)	Year of most recent record	Conservation Status
Invertebrates				
Cinnabar	<i>Tyria jacobaeae</i>	1.55km SW	2019	UKBAP; NERC
Latticed Heath	<i>Chiasmia clathrata</i>	1.55km SW	2017	UKBAP; NERC
Ruddy Darter	<i>Sympetrum sanguineum</i>	1.55km SW	2009	Essex Red Data List
Shaded Broad-bar	<i>Scotopteryx chenopodiata</i>	1.55km SW	2015	UKBAP; NERC

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Small Heath	<i>Coenonympha pamphilus</i>	1.55km SW	2017	UKBAP; NERC
Small Red-Eyed Damselfly	<i>Erythromma viridulum</i>	1.55km SW	2010	Essex Red Data List
Blood-vein	<i>Timandra comae</i>	1.93km NNE	2018	UKBAP; NERC
Amphibians				
Great Crested Newt	<i>Triturus cristatus</i>	1.22km ESE	2018	HabRegs2; HabDir2,4; NERC; UKBAP; WCA5
Reptiles				
Slow-worm	<i>Anguis fragilis</i>	1.78km S	2016	UKBAP; NERC; WCA5
Birds				
Buzzard	<i>Buteo buteo</i>	1.59km SSW	2015	Green
Great Tit	<i>Parus major</i>	1.59km SSW	2018	Green
Mammals				
			2018	PBA
Soprano Pipistrelle	<i>Pipistrellus pygmaeus</i>	0.69km WSW	2018	HabRegs2; HabDir4; NERC; UKBAP; WCA5; Essex Red Data List
European Otter	<i>Lutra lutra</i>	0.82km S	2018	HabRegs2; HabDir2,4; NERC; UKBAP; WCA5
Brown Long-eared Bat	<i>Plecotus auritus</i>	1.11km SE	2013	HabRegs2; HabDir4; NERC; UKBAP; WCA5; Essex Red Data List
Common Pipistrelle	<i>Pipistrellus pipistrellus</i>	1.17km NNE	2018	HabRegs2; HabDir4; WCA5; Essex Red Data List
Daubenton's bat	<i>Myotis daubentonii</i>	1.21km SSW	2015	HabRegs2; HabDir4; NERC; UKBAP; WCA5; Essex Red Data List
Hedgehog	<i>Erinaceus europaeus</i>	1.64km S	2018	UKBAP; NERC; Essex Red Data List
European Water Vole	<i>Arvicola amphibius</i>	1.70km ESE	2018	NERC; UKBAP; WCA5

Abbreviations used in Table 3.2: WCA5: Wildlife & Countryside Act Schedule 5; NERC: Natural Environment & Rural Communities Act Species of Principal Importance; UKBAP: UK Biodiversity Action Plan priority species; HabDir2, 4, 5: Habitats Directive Annex 2, 4, 5; PBA: Protection of Badgers Act 1992; HabRegs2: The Conservation (Natural Habitats, &) Regulations 2017 (Schedule 2); HabRegs4: The Conservation (Natural Habitats, &) Regulations 2017 (Schedule 4); Green: Bird Population Status: green.

3.3 Phase 1 Habitat Survey

- 3.3.1 The survey results are presented in the form of a map with the habitat types and boundary features marked (Figure 3.2). Photographs can be found in Appendix B.
- 3.3.2 Descriptions of the habitat types and boundary features are detailed below. Habitat descriptions are defined by broad habitat types (JNCC, 2010).

Scattered Scrub

- 3.3.3 Scattered scrub was located sporadically around the peripheries of the site, with species including bramble *Rubus fruticosus*, blackthorn *Prunus spinosa*, dog rose *Rosa canina*, and dogwood *Cornus sanguinea*.

Scattered Broadleaved Trees

- 3.3.4 Many broadleaved trees were scattered within the boundary hedgerows and throughout the site, with species including field maple *Acer campestre*, oak *Quercus sp.*, ash *Fraxinus excelsior*, hazel *Corylus avellana*, elder *Sambucus nigra*, and willow *Salix sp.*. The standalone trees ranged in age from immature to mature.

Semi-improved Grassland

- 3.3.5 Semi-improved grassland was located alongside the hedgerows, often in conjunction with the tall ruderal vegetation or where it was absent. Two large triangles of semi-improved grassland were present adjacent to the western and central game-bird set-asides. The dominant species was red fescue *Festuca rubra*, with other species including selfheal *Prunella vulgaris*, ribwort plantain *Plantago lanceolata*, and yarrow *Achillea millefolium*. The sward was short at the time of the survey.

Tall Ruderal Vegetation

- 3.3.6 Tall ruderal vegetation was present alongside many of the hedgerows on site, with a large area of tall ruderal present in the north-east corner of the site. Species included common nettle *Urtica dioica*, broad-leaved dock *Rumex obtusifolius*, teasel *Dipsacus fullonum*, spear thistle *Cirsium vulgare*, hemlock *Conium maculatum*, ragwort *Jacobaea vulgaris*, and red dead-nettle *Lamium purpureum*. The vegetation was unmanaged at the time of the survey with a height of approximately 50cm.

Wet ditch

- 3.3.7 Two wet ditches were recorded on site; one along the southern border and one along a hedgerow in the northern half of the site, south-west of the buildings. The water was very shallow (<5 cm) and had no flow. There was no bankside vegetation, and both were heavily shaded.

Arable

- 3.3.1 The majority of the site comprised arable farmland with crop species including maize, mustard, and other unidentified species. The crops were recently harvested at the time of the survey.
- 3.3.2 Arable field margins included species such as upright hedge parsley *Torilis japonica*, cock's-foot grass *Dactylis glomerata*, teasel, and ryegrass *Lolium perenne*. The margins were unmanaged at the time of the survey and at a height of approximately 50cm.
- 3.3.3 Within the northern half of the site, three strips of crop were left aside to act as a hide for game birds. One was located to the west, one to the east, and one in the centre. These game-bird set-asides included maize and mustard and were approximately 25m wide and one metre tall.

Hedgerows

Native species rich

- 3.3.4 Four native species rich hedgerows were recorded on site. These were located along the north-eastern and north-western borders and to the east of the centre of the site. Species included hazel,

field maple, elder, blackthorn, rose *Rosa sp.*, hawthorn *Crataegus monogyna*, and ash. The hedgerows were unmanaged at the time of the survey with a height of approximately two metres.

Native species poor

- 3.3.5 The remainder of the hedgerows bordering the site were native species poor and included species such as hawthorn, blackthorn, and hazel.

Dry Ditch

- 3.3.6 A series of dry ditches were located along the majority of the hedgerows on site. There was little bankside vegetation with species including nettle and fescue grass. There were small pools of water occasionally present across the ditches due to the recent heavy rainfall.

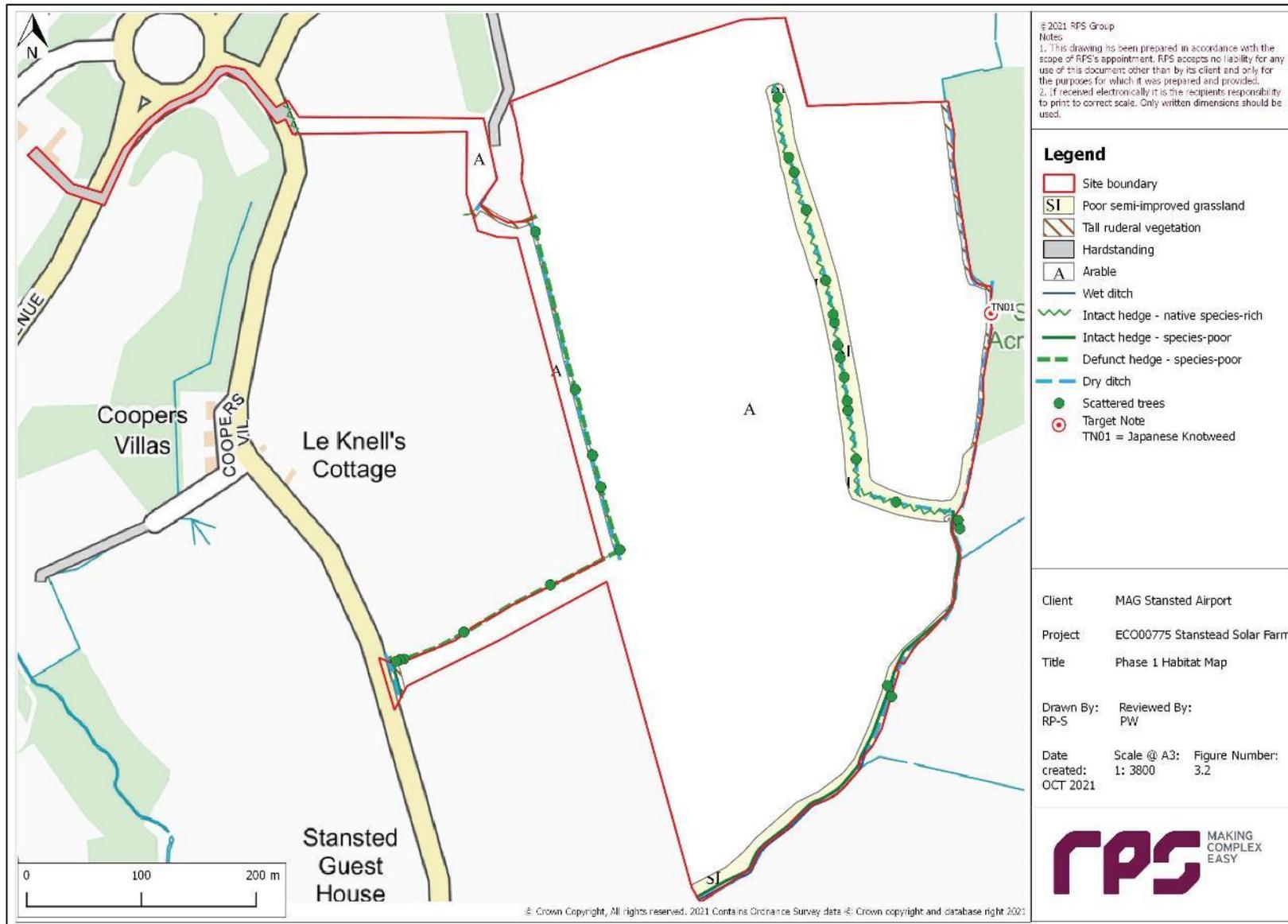
Amenity grassland

- 3.3.7 Two small areas of amenity grassland were recorded on site, both within the northern half of the site. The first was a small patch of grassland along the road to the buildings on site and the second bordered the patch of semi-improved grassland adjacent to the central game-bird set-aside. Both areas were shortly mown at the time of the survey, with species including red fescue and ribwort plantain.

Ponds

- 3.3.8 No ponds were recorded on site during the survey, although based on Ordnance Survey maps a pond was previously located in the north-western arable field. The area where the pond is located on the OS maps comprised semi-improved grassland and scattered scrub, a vegetated spoil heap at the OS location suggested the pond has been filled in at some point although not recently.

Figure 3.2: Phase 1 Habitat Survey Map.



3.4 Protected Species Surveys

Great Crested Newts

HSI Assessment of Waterbodies

3.4.1 Results of the HSI scores for the waterbodies on site are provided in Table 3.3.

Table 3.3. HSI scores for waterbodies

Waterbody ID	HSI score	Pond suitability
P1	0.45	Poor
P2	0.39	Poor
P3	0.33	Poor
P4	0.36	Poor
P5	0.48	Poor

Population Presence / Size Class Estimate

3.4.2 All ponds were subject to population presence / size class estimate surveys.

3.4.3 No GCN were recorded during the 4 visits. No eggs were found during the egg searches conducted as part of each of the survey visits.

3.4.4 Smooth newt *Lissotriton vulgaris* were observed on several surveys with a peak count of 7 individuals observed at P1, 8 individuals at P4 and a peak count of 3 individuals at P5.

3.4.5 Pond 2 only contained water on the first survey visit.

3.4.6 No records for GCN were returned in the desk study.

Reptiles

3.4.7 Results of the reptile surveys are summarised in Table 3.4, which gives counts of all life stages of each species recorded on each survey visit.

3.4.8 One species of reptile was recorded on site: common lizard. Locations of records are shown on Figure 3.3.

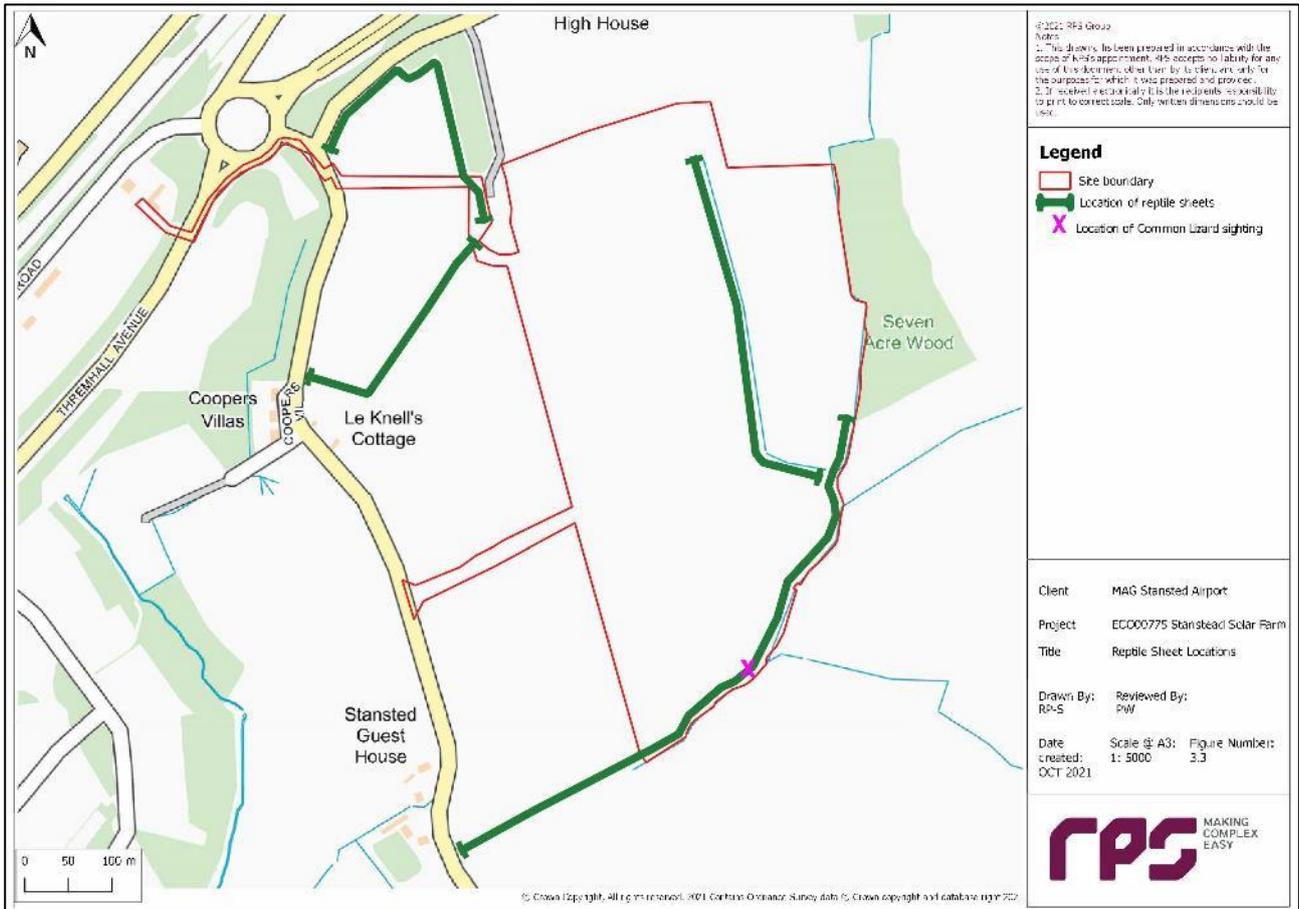
3.4.9 During the seven visits two sightings, both of adult common lizard were recorded. Both records were at the same location and could therefore be the same reptile.

3.4.10 The maximum count of all life stages of common lizard recorded on any one survey visit was 1.

Table 3.4. Summary of reptile survey results

Species	Date						
	12/05	18/05	21/05	26/05	28/05	02/06	08/06
Common Lizard (adult female)	-	-	-	-	-	1	1

Figure 3.3: Reptile survey results.



Bats

- 3.4.11 A number of the trees on site provide suitable roosting opportunities for bats. No buildings were located within the survey area. A summary of the trees is provided in Table 3.5 below.
- 3.4.12 Fourteen trees were noted as having features suitable for roosting bats. Four trees had high bat roost potential. Six trees had moderate bat roost potential. The remaining trees had low potential. Several trees which were originally assessed during the PEA were reassessed with a different level of roost suitability following the ground-based assessment which lists and classifies individual features.
- 3.4.13 No droppings or other evidence of bats were found externally or internally (where accessible) on any of the trees.

Table 3.5: Summary of Bat Roost Suitability for Trees on Site.

Tree Reference	Species	Potential Roost Features	Evidence of Bats	Assessed level of Roost Suitability
T1	<i>Quercus sp</i>	Semi-occluded split	No evidence of bats noted	Moderate
T2	<i>Quercus sp</i>	Dropped limbs / frost cracks	No evidence of bats noted	Moderate

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T3	<i>Quercus sp</i>	Dropped limbs / hollow main stem / knot holes	No evidence of bats noted.	High
T6	<i>Quercus sp</i>	Ivy clad	No evidence of bats noted.	Low
T7	<i>Quercus sp</i>	Tear-out / dead limbs	No evidence of bats noted.	Moderate
T8	<i>Quercus sp</i>	Frost crack / union	No evidence of bats noted.	Low
T10	<i>Quercus sp</i>	Cavities in dead limbs	No evidence of bats noted	Low
T12	<i>Quercus sp</i>	Rot holes / hung-up dead limbs with rot holes	No evidence of bats noted	High
T15	<i>Quercus sp</i>	Unions / knot holes / tear-out / dropped limbs	No evidence of bats noted.	Moderate
T17	<i>Quercus sp</i>	Dead limbs with cavities.	No evidence of bats noted	Moderate
T18	<i>Quercus sp</i>	Knot holes / cracks	No evidence of bats noted	Moderate
T19	<i>Quercus sp</i>	Hollow cavities	No evidence of bats noted	High
T20	<i>Quercus sp</i>	Cavities / Knot holes / cracks	No evidence of bats noted	High
T21	<i>Acer campestre</i>	Semi-occluded knot holes	No evidence of bats noted	Low

Activity Surveys

- 3.4.14 The majority of the site was arable which provides very limited foraging habitat for bats. The vegetation around the peripheries of the site including grassland and scrub along the southern boundary offer low to moderate value foraging habitat for bats.
- 3.4.15 The hedgerows and woodland adjacent to the eastern boundary offer moderate to high value foraging habitat and commuting routes for bats.
- 3.4.16 Seven bat activity surveys were carried out across the 2021 survey season. Activity across the site was generally low, with the majority of bats recorded along the southern and western boundaries. The majority of the bats recorded were common *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, which accounted for 77.4% of all calls across the seven surveys. A further 13% of bat calls were Leisler *Nyctalus leisleri*, 3.6% were noctule *Nyctalus noctule* and 2.2% were serotine *Eptesicus serotinus*. Brown long-eared *Plecotus auritus* and barbastelle *Barbastella*

barbastellus calls were also recorded in low numbers. For a summary of survey results, see Table 3.6 below. For transect routes, see Appendix F.

Table 3.6: Summary of Bat Activity Surveys

Date	C. Pip	S. Pip	Noctule	Myotis species	Leisler	Serotine	BLE	Barbastelle	Total number of passes
10/05/21	15	0	0	4	7	0	1	1	28
25/05/21	7	3	4	1	2	5	0	0	22
15/06/21	28	8	2	0	0	0	0	0	38
14/07/21	38	13	2	1	0	0	0	0	54
10/08/21	22	3	0	0	6	0	0	0	31
02/09/21	32	1	0	0	14	0	0	1	49
01/10/21	0	2	0	3	0	0	0	0	5
Total passes / species	142	30	8	9	29	5	1	2	227
% of bat passes / species	63.9%	13.5	3.6%	4%	13%	2.2%	0.4%	0.9%	

3.4.17 Static detectors were periodically deployed from April to October to further assess bat activity levels across the site. Activity across the site was generally low, with an average of 57.9 bat calls per night. The majority of the bats recorded were pipistrelle, which accounted for 96.6% of all calls across the three surveys. The remaining bat calls were barbastelle (1.5%) and lower numbers of noctule, myotis sp, leisler, serotine and brow long-eared. No other species were recorded. For a summary of survey results, see Table 3.7 below.

Table 3.7: Summary of Static Detector Results

Survey	C. Pip	S. Pip	Noctule	Myotis species	Leisler	Serotine	BLE	Barbastelle	Average bats per night (all species)
April (Static 1)	0	0	0	1	0	0	0	0	0.2
April (Static 2)	0	0	0	0	0	0	0	0	0
May (Static 1)	0	0	0	0	1	0	0	0	0.2
May (Static 2)	10	0	0	0	0	0	0	1	2.2
June (Static 1)	9	3	0	0	0	0	0	0	12

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June (Static 2)	32	2	0	0	0	1	0	0	35
July (Static 1)	771	44	2	1	4	0	0	12	208
July (Static 2)	1428	15	2	0	1	0	0	2	362
August (Static 1)	348	12	0	1	8	1	0	0	123
August (Static 2)	-	-	-	-	-	-	-	-	-
September (Static 1)	267	11	1	3	1	0	7	2	97
September (Static 2)	69	59	3	3	0	0	12	16	54
October (Static 1)	30	12	3	3	0	0	0	15	21
October (Static 2)	0	1	1	1	0	0	0	1	4
Total passes / species	2,964	159	12	13	15	2	19	49	3,233
% of bat passes / species	91.7%	4.9	0.4%	0.4%	0.4%	0.06%	0.6%	1.5%	

Birds

3.4.18 A total of 42 species were recorded within the survey area during the four site visits. Of these species, 24 were confirmed to be breeding on site making an assemblage of 24.

3.4.19 Table 3.8 provides a summary of the breeding and conservation status of the 42 species recorded during the course of the survey, with the numbers of territories identified (or estimated in the case of probable and possible records). A full list of species recorded with scientific names is presented in Appendix F.

Table 3.8: Breeding status, abundance and conservation status of birds recorded

Species	Breeding status	No. of territories	Annex 1 EU Birds Directive	Schedule 1 WCA	NERC Species of Principal Importance	BoCC 4 Red and Amber species
Mallard	Non-breeding	-	-	-	-	Amber
Common Buzzard	Non-breeding	-	-	-	-	-
Peregrine	Non-breeding	-	■	■	-	-
Red-legged Partridge	Confirmed*	3	-	-	-	-
Pheasant	Confirmed*	3	-	-	-	-
Golden Plover	Non-breeding	-	■	-	-	Red
Black-headed Gull	Non-breeding	-	-	-	-	Amber
Stock Dove	Non-breeding	-	-	-	-	Amber
Woodpigeon	Confirmed	12	-	-	-	-
Collared Dove	Non-breeding	-	-	-	-	-

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Great Spotted Woodpecker	Confirmed	1	-	-	-	-
Skylark	Confirmed	4	-	-	■	Red
Swallow	Non-breeding	-	-	-	-	-
Meadow Pipit	Non-breeding	-	-	-	-	Amber
Pied Wagtail	Confirmed	2	-	-	-	-
Grey Wagtail	Non-breeding	-	-	-	-	Red
Wren	Confirmed	12	-	-	-	-
Dunnock	Confirmed	8	-	-	■	Amber
Robin	Confirmed	29	-	-	-	-
Wheatear	Non-breeding	-	-	-	-	-
Song Thrush	Confirmed	1	-	-	■	Red
Blackbird	Confirmed	5	-	-	-	-
Blackcap	Confirmed	9	-	-	-	-
Lesser Whitethroat	Non-breeding	-	-	-	-	-
Whitethroat	Confirmed	4	-	-	-	-
Chiffchaff	Confirmed	4	-	-	-	-
Goldcrest	Confirmed	1	-	-	-	-
Great Tit	Confirmed	10	-	-	-	-
Coal Tit	Confirmed	3	-	-	-	-
Blue Tit	Confirmed	26	-	-	-	-
Long-tailed Tit	Confirmed	4	-	-	-	-
Nuthatch	Non-breeding	-	-	-	-	-
Treecreeper	Non-breeding	-	-	-	-	-
Magpie	Confirmed	5	-	-	-	-
Jay	Non-breeding	-	-	-	-	-
Carrion Crow	Confirmed	2	-	-	-	-
Chaffinch	Confirmed	4	-	-	-	-
Linnet	Non-breeding	-	-	-	■	Red
Lesser Redpoll	Non-breeding	-	-	-	-	Red
Goldfinch	Confirmed	1	-	-	-	-
Greenfinch	Non-breeding	-	-	-	-	-
Yellowhammer	Confirmed	4	-	-	■	Red

Note: *. Species released on site on annual basis pre 2021 also likely small self-sustaining population.

- 3.4.20 The locations of territories of NERC Species of Principal Importance and BoCC Red or Amber listed species recorded breeding within the survey area are shown in Figures 3.4 and 3.5 respectively. No Annex 1 and / or Schedule 1 species were recorded as breeding within the survey area.
- 3.4.21 Additionally, the habitats on site, particularly the scattered trees, hedgerows and arable, provide suitable nesting opportunities for a range of bird species.

Figure 3.4: Amber listed species recorded breeding within the survey area.

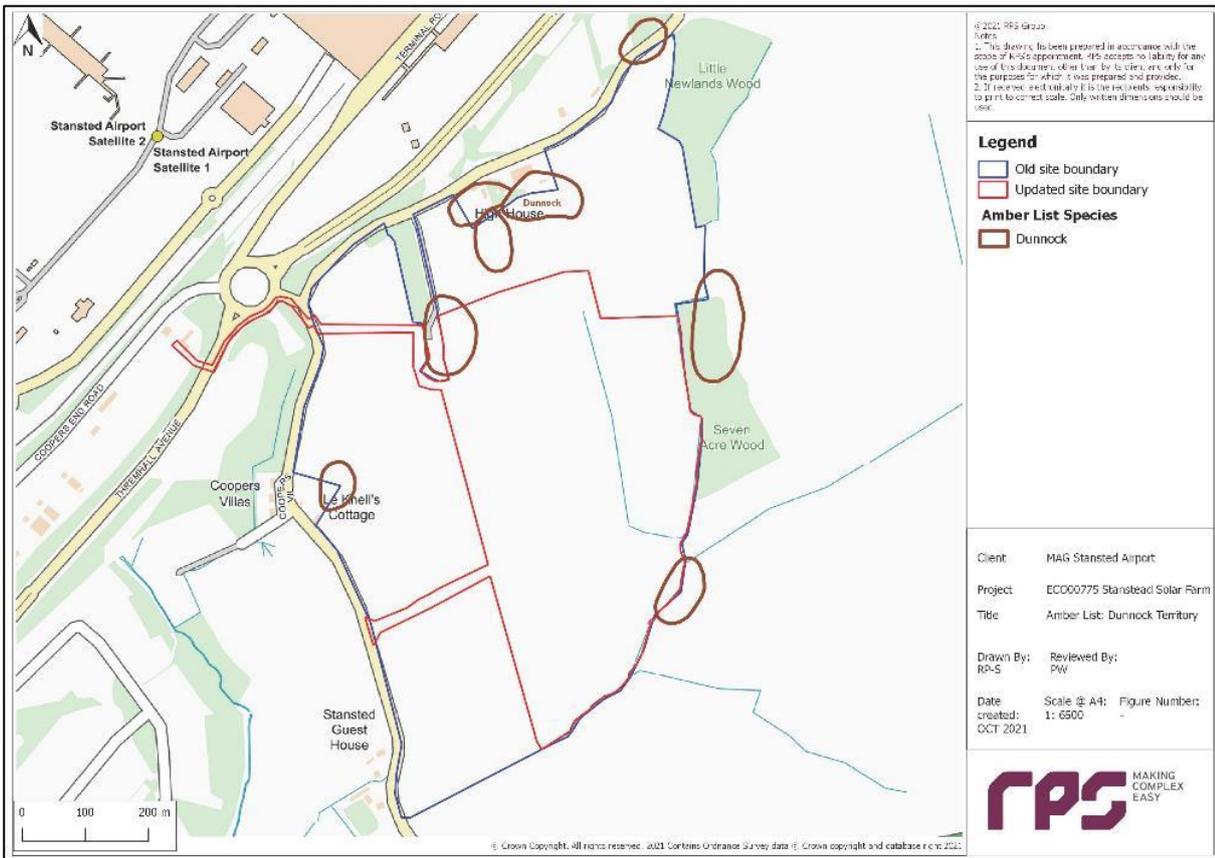
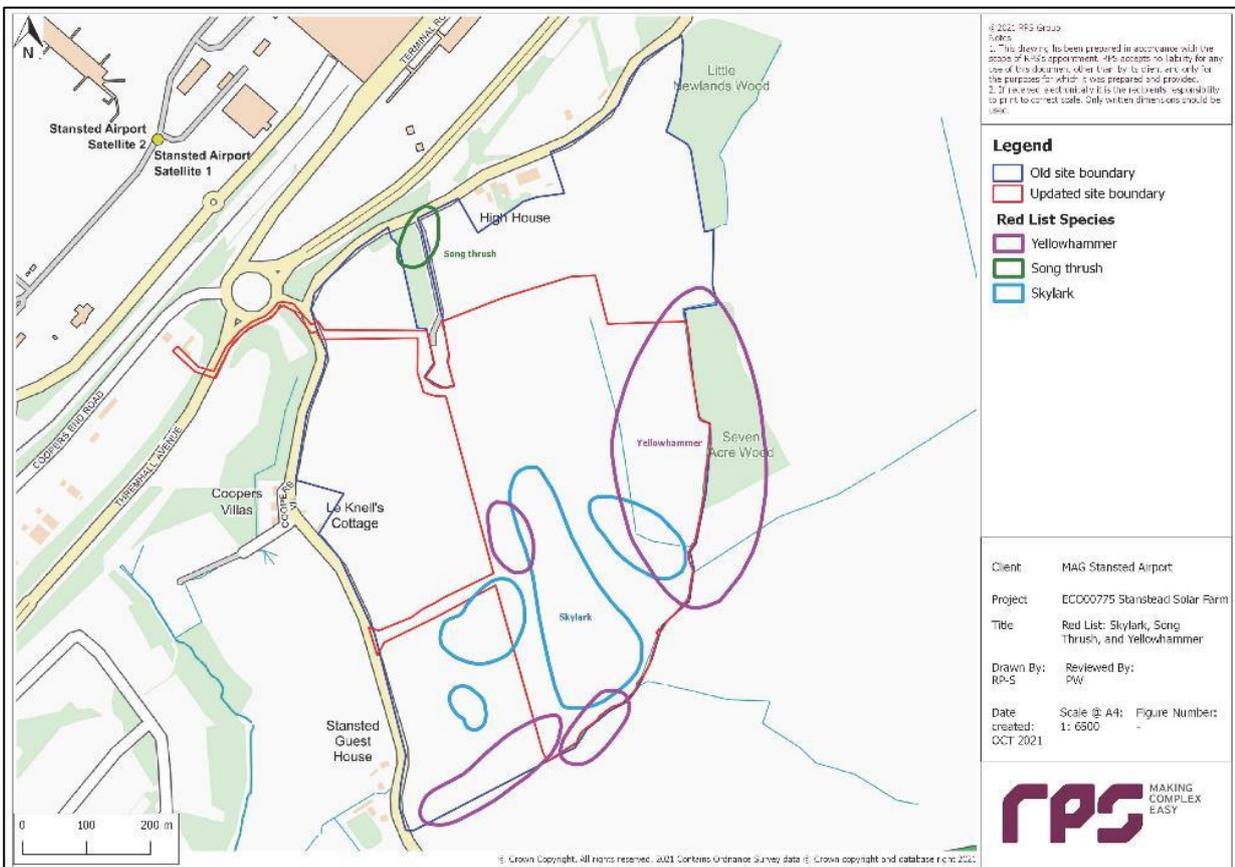


Figure 3.5: Red listed species recorded breeding within the survey area.



Invasive Plant Species

- 3.4.22 Japanese Knotweed *Reynoutria japonica* was noted internal to the eastern site boundary and external to the boundary in Seven Acre Wood (Figure 2.4).
- 3.4.23 The Japanese knotweed was located on both banks of the dry ditch with more extensive stands recorded external to the site boundary.
- 3.4.24 Field Horsetail *Equisetum arvense* was observed at several locations across the site but was particularly abundant adjacent to the southern boundary. Field Horsetail is a native species but can dominate soft landscaping and penetrate some hardstanding such as paths, the species can be difficult to eradicate.

Badgers

- 3.4.25 Survey results and sett locations can be found in Appendix E. This information should be kept CONFIDENTIAL and not published. Location data should be removed prior to sharing in a public forum.
- 3.4.26 [REDACTED]
- [REDACTED]

Other Species

- 3.4.32 The vegetation around the peripheries of the working areas and site is considered to provide limited suitable foraging habitat for hedgehog *Erinaceus europaeus*, a UKBAP priority species. Records for the species were also returned within 2 km of the site and the wider landscape was considered to provide suitable foraging, commuting, hibernation and breeding habitat for hedgehogs.
- 3.4.33 Rabbit *Oryctolagus cuniculus* burrows were noted along all internal hedgerows and boundaries of the site.

3.5 Biodiversity Net Gain

- 3.5.1 The total area of the habitats within the site is 22.17 ha.
- 3.5.2 The baseline units of habitats within the site prior to construction were calculated to have a total of 46.98 units.
- 3.5.3 The total length of hedgerows within the site is 1.46 km.
- 3.5.4 The baseline units of hedgerows within the site prior to construction were calculated to have a total of 20.06 units.
- 3.5.5 The total length of ditches within the site, excluding those associated with a hedgerow, is 0.371 km.
- 3.5.6 The baseline units of ditches within the site prior to construction were calculated to have a total of 1.48 units.
- 3.5.7 Table 3.9 below provides habitat classifications, condition, and total area.

Table 3.9: Baseline BNG calculations based on existing site habitats.

Phase 1 Habitat	UK Hab Category	Condition	Area (ha) or length (km)
Habitats (Ha)			
Poor semi-improved grassland	Grassland – Modified Grassland	Moderate (2)	1.1783
Tall ruderal	Sparsely Vegetated Land – Ruderal / Ephemeral	Moderate (2)	0.3834
Arable	Cropland – Cereal Crops	Poor (1)	20.3682
Hardstanding	Urban - Developed Land; Sealed Surface	N/A (0)	0.2415
Hedgerows (km)			
Native species rich hedge with trees and ditch	Native Species Rich Hedgerow with trees - Associated with bank or ditch	Good	0.456
Species poor hedgerow with ditch	Native Hedgerow - Associated with bank or ditch	Good	0.46
Species poor hedgerow (defunct)	Native Hedgerow	Moderate	0.219
Native species rich hedgerow	Native Species Rich Hedgerow	Good	0.026
Species poor hedge with ditch	Native Hedgerow - Associated with bank or ditch	Moderate	0.301
Rivers (km)			
Dry ditch (along woodland)	Rivers - Ditches	Poor (1)	0.371

4 EVALUATION AND POTENTIAL IMPACTS

4.1 Designated sites

- 4.1.1 There were two statutory designated sites and eight non-statutory designated sites within 2 km from the site.
- 4.1.2 Both statutory designated sites were approximately 1.5 km from site. The site falls within the Impact Risk Zone (IRZ) for both SSSIs. Natural England (NE) define IRZs around each SSSI which reflect the sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts. Local Planning Authorities (LPAs) have a duty to consult NE before granting planning permission on any development that is in or likely to affect a SSSI. The SSSI IRZs can be used by LPAs to consider whether a proposed development is likely to affect a SSSI and determine whether they will need to consult NE to seek advice on the nature of any potential SSSI impacts and how they might be avoided or mitigated.
- 4.1.3 With regards to the proposed works and effects to the SSSIs, in relation to ecology the SSSI IRZs state *“Solar schemes can impact on functional land outside SSSIs which birds depend on for feeding”*. However, if careful consideration is given to enhancing the land for foraging birds, and trees and hedgerows are retained where possible, it is considered unlikely that the works will result in a negative impact on foraging birds. Following NE guidance, it will be for the LPA to contact NE for their advice regarding the proposals.
- 4.1.4 Of the non-statutorily designated sites, Stansted Airport Sewage Works Fen LWS was located just 0.02 km west, separated from the site by Parsonage Road. Due to the proximity to the proposed works there is a potential to negatively impact the LWS, especially construction phase impacts through pollution. To avoid these impacts and to protect the designated site, mitigation measures are outlined in Section 5.
- 4.1.5 It is considered that there are no further potential negative impacts on the other designated sites due to the distance from the site and the nature of the works.

4.2 Habitats

- 4.2.1 Table 4.1 below summarises the habitat types within the site and outlines the potential impacts of the development proposals to each of these habitats.

Table 4.1: Summary of potential habitat impacts

JNCC Code	Habitat Type	Area (m ² or length (m))	% of site	Ecological Importance	Potential impact
A3.1	Scattered trees	26 trees	N/A	High	To be retained – Impacts unlikely
B6	Poor semi-improved grassland	11783	5.24	Low	To be retained and improved – Positive impact
C3.1	Tall ruderal	3834	1.70	Moderate	To be retained and improved – Positive impact
G2	Wet ditch	200	0.09	High	To be retained – Impacts unlikely
J1.1	Arable	203682	90.63	Low	Total loss
J2.1.1	Native species rich hedge	482	0.21	High	To be retained – Impacts unlikely
J2.1.2	Species poor hedge	460	0.20	Moderate	To be retained – Impacts unlikely

J2.2.2	Defunct species poor hedge	521	0.23	Low	To be retained and improved – Positive impact
J2.6	Dry ditch	1390	0.62	Low	To be retained – Impacts unlikely
-	Hardstanding	2415	1.08	Negligible	To be retained – Temporary impact

4.3 Species

Protected Plant Species

4.3.1 No rare or protected plant species were recorded on site during the survey. The site is unlikely to support protected or notable species, given the type of habitat present, and as such, no further surveys are required, and they will not be considered further in this report.

Great Crested Newts

- 4.3.2 All ponds within 500 m of the proposed development were assessed for suitability to support GCN.
- 4.3.3 HSI assessments designated all ponds as offering ‘poor’ suitability meaning that it is unlikely that GCN are present in these ponds. Additionally, traditional presence / population surveys failed to detect either GCN or evidence of breeding and therefore it is highly unlikely that they will be on site or impacted during the proposed works.
- 4.3.4 No further surveys or mitigation measures are required, and they will not be considered further in this report.

Reptiles

- 4.3.5 The vegetation around the peripheries of the site offers suitable foraging, commuting and refugia for reptiles. During the seven reptile survey visits two sightings, both of adult common lizard were recorded. Both records were at the same location and could therefore be the same reptile. A single record for slow worm *Anguis fragilis* was returned in the data search within 2 km of the site.
- 4.3.6 It is considered that the site contains a ‘low’ population of common lizard of importance at a local level. Presence was confirmed adjacent to the southern boundary and this habitat is to be retained.
- 4.3.7 A precautionary approach to the presence of reptiles should be adopted, mitigation measures are therefore outlined in Section 5.

Bats

- 4.3.8 The following species have been recorded on the site during the activity surveys:
- Common Pipistrelle;
 - Soprano Pipistrelle;
 - Noctule;
 - Leisler’s;
 - Barbastelle;
 - Brown Long-eared;;
 - Serotine; and
 - *Myotis sp*
- 4.3.9 Both common and soprano pipistrelles are considered to be widespread and occasionally common in Essex (EBG, 2021). Results from both the activity transects and static recordings show that low

numbers of common and soprano pipistrelle use the site for foraging and commuting, with both species utilising the southern boundary hedgerow and to a lesser extent the woodland edges north and east of the site for commuting and foraging. Results from the activity transects indicate that roosts of both species are unlikely to be close to the application site as calls only commenced significantly beyond dusk. It is considered that the site is of Local importance for common and soprano pipistrelle bats.

- 4.3.10 Noctule bats are widespread but relatively scarce in Essex (EBG, 2021). Noctule bats were only rarely recorded by the static detectors over the survey period, with the highest number of recordings being an average of 0.6 contacts per night during the three nights of recording in September on a hedge line oak tree on the northern boundary of the site. The habitats on and adjacent to the site were suitable for this species. Given the low activity onsite and widespread nature of this species, the site is considered to be of low importance for noctule bats.
- 4.3.11 Leisler's bats are considered to be rare but widespread across Britain (Hooton, 2017). In Essex the species is scarce, but widespread (EBG, 2021). Leisler's were recorded during the April / May and August / September transects but a few records were recorded on the static detectors in July. Because in some instances it can be difficult to distinguish the echolocation calls of this species from Noctule bats, there may be recordings on the site that were not attributed directly as Leisler's. The habitats on and adjacent to the site included favoured habitats of for this species, fields, woodland and urban areas. Taken together, the data from the surveys and the status of the species in Essex, it is concluded that the site is of Local importance for Leisler's bats.
- 4.3.12 Barbastelle bats are a possibly more widespread than appreciated in Essex but are scarce and is one of Britain's rarest bats (EBG, 2021). Essex likely contains maternity sites for this species. Barbastelle bats were recorded rarely during the activity transects and by the static detectors in May, July and September. Results from the activity transects indicate that barbastelle roosts may be present close to the site. Maternity colonies require mature woodland which is not present on the application site, but mature woodland is located to the north and east of the site boundary. Additionally, trees adjacent to site (e.g. hedgerow trees) have roosting potential and could be used by individual roosting bats. Despite the infrequent contacts of this species during the surveys, given the rarity of this species in Essex, the site is at to be at least of Local importance for barbastelle.
- 4.3.13 Brown long-eared bat is a common and widespread species both nationally and in Essex (EBG, 2021). It was recorded only rarely (although this is likely partly due to its quiet echolocation calls) by the static detectors placed on hedgerow trees in the northern portion of the site during September with the highest average of 2.4 contacts per night during any recording period. Habitats on and adjacent to site include favoured foraging habitats of woodland, hedgerows and farmland. The timings of the contacts do not suggest a roost on or near to the site, and therefore based on the low activity during the surveys, the site is considered to be of Negligible importance for brown long-eared bats.
- 4.3.14 Serotine was recorded on the May transect only, static detectors recorded passes in July and August with the highest average of 0.2 contacts per night. Serotine bats are widespread but scarce in Essex (EBG, 2021). Based on the low levels of activity, the site is considered to be of Low importance for serotine.
- 4.3.15 Myotis sp bats recorded at the site could not be reliably identified to species level from echolocation calls. Recordings of myotis sp contacts were rare, with just one in September and three in October from the walked transects and only small numbers of contacts on the static detectors. The highest number of recordings was an average of 0.6 contacts per night during the recordings in September and October. Based on the low activity recorded during the surveys, the site is considered to be of negligible importance for myotis sp bats.
- 4.3.16 The majority of activity was associated with the off-site woodland blocks and field boundaries of the application site. Very little activity was recorded at the west of the site where there are sections of the boundary with no linear features such as hedgerows.
- 4.3.17 The following habitats are considered to be most important for bats on the site:
- The off-site woodland blocks, which are used by multiple bat species, including the county scarce barbastelle, serotine and leisler bats for foraging.

- The internal hedgerows and hedge line trees which form a sheltered link / commuting corridor between off-site blocks of woodland to the north and east. These features will not be directly affected by the development.
- The southern boundary of the site, which is used by foraging and commuting bats of several species, including Barbastelle, and form strong connections with other habitats on site and to the wider landscape. These habitats also contain trees with features suitable for roosting bats.

- 4.3.18 The development will result in the loss of arable habitat on the application site, which would represent no loss of foraging habitat bat species.
- 4.3.19 No trees with bat roost potential are currently known to be lost to the development. Any trees that require works or removal should be re-assessed for bat roost potential prior to commencement.
- 4.3.20 Several of the bat species recorded on site, such as Barbastelle and Brown Long-eared bats, are not tolerant of light. The ability of bats to forage and commute around the site during construction of the proposed development could be affected by lighting in the absence of consideration for impacts on bats.
- 4.3.21 Mitigation measures are proposed in Section 5.

Birds

Breeding bird survey

- 4.3.22 A total of 24 of the 42 species recorded during the survey qualify as being of 'conservation interest' by meeting one, or more, of the criteria listed under Paragraph 2.1.11. The following accounts relate to those species confirmed as breeding survey area in 2021 that are included on one, or more, of the lists of species either afforded special statutory protection or denoting a species is of high conservation importance.

Specially protected species

- 4.3.23 One flight of peregrine was recorded flying south-west over the site from the direction of the airport. They are not considered to be breeding on site it is more likely they are residents or breed within the perimeter of airport given the nature of buildings etc.

Species of conservation concern

- 4.3.24 Three species confirmed breeding within the survey area are included on the BoCC Red list; and are of high conservation concern. The location of the territories for these species are illustrated on Figure 3.5. The species and reasons for Red list status are given below:

- Skylark – moderate breeding population decline over 25 years (-32%) and severe breeding population decline over the longer term (-62%).
- Song Thrush – severe breeding population decline over the longer term (-59%).
- Yellowhammer – severe breeding population decline over the longer term

- 4.3.25 One species recorded during the survey are included on the BoCC Amber List. Location of territories can be seen in Figure 3.4. The species and reasons for Amber list status are given below:

- Dunnock – moderate breeding population decline over the longer term (-31%).

Species of principal importance

- 4.3.26 Four of the species of conservation concern listed above are also species of principal importance in England under Section 41 of the NERC Act 2006 (skylark, dunnock, song thrush and yellowhammer).

Geographical importance

- 4.3.27 The following geographical frames of reference and selection criteria (based on the Guidelines for Ecological Impact Assessment in the United Kingdom [CIEEM, 2016]) are used to ascribe nature conservation value or potential value to the bird populations within the survey area.

- International importance - a species which is cited as part of the designated interest of a SPA and occurs in internationally or nationally important numbers.
- National importance - a species which is cited as part of the designated interest of a SSSI and occurs in nationally important numbers.
- Regional importance – NERC Species of Principal Importance, BoCC Red List species or UK BAP Priority species that regularly occur in regionally important numbers.
- County importance - NERC Species of Principal Importance, BoCC Red List species, UK or Essex LBAP Priority Species that regularly occur in numbers that are important on a county basis.
- Local importance - NERC Species of Principal Importance, BoCC Red or Amber List species, UK or Essex LBAP Priority Species which occur regularly in locally sustainable populations.
- Site - all common and widespread species.

4.3.28 For the purposes of this evaluation the number of breeding territories recorded during the survey is compared to the species’ national, regional (East of England) and county only Essex population estimates (where available).

4.3.29 National breeding population estimates are based on Clements, et al. (2017), Holling, et al. (2018), Musgrove, et al. (2013) and Wilson, et al. (2018). For those species where data are available, regional breeding population estimates are based on Conway, et al. (2008), Clements, et al. (2017), Holling, et al. (2018) and Wilson, et al. (2018). For those species where data are available, county breeding population estimates are based on Holling, et al. (2018), in addition, a descriptive county status has been derived from the Essex lists (Essex Bird club report 2019).

4.3.30 Where no regional or county population estimates are available, professional judgment and comparisons with population estimates at higher geographical levels have been used to inform this assessment.

4.3.31 Table 4.2 summarizes the abundance of species of conservation interest recorded during the survey, the national and/or regional population estimate and county status for these species and the geographical importance of the populations within the survey area as derived from the criteria outlined above.

Table 4.2: Species of conservation interest, number of territories, national, regional and county status and geographical importance of survey area population

Species	No. of pairs	UK breeding population	Regional breeding population	County status	Geographical importance of breeding population
Skylark	4	1,500,000	-	Essex: common resident. Winter visitor and passage migrant.	Local
Song Thrush	1	1,200,000	-	Essex: common but declined resident. Passage migrant and winter visitor.	Local
Dunnock	4	2,500,000	-	Essex: abundant and widespread resident.	Site
Yellowhammer	4	710,000	-	Essex: Common but declining resident.	Local

4.3.32 The level of geographical importance of the breeding populations of species of conservation interest is mostly local based on the number of territories within the site and the relative abundance of the species in the wider countryside.

Breeding Bird Assemblage

4.3.33 The following recorded breeding species are farmland birds of conservation concern. They include those that are ground nesting birds skylark and yellowhammer, but which also rely on open arable habitat for invertebrate prey for their young and as foraging habitat in winter relying on weedy field margins and leftover grains on winter stable/fallow land.

- *Skylark* – Four territories of this red list species were identified breeding on site mainly distributed within the large open arable field south-east of Le Knell’s Cottage. Birds within the site were mostly recorded singing or calling overhead. Skylarks can be found on most areas of open farmland, preferring larger arable and grassland fields. Skylarks nest on the ground in short grass or crops, avoiding vegetation over 60 cm high. Winter-sown crops and silage fields are only suitable for a single brood, making buffer strips and spring crops essential to maintain adult populations. The open areas are chosen to allow sightings of potential predators. Adults feed on a range of seeds and plant shoots including knotgrass, groundsel, fat hen and grasses. Chicks are entirely dependent on insects until fledging, favouring sawfly larvae, beetles, ants, spiders and grasshoppers.
- *Yellowhammer* – Four territories of this red list species were identified during the breeding bird survey with records mainly concentrated along hedgerows along the southern and eastern borders with one territory along hedgerow in centre of site. The yellowhammer prefers a mixed farming landscape with well-managed hedgerows and scrub. In winter they favour winter stubbles, natural regeneration, game cover, livestock farmyards and feeding stations where grain cleanings have been left out for finches, sparrows and buntings. Adults feed on a range of plants including dead nettles, groundsel, sorrel, cereal grains, millet and annual plant weed seeds foraged from stubble fields. They will feed on spill from game hoppers and will also take insects in the breeding season. Young are dependent upon insects for the first week or so after hatching.

4.3.34 The following recorded breeding species on site are also of conservation concern. These species mainly nest in scrub and woodland but also inhabit farmland hedgerows and small copses. They also rely on arable field margins for finding invertebrates in spring/summer and small seeds in winter.

- *Song Thrush* - One territory of song thrush was found between two site boundary lines in small woodland west of High House nursery. This is a species with wide ranging habitat requirements, being found in both rural and urban situations, in gardens, parks, open farmland, hedgerows and woodlands. It breeds in almost any habitat with trees or bushes for nesting. Nesting takes place over a long season with nests usually within 2 m of the ground. Two or more broods are raised, each consisting of an average of five eggs. Feeding occurs on open ground with the main prey item being invertebrates, particularly snails, in dry summer periods and late spring when berries and fruit have finished.
- *Dunnock* – Eight territories of this amber list species were identified widely spread around the site boundary but with 3 of these concentrated around High House nursery. This Robin sized bird is common in gardens, parks, hedgerows, scrub and along woodland edges. Dunnocks are shy birds, hopping about in low vegetation and around the edge of lawns, feeding on small insects, worms and seeds. They nest in hedges or shrubs, laying up to five eggs. Dunnock can benefit from planting of native berry and seed-bearing shrubs that provide insects in Spring/Summer period but also food and cover throughout the year.

Species Diversity

4.3.35 The bird community recorded during the survey is considered typical for the habitats present within survey area.

4.3.36 Whilst the majority of species recorded are common and widespread in Essex, the habitats within the survey area do provide breeding habitat for an assemblage of species of some conservation importance.

4.3.37 The number of species recorded in an area is a simple measure of diversity that can indicate the site's importance. Table 4.2 shows the criteria outlined in Fuller (1980) for breeding bird assemblages to indicate the importance of site at various geographical levels.

Table 4.3: Breeding bird assemblage diversity criteria

	National importance	Regional importance	County importance	Local importance
Number of species	85+	70-84	50-69	25-49

4.3.38 Based on Fuller's criteria, the breeding bird assemblage of 24 species recorded within the survey area in 2021 is at the lower limit of local importance. However, it should be noted that Fuller's analysis was developed in the 1970's since when species diversity has declined significantly. As a result, Fuller's thresholds are considered too high for today's breeding bird populations. Taking this into consideration, the diversity of the breeding assemblage should be considered toward the middle or upper threshold of local importance.

Implications of development

4.3.39 Given the widespread distribution and density of breeding birds across the site, it is inevitable that the development of the site will result in loss to some extent of breeding territories.

4.3.40 Solar panels will be installed on habitat used by ground nesting birds (primarily skylark) with some disturbance during the construction phase. There would also be temporary disturbance of foraging areas used by the wider breeding bird assemblage during the installation of the panels, most notably yellowhammer.

4.3.41 During the construction phase there will be the potential for indirect effects on bird activity through disturbance from the movement of machinery, human activity and noise and during the nesting season (March-Aug inclusive) disturbance of breeding birds and their dependent young (both on-site and within adjacent breeding habitat) could occur.

Site Layout and Management

4.3.42 The retention of hedgerows and mature trees with stand offs will retain the field boundaries and avoid the loss of vegetation cover on the field margins.

4.3.43 Within the arable fields in the south of the site, a total of 4 skylark territories were confirmed during the surveys undertaken in 2021. Skylarks are typically ground-nesting birds and characteristic of open arable farmland, making use of nesting cover and bare ground for feeding that crops provide throughout the year. The proposed development could result in some direct loss of suitable skylark foraging and nesting habitat if some steps are not taken.

4.3.44 The treatment and management of grassland beneath the panels will affect their suitability for skylark. Studies by the RSPB have shown that where management can maintain a slightly tussocky grassland sward height below and between panels of between 10 and 25cm (for example through low intensive sheep grazing) skylark can continue to nest beneath solar panels and between solar arrays.

4.3.45 Another species of conservation concern which was considered to be breeding within the site boundary included yellowhammer; this is a typical farmland species, relying on crop fields for foraging and nesting habitat. Based on the retention of hedgerows and ditches it is possible for this species and the current breeding assemblage to continue to use the site when as operational solar park. Some provision of wild bird crops or alternatively wildflower strips or margins within the grassland would help provide food for this species in autumn, winter and early spring. This should also help to indirectly support breeding populations that have suffered long term population declines.

- 4.3.46 The current hedgerows have good structure are subject to a management regime that has provided nest sites for several farmland bird species. Sensitive management will continue with the objectives of maintaining dense structure through periodic trimming back in winter to maintain the resource of flowers and fruits. As many species produce fruit on the previous years' growth, each side of a hedgerow should be cut only once every 2 years on rotation.
- 4.3.47 Sympathetic management of grassland below the arrays, field margins and hedgerows should ensure there is suitable cover to protect birds from predation but also support populations of key invertebrate prey at crucial times of the year.

Conclusions

- 4.3.48 The survey of breeding birds recorded a breeding assemblage of 24 species in 2021. The surveys undertaken from March - June 2021 were undertaken during the peak breeding period.
- 4.3.49 Of the 24 species recorded as breeding or possibly breeding within the survey area, 4 species meet at least one of a range of criteria relating to special statutory protection or conservation importance.
- 4.3.50 No breeding population of any species within the survey area approaches the 1% level of the national population. Therefore, no species considered to be breeding or possibly breeding are present in nationally important numbers.
- 4.3.51 The diversity of species overall present within the survey area is at a level indicative of local importance for breeding birds with populations of farmland birds that have suffered long term population declines; most notably skylark (4 territories) and Yellowhammer (4 territories).

Badgers

- 4.3.52 The site boundary features, and internal hedgerows provide habitat for foraging and commuting badgers. The presence of an extensive active main sett adjacent to the site has been confirmed but the badger survey indicated the main dispersal routes were eastwards with well-defined pathways within the woodland blocks.
- 4.3.53 The internal areas of the site do provide suitable habitat for sett excavation, and evidence of commuting badgers was recorded.
- 4.3.54 The arable habitat will be lost as part of the proposed development. Given the current level of field signs of Badgers within the site and the retention of boundary features, the development proposals are not expected to significantly impact on the local Badger population or their ability to disperse.
- 4.3.55 No works are proposed within 30 m of a sett and no specific mitigation measures for loss of badger habitat is therefore required.
- 4.3.56 Future sett building or currently disused setts becoming re-occupied cannot be entirely ruled out. Mitigation measures are therefore outlined in Section 5.

Invasive Species

- 4.3.57 Japanese Knotweed, a Schedule 9 invasive species (Wildlife & Countryside Act 1981, as amended) was found to be present in close proximity to the proposed works. It is considered that the Japanese knotweed is a sufficient distance from the works that it is unlikely to be spread as a result. However, a management plan has been developed (RPS, 2021) and a control programme should be implemented to control the spread of Japanese Knotweed onto site
- 4.3.58 Notwithstanding this, suitable eradication should be put in place to ensure these species are not spread.

Other Fauna

- 4.3.59 Precautionary mitigation measures to avoid impacts to hedgehogs during the works are detailed in Section 5.

- 4.3.60 Rabbits are protected under the Wild Mammals (Protection) Act 1996 which means it is an offence to inflict unnecessary suffering on any wild mammal. If works in the area of rabbit burrows are proposed, this should be done by a specialist under a watching brief.

4.4 Biodiversity Net Gain

- 4.4.1 To achieve net gain across the site, areas of habitat that score highly within the biodiversity metric will be retained and enhanced. The habitats of most value within the site consist of the hedgerows, that runs along the field boundaries.
- 4.4.2 The arable will be enhanced to wildflower meadow beneath the proposed solar panels which will increase the biodiversity of the site and provide suitable foraging habitat for a range of species, including invertebrates, birds, small mammals, and bats.
- 4.4.3 Additional native species rich hedgerows with trees will be incorporated into the site, providing suitable foraging, nesting, and refuge habitat for a range of species.
- 4.4.4 Management regimes will be sympathetic to wildlife to create ecologically valuable habitats. This includes avoidance of fertiliser and over-cutting of the grassland. Hedgerows will be managed to allow a height of three to four metres.

5 MITIGATION AND ENHANCEMENT

5.1 Designated sites

- 5.1.1 As previously mentioned in Section 4, the LPA should contact NE for their advice regarding the proposals.
- 5.1.2 It is important that pollution prevention measures, especially dust suppression, are adhered to during the works in order to prevent any negative impacts through pollution on the nearby designated sites including Stansted Airport Sewage Works Fen LWS. An Ecological Management Plan should be produced for the site to ensure all construction and operational impacts are reduced and mitigated for.

5.2 Habitats

- 5.2.1 Removal of habitats should be avoided where possible. Where avoidance is not possible, habitats should be replaced on a like-for-like basis. For example, where trees are removed, these should be replaced in areas where they will not cause shading to the solar panels. Where replacement is not possible, such as the arable fields, sympathetic landscaping and habitat management should ensure that there is no net loss in biodiversity and ecological value.
- 5.2.2 Seven Acre Woods was located to the east of the site which could potentially be impacted by the construction works through site emissions and polluted surface run-off. Construction activities need to be carefully managed to prevent and mitigate, as far as reasonably practicable, any potential emissions such as noise, light etc. It is recommended that pollution prevention measures, especially dust suppression are implemented and adhered to during the works.
- 5.2.3 An Ecological Management Plan should be produced for the site to ensure all construction and operational impacts are reduced and mitigated for.

5.3 Species

Reptiles

- 5.3.1 A small, localised population of common lizard was found to be present along the southern boundary of the site. This habitat is to be retained and the proposed works will result in the loss of arable habitat which is unsuitable to support common lizard. The arable should be maintained in its current condition until works commence, if this is not possible and the arable becomes favourable for reptiles additional mitigation may be required.
- 5.3.2 A precautionary approach is recommended, and mitigation measures are listed below:
- any open excavations should be sloped to prevent entrapment;
 - any open pipes should be capped at the end of each day; and
 - any hazardous materials should be stored in a secure store.
- 5.3.3 In addition, a two-phase cut is recommended in areas where the vegetation is >20 cm above ground level such as the where standing crops are present at the commencement of works. The areas of hedgerow, scrub and tall ruderal vegetation are not anticipated to be affected by the works, but should this change, they will also require a two-phase cut. A two-phase cut involves first cutting the vegetation down to 20 cm above ground level, leaving it for at least 24 hours, then cutting it down to ground level. This is to ensure that any reptiles present within the vegetation are able to leave the area in safety. Any vegetation management undertaken to displace reptiles should be overseen by a suitably qualified ecologist (SQE).
- 5.3.4 In the unlikely event that reptiles are found during the works, RPS should be contacted, and an ecologist will supervise the removal and release of the reptile. Where reptiles are encountered during any vegetation removal, they should be left alone and allowed to relocate of their own accord unharmed and advice should be sought from a suitably qualified ecologist.

Bats

- 5.3.5 Bats are nocturnal and adapted to roost and forage in low light conditions, therefore increases in artificial lighting can cause disturbance or disrupt existing flight paths. To protect foraging and commuting bats throughout construction, night working should be avoided to prevent an increase in light levels across the retained habitats.
- 5.3.6 As the proposed development does not include any lighting and no linear commuting features or trees with roost potential are to be removed no further mitigation is required.
- 5.3.7 Should lighting be required, this should be assessed by a suitably qualified ecologist to ensure bats are not negatively impacted by the works.

Birds

- 5.3.8 The proposed solar park would have a very limited impact to the breeding bird species found during 2021 bird survey with the retention of field boundary hedgerows and trees, the inclusion of strips of wild bird crops or wildflower strips as an alternative food source following the conversion of arable to grassland and the implementation of environmentally sensitive management for a proportion of the grassland areas below / between the solar panels so they remain suitable for use by nesting skylark.
- 5.3.9 All existing trees and hedges are to be retained with the exception of a single ash to allow access to the site. Removal should be conducted outside the nesting bird season (March – August, inclusive). Should any additional trees or scrub require removal, this approach should be extended to protect potential nesting sites.
- 5.3.10 If removal outside of the season is not possible, a nesting bird check of the habitat will be required by a suitably qualified ecologist immediately prior to removal. If an active nest is encountered, a suitable 'no-work' buffer zone must be implemented around the nest until all chicks have fledged; RPS can provide further advice in this instance.

Invasive species

- 5.3.11 Japanese knotweed is present within and directly adjacent to the eastern site boundary. A Japanese knotweed management plan has been prepared setting out the control options and providing site specific recommendations.
- 5.3.12 The Japanese Knotweed management plan should be followed to ensure control is achieved.

Badgers

- 5.3.13 Active sett locations are currently outside the areas proposed for development (including a 30 m buffer). Works will take place within 30 m of several disused setts and the disused status should be confirmed no greater than 12 weeks prior to works commencing.
- 5.3.14 A maximum of 12 weeks prior to works commencing all setts within 30 m of works should be reassessed to confirm the disused status. Remote camera traps should be deployed for a minimum of 21 days. Where any currently disused setts within 30 m be found to be active a non-disturbance buffer will be implemented and where necessary a Natural England licenced sett closure may be required.
- 5.3.15 There is potential to harm commuting or foraging badgers during construction, and the following precautionary measures are therefore recommended:
- prior to development commencing, a walkover to confirm the continued absence of any setts should be undertaken;
 - any open deep excavations should be sloped or securely boarded / fenced to prevent entrapment;
 - excavations should be checked for trapped animals daily; and

- any hazardous materials should be stored in a secure store.

5.3.16 If at any time prior to or during the works, a badger or badger sett is noted on site, works in the area should cease, and RPS should be contacted immediately to provide further advice

Other fauna

5.3.17 There is potential to harm commuting or foraging hedgehog during construction, and the following precautionary measures are therefore recommended:

- any open deep excavations should be sloped or securely boarded / fenced to prevent entrapment;
- excavations should be checked for trapped animals daily; and
- any hazardous materials should be stored in a secure store.

5.3.18 Rabbits are protected under the Wild Mammals (Protection) Act 1996 which means it is an offence to inflict unnecessary suffering on any wild mammal. If works in the area of rabbit burrows are proposed, this should be done by a specialist under a watching brief.

5.4 Biodiversity Net Gain and Enhancement Opportunities

5.4.1 Planning policy at the national and local level and strategic biodiversity partnerships encourage inclusion of ecological enhancements in development projects to provide a 10% net gain in biodiversity.

5.4.2 The landscaping proposals for the site include enhancement of the existing arable field into species rich wildflower meadow and additional tree and hedgerow planting. The DEFRA BNG Metric 3.0 was used to calculate the on-site net change in biodiversity, as described below.

5.4.3 The total area of the habitats within the site is 22.17 ha.

5.4.4 The baseline units of habitats within the site prior to construction were calculated to have a total of 46.98 units. The habitat units were calculated to be 123.79 units post-construction. This is a net gain of 163.48%.

5.4.5 The total length of hedgerows within the site is 1.46 km.

5.4.6 The baseline units of hedgerows within the site prior to construction were calculated to have a total of 20.06 units. The hedgerow units were calculated to be 25.99 units post-construction. This is a net gain of 29.57%.

5.4.7 The total length of ditches within the site, excluding those associated with a hedgerow, is 0.371 km.

5.4.8 The baseline units of ditches within the site prior to construction were calculated to have a total of 1.48 units. No new river units are provided, resulting in no net change for river units.

5.4.9 Table 5.1 below provides habitat classifications, target condition, and total area of new and enhanced habitats provided post-construction.

Table 5.1: Habitats to be created or enhanced on site

Habitat	UK Hab Category	Target Condition	Area (ha) or length (km)
Habitats (Ha)			
Wildflower seeded grassland	Grassland – Other Neutral Grassland	Moderate (2)	19.0170
Hardstanding / solar panels	Urban - Developed Land; Sealed Surface	N/A (0)	0.9279
Trees	Urban – Urban Tree	Moderate (2)	0.0041
Hedgerows (km)			

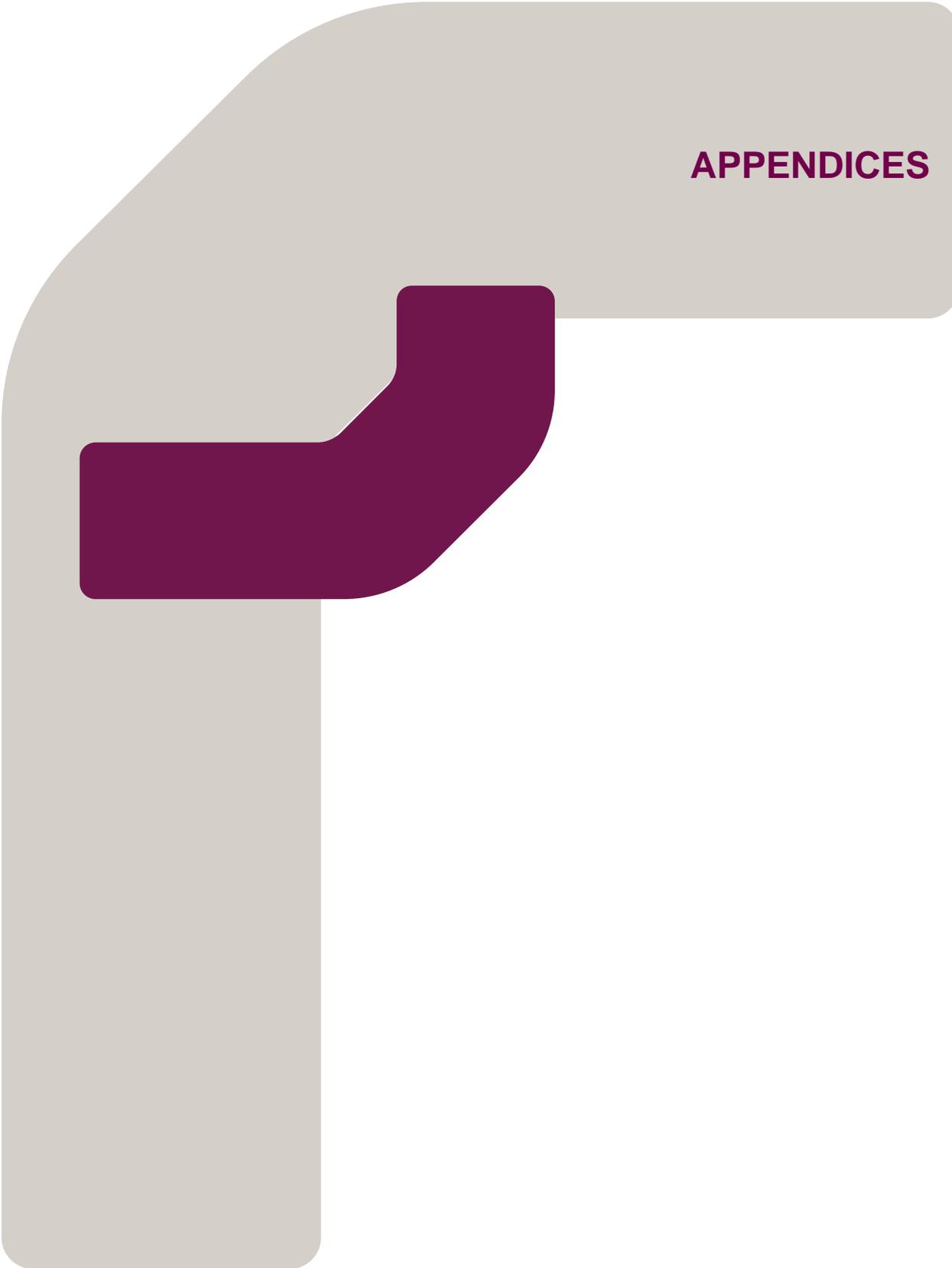
STANSTED SOLAR FARM ECOLOGICAL APPRAISAL REPORT

Native species rich hedge with trees	Native Species Rich Hedgerow with trees	Moderate (2)	0.439
Native species rich hedgerow	Native Species Rich Hedgerow	Moderate (2)	0.209

5.4.10 In summary, the proposed development has the potential to provide a net gain of 163.48% for habitats and 29.57% net gain for hedgerows, provided target conditions are met through appropriate management regimes. The ditch is to be retained within the works with no new ditches created. The BNG score for river units therefore remains at 0%.

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APPENDICES

Appendix A

Relevant Legislation

GREAT CRESTED NEWTS

Great Crested Newts *Triturus cristatus* are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (and as amended), which affords the species protection under Section 9. The species is also listed on Schedule 2 of the Conservation of Habitats and Species Regulations 2017. In combination, this makes it an offence to:

- intentionally kill, injure or take (capture etc.) a Great Crested Newt;
- possess a Great Crested Newt;
- intentionally or recklessly damage, destroy, obstruct access to any structure or place used by Great Crested Newt for shelter or protection, or disturb any animal occupying such a structure or place; and sell, offer for sale, possess or transport for the purpose of sale (live or dead animal, part or derivative) or advertise for buying or selling such things.

Great Crested Newts are also listed on the UKBAP as a Priority Species and are listed as a species of principal importance for biodiversity in England & Wales under Section 41 of the Natural Environment & Rural Communities Act (2006).

REPTILES

All common UK reptile species (Adder *Vipera berus*, Grass Snake *Natrix Helvetica*, Common Lizard *Zootoca vivipara* and Slow Worm *Anguis fragilis*) are protected through part of Section 9(1 and 5) of the Wildlife & Countryside Act 1981 (as amended). This prohibits:

- Intentional or reckless injuring or killing;
- Selling, offering or exposing for sale, or having in possession or transporting for the purpose of sale, any live or dead wild animal or any part of, or anything derived from, such an animal; or
- Publishing or causing to be published any advertisement likely to be understood as conveying buying or selling, or intending to buy or sell, any of those things.

BIRDS

All birds, their nests and eggs are afforded protection under the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. It is an offence to:

- intentionally kill, injure or take any wild bird;
- intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; and
- intentionally take or destroy the egg of any wild bird.

Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Licences can be issued to visit the nests of such birds for conservation, scientific or photographic purposes but not to allow disturbance during a development even in circumstances where that development is fully authorised by consents such as a valid planning permission.

BATS

All British bat species are fully protected under Schedule 5 of the Wildlife and Countryside Act 1981, as updated by the Countryside and Rights of Way Act 2000. All British bats are also included on Schedule 2 of The Conservation of Habitats and Species Regulations 2017 as European Protected Species. It is an offence to:

- intentionally or recklessly kill, injure or capture bats;
- deliberately or recklessly disturb bats (whether in a roost or not); and
- damage, destroy or obstruct access to bat roosts

A roost is defined as 'any structure or place which [a bat] uses for shelter or protection'. As bats tend to reuse the same roosts, legal opinion is that a roost is protected whether or not bats are present at the time of survey.

A licence will therefore be required by those who carry out any operation that would otherwise result in offences being committed.

The following bat species are listed as being of principal importance for the conservation of biodiversity in England, (commonly referred to as UKBAP Priority species): Barbastelle, Bechstein's, Noctule, Soprano Pipistrelle, Brown Long-eared, Greater Horseshoe, and Lesser Horseshoe.

BADGER

Badgers are protected under the Protection of Badgers Act 1992. This act is based on the need to protect badgers from baiting and deliberate harm or injury. The act makes it an offence to:

- Wilfully kill, injure, take, possess or cruelly ill-treat a badger, or attempt to do so;
- 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 routes.

A sett is defined as "any structure or place that displays signs indicating current use by a badger".

JAPANESE KNOTWEED

Non-native invasive species (NNIS), such as Japanese Knotweed, are species that do not occur naturally in Great Britain but have been introduced and have subsequently become established. They are agents of change and can cause economic and / or ecological damage. Invasive species are estimated to cost the UK economy more than 2 billion pounds each year, due to control cost and impacts on the agriculture sector, amenity use, flooding severity etc.

Additionally, the presence of some Schedule 9 invasive species, in particular Japanese Knotweed, Giant Hogweed and Himalayan Balsam can have a significant impact on property value, can cause issue/delays relating to site development and can impede property sale.

Due to the many negative effects of invasive species, legislation has been passed that aims to prevent the spread of Schedule 9 listed plant material into the wild where it then poses a threat to the UK's native biodiversity and ecosystems. NNIS of particular concern are listed under Schedule 9 Part 2 of the Wildlife and Countryside Act 1981 (as amended in 2008) (WCA). Essentially, it is an offence to cause Schedule 9 plants to grow in the wild and, if transported offsite, there is a duty of care for any part of the plant that can facilitate growth, including, for example, whole plants, seeds, rhizomes, bulbs, corms and cuttings.

Schedule 9 species planted in managed land are not considered as being in the 'wild', assuming that the species is kept under control and is properly managed. However, where the plant is inadequately managed or contained and it is likely to have an adverse effect on habitats and their native biodiversity, an offence will have been committed.

Recently, new legislation has been passed aimed at facilitating invasive species management efforts, including the Anti-social Behaviour Crime and Policing Act 2014, the Infrastructure Act 2015 and new EU regulations introduced on 1st January 2015. This legislation provides the tools necessary for property owners to protect their land from neighbouring invasions. Conversely, if an invasive species is not being properly managed on a property, this legislation could be used to mandate control or potentially result in fines.

It is worth noting that the legislation provides a defence if the accused can prove that all reasonable steps have been taken, and all due diligence has been exercised, in order to avoid committing an offence. Therefore, in order to reduce the potential for fines / prosecution, a management plan should be in place for invasive species on a property and property owners should be able to show that they are following it.

Appendix B

Photographs

Photograph 1: Arable habitat.



Photograph 2: Central hedgerow with occasional oak.



Photograph 3: Arable with woodland in background.



Photograph 4: Pond 1.



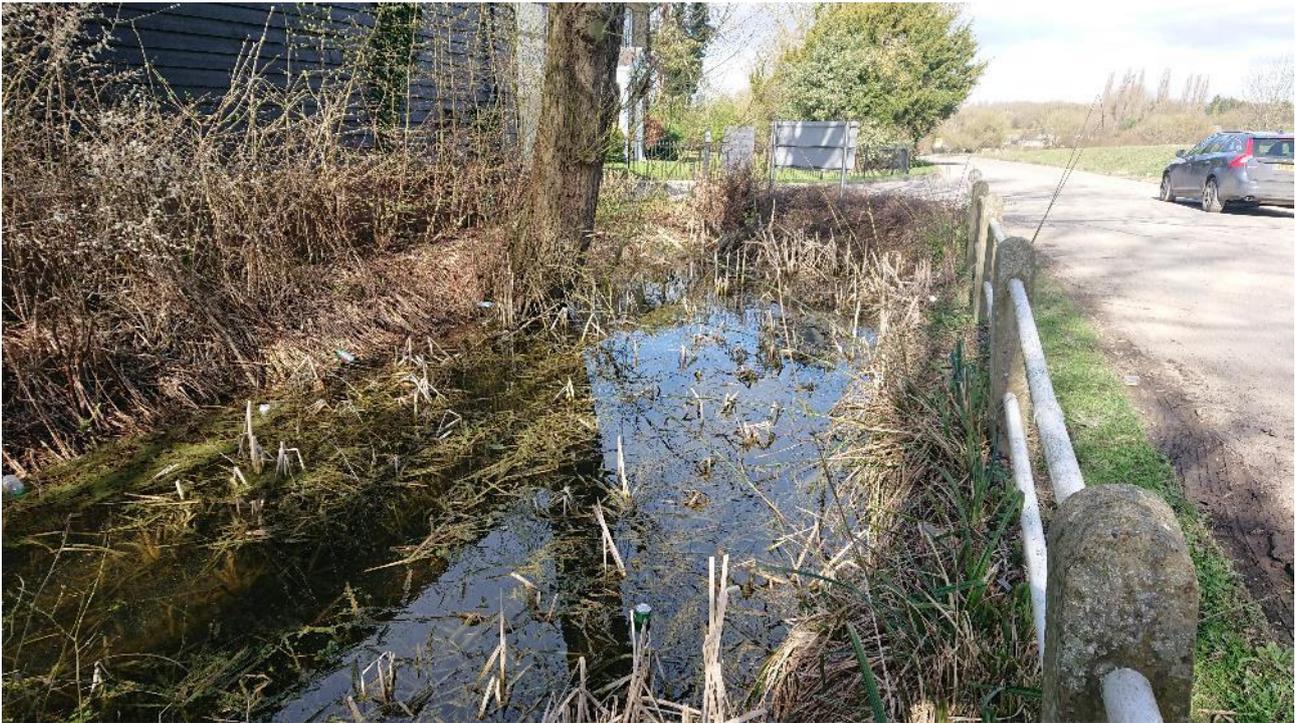
Photograph 5: Pond 2 – Dry.



Photograph 6: Pond 3 – Dry.



Photograph 7: Pond 4.



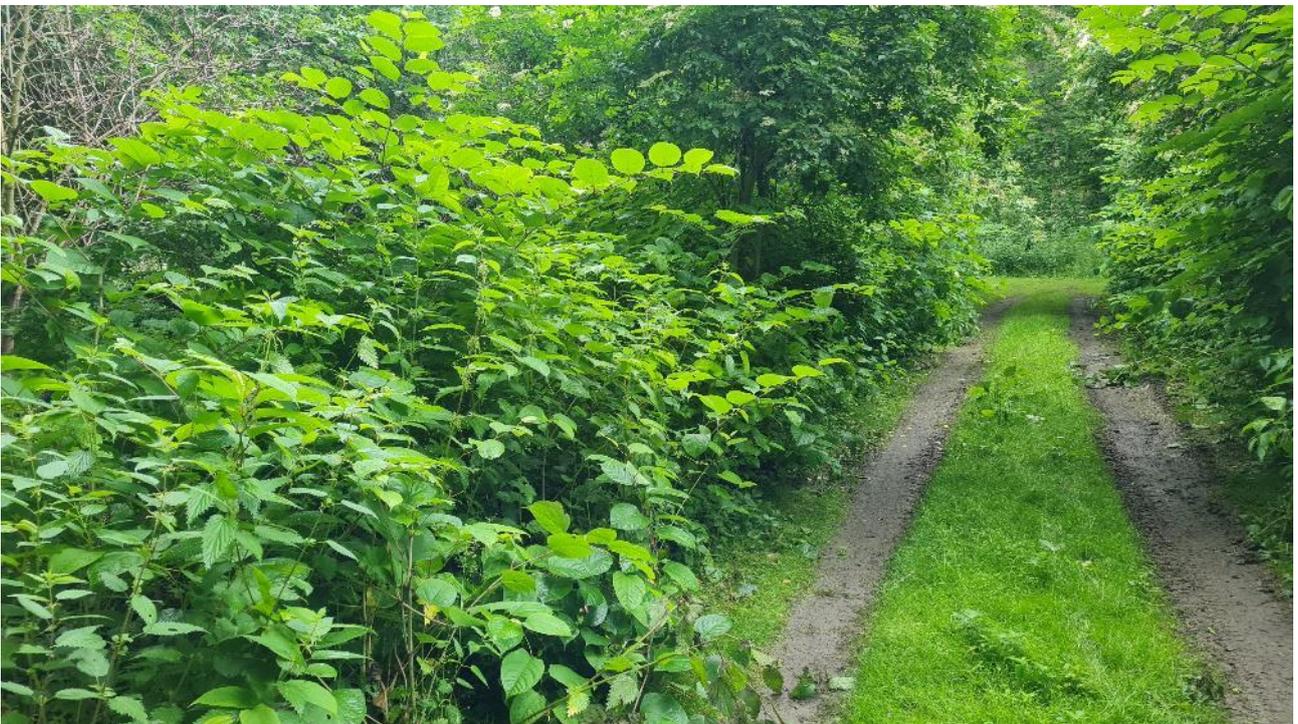
Photograph 8: Pond 5.



Photograph 9: Japanese Knotweed.



Photograph 10: Woodland Japanese Knotweed.



Photograph 11: Active main sett.

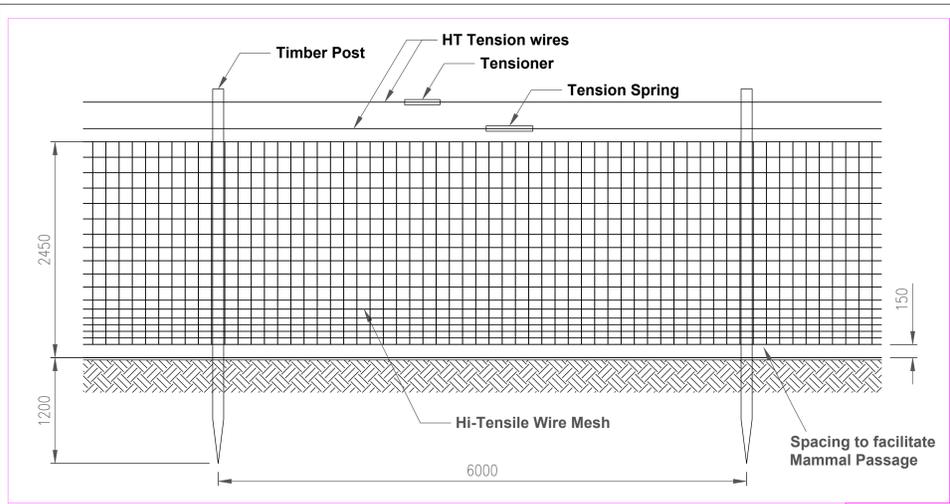


Photograph 12: Disused sett.



Appendix C

Development Proposals



TYPICAL SECURITY DEER FENCE DETAILS



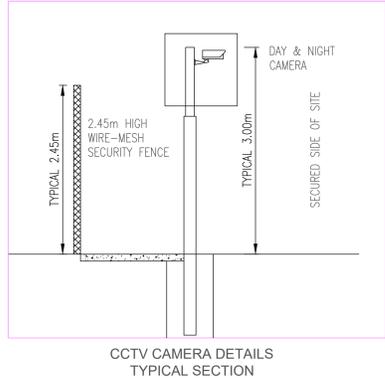
TYPICAL IMAGE OF DEER FENCE



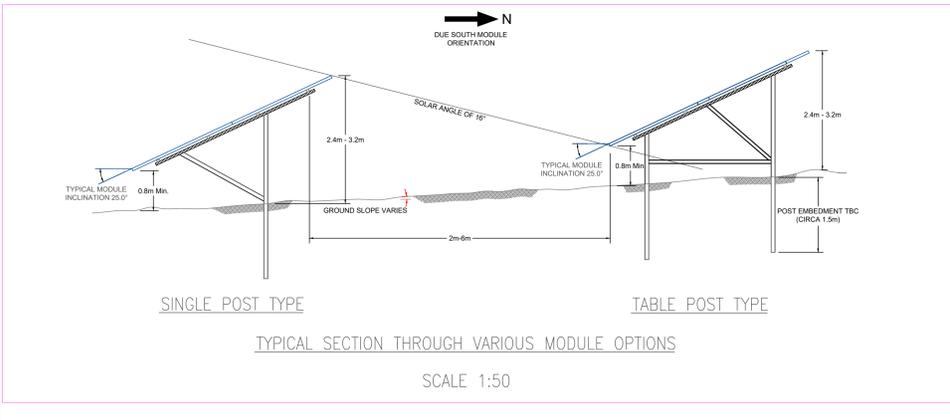
EXISTING VIEW ALONG ROAD



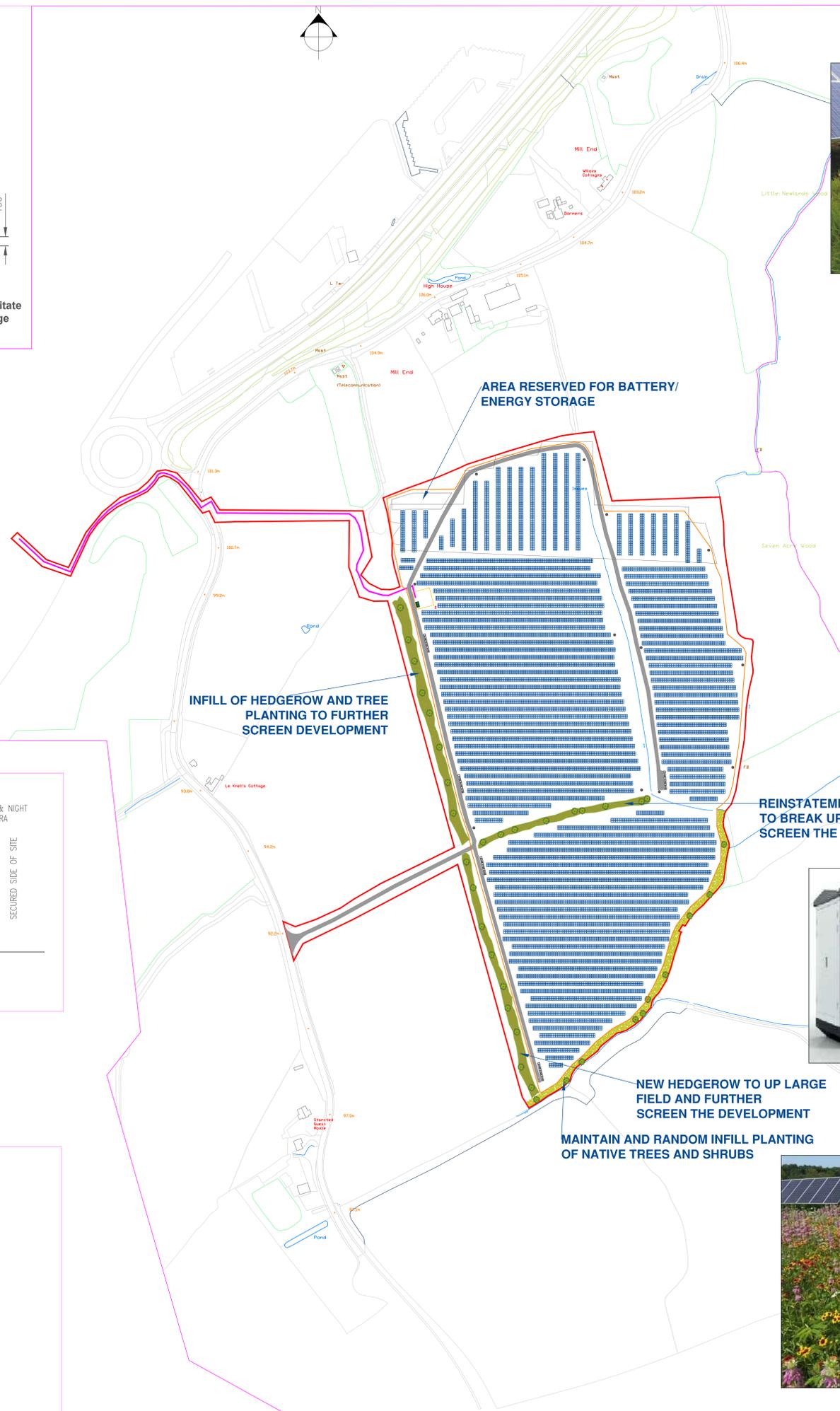
TYPICAL DESIRED HEDGEROW AND TREE PLANTING TO SCREEN FROM ROAD



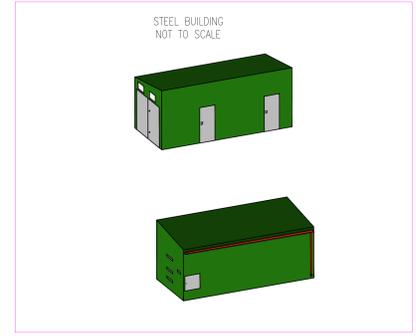
CCTV CAMERA DETAILS TYPICAL SECTION



SCALE 1:50



SHEEP GRAZING



TYPICAL PRIMARY SUBSTATION TYPICAL DIMENSIONS 6m x 3.2m x 3.4m HIGH. ALL SUBJECT TO FINAL DESIGN



TYPICAL INVERTOR SUBSTATION DIMENSIONS: 7m x 2.5m x 3m HIGH. ALL SUBJECT TO FINAL DESIGN



EXAMPLE WILD FLOWER GRASSLAND

Notes
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 2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

- LEGEND**
- SITE BOUNDARY
 - 2 x 12 = 24 MODULE PANEL (12m) & 2 x 24 = 48 MODULE PANEL (24m)
 - CABLE ROUTE (clean permeable material used)
 - 4m ACCESS TRACK (clean permeable material used)
 - INVERTER SUBSTATION
 - SECURITY FENCE
 - CCTV
 - PROPOSED MITIGATION SCREEN PLANTING COMPRISED OF LOCALLY APPROPRIATE HEDGEROW PLANTING WITH RANDOM TREES AND WILDFLOWER GRASSLAND
 - MAINTAIN EXISTING GRASSLAND EDGE AND RANDOM INFILL PLANTING OF NATIVE TREES AND SHRUBS

- NOTES:**
- Typical panels shown are 2.2m x 1.3m approx.
 - Typical module cross section shows two panels in portrait. However, based on best available technology, three panels in portrait, four panels in landscape and six panels in landscape may also be required and will be subject to final design.
 - Number and type of inverters are subject to final design and technology, as a worst case, inverter buildings have been used and maybe replaced by string inverters.

Rev	Description	By	CB	Date
G	Layout updated to reflect Glint and Glare	GG	AL	30/01/2022
F	Types and general style amendments	GG	AL	02/11/2021
E	Planning related	GG	AL	19/08/2021
D	Amended Red line	GG	AL	06/08/2021
C	Amended Layout	GG	AL	26/07/2021
B	Amended Layout	GG	AL	26/07/2021
A	Amended Layout	GG	AL	23/07/2021



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Client **MAG**

Project **STANSTED SOLAR PROJECT**

Title **DRAFT PLANNING DRAWING**

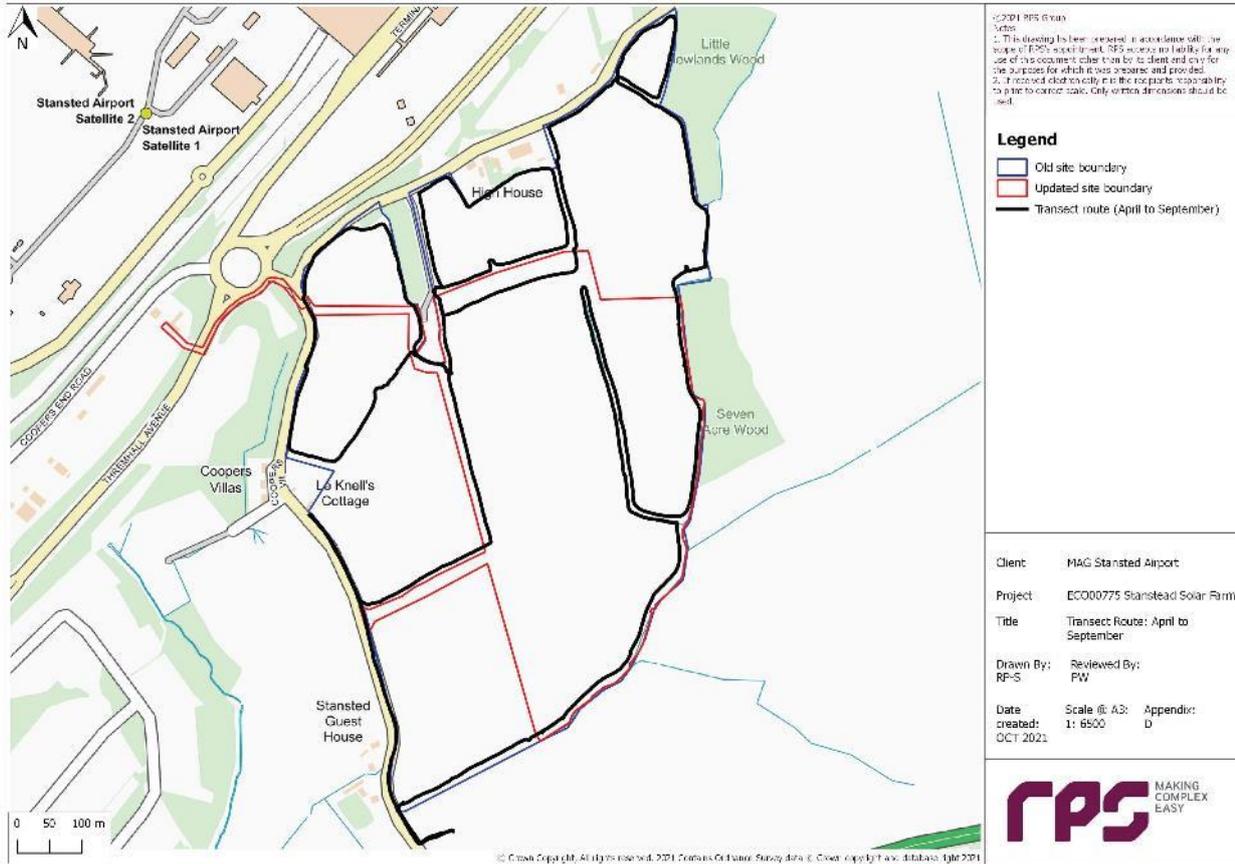
Status **DRAFT** Drawn By **GG** PM/Checked by **AL**

Job Ref **JPW1799** Scale @ **A0** Date Created **MAY 2021**

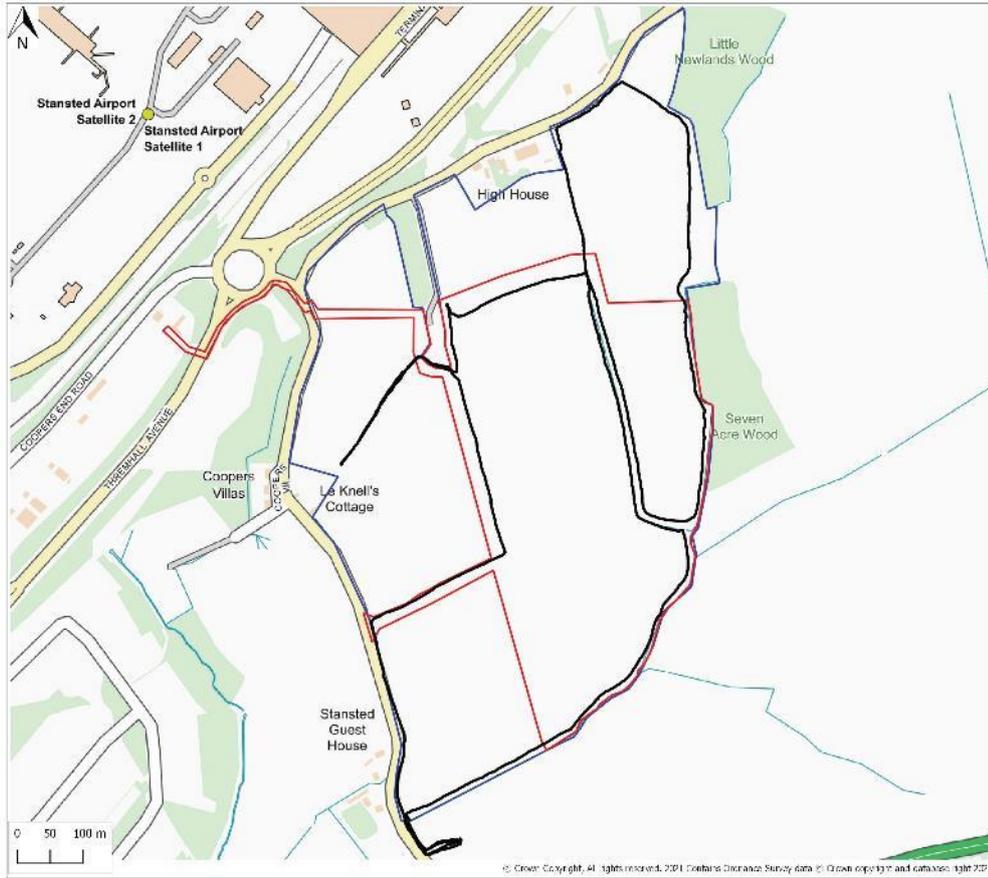
RPS Drawing/Figure Number **JPW1799-001** Rev **G**

Appendix D

Bat Transect Routes



STANSTED SOLAR FARM ECOLOGICAL APPRAISAL REPORT



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Notes:
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2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Old site boundary
- Updated site boundary
- Transect route (October)

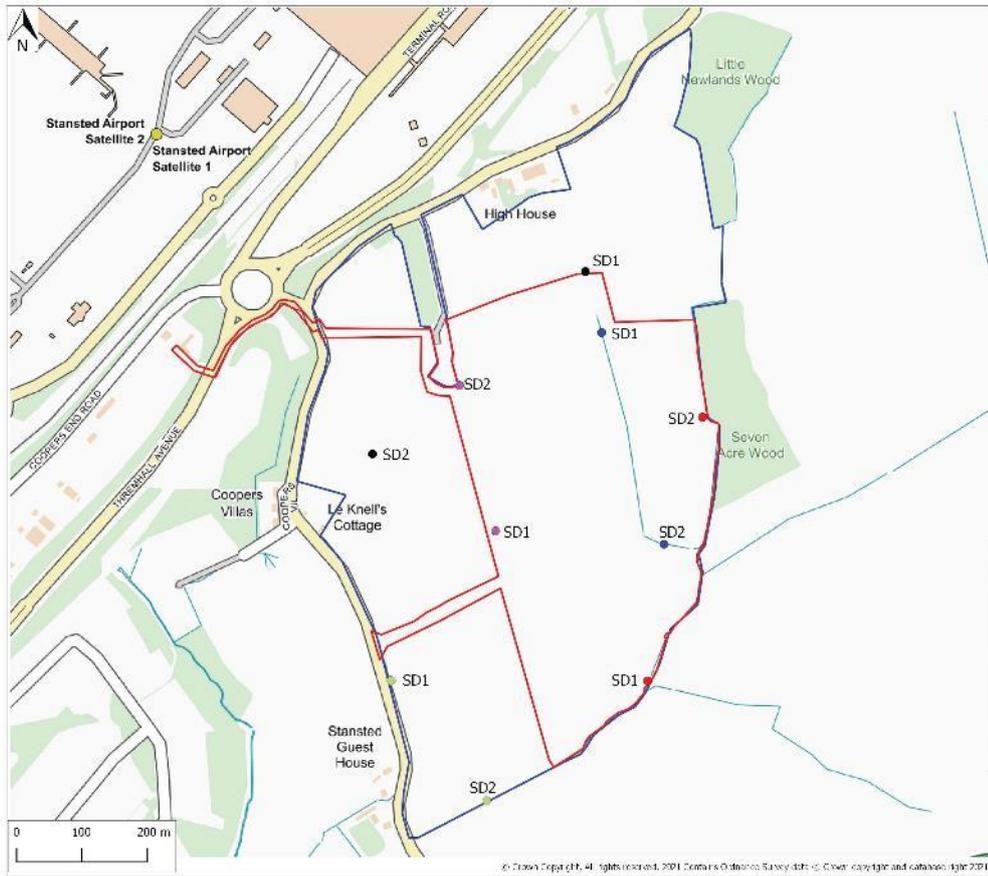
Client: MAG Stansted Airport
Project: ECO00775 Stansted Solar Farm
Title: Transect Route: October

Drawn By: RP-S
Reviewed By: PW

Date created: OCT 2021
Scale @ A3: 1: 6500
Appendix: D

RPS MAKING COMPLEX EASY

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2. If received electronically it is the recipient's responsibility to print to correct scale. Only written dimensions should be used.

Legend

- Old site boundary
- Updated site boundary

Static Detector Locations

- April
- May and June
- July
- August
- September and October

Client: MAG Stansted Airport
Project: ECO00775 Stansted Solar Farm
Title: Static Bat Detector Locations

Drawn By: RP-S
Reviewed By: PW

Date created: OCT 2021
Scale @ A4: 1: 6500
Appendix: D

RPS MAKING COMPLEX EASY

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Appendix F

Bird Species Data

English name	Scientific Name
Mallard	<i>Anas platyrhynchos</i>
Common Buzzard	<i>Buteo buteo</i>
Peregrine	<i>Falco peregrinus</i>
Red-legged Partridge	<i>Alectoris rufa</i>
Pheasant	<i>Phasianus colchicus</i>
Golden Plover	<i>Pluvialis apricaria</i>
Black-headed Gull	<i>Larus ridibundus</i>
Stock Dove	<i>Columba oenas</i>
Woodpigeon	<i>Columba palumbus</i>
Collared Dove	<i>Streptopelia decaocto</i>
Great Spotted Woodpecker	<i>Dendrocopos major</i>
Skylark	<i>Alauda arvensis</i>
Swallow	<i>Hirundo rustica</i>
Meadow Pipit	<i>Anthus pratensis</i>
Pied Wagtail	<i>Motacilla alba</i>
Grey Wagtail	<i>Motacilla cinerea</i>
Wren	<i>Troglodytes troglodytes</i>
Dunnock	<i>Prunella modularis</i>
Robin	<i>Erithacus rubecula</i>
Wheatear	<i>Oenanthe oenanthe</i>
Song Thrush	<i>Turdus philomelos</i>
Blackbird	<i>Turdus merula</i>
Blackcap	<i>Sylvia atricapilla</i>
Lesser Whitethroat	<i>Sylvia curruca</i>
Whitethroat	<i>Sylvia communis</i>
Chiffchaff	<i>Phylloscopus collybita</i>
Goldcrest	<i>Regulus regulus</i>
Great Tit	<i>Parus major</i>
Coal Tit	<i>Parus ater</i>
Blue Tit	<i>Parus caeruleus</i>
Long-tailed Tit	<i>Aegithalos caudatus</i>
Nuthatch	<i>Sitta europea</i>
Treecreeper	<i>Certhia familiaris</i>
Magpie	<i>Pica pica</i>
Jay	<i>Garrulus glandarius</i>
Carrion Crow	<i>Corvus corone</i>
Chaffinch	<i>Fringilla coelebs</i>
Linnet	<i>Linaria cannabina</i>
Lesser Redpoll	<i>Carduelis flammea</i>
Goldfinch	<i>Carduelis carduelis</i>
Greenfinch	<i>Chloris chloris</i>
Yellowhammer	<i>Emberiza citrinella</i>

Appendix G

Biodiversity Net Gain Metric 3.0

Stansted Solar Farm

Headline Results

[Return to results menu](#)

On-site baseline	<i>Habitat units</i>	46.98
	<i>Hedgerow units</i>	20.06
	<i>River units</i>	1.48
On-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	123.79
	<i>Hedgerow units</i>	25.99
	<i>River units</i>	1.48
On-site net % change (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	163.48%
	<i>Hedgerow units</i>	29.57%
	<i>River units</i>	0.00%
Off-site baseline	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation & enhancement)	<i>Habitat units</i>	0.00
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	76.81
	<i>Hedgerow units</i>	5.93
	<i>River units</i>	0.00
Total on-site net % change plus off-site surplus (including all on-site & off-site habitat retention, creation & enhancement)	<i>Habitat units</i>	163.48%
	<i>Hedgerow units</i>	29.57%
	<i>River units</i>	0.00%
Trading rules Satisfied?	Yes	

Stansted Solar Farm
 B-3 Site Hedge Enhancement

Condense / Show Columns Condense / Show Rows
 Main Menu Instructions

Baseline Habitats										
Baseline ref	Baseline habitat	Length KM	Baseline distinctiveness band	Baseline distinctiveness score	Baseline condition category	Baseline condition score	Baseline strategic significance category	Baseline strategic significance score	Baseline habitat units	Suggested action
5	Native Hedgerow - Associated with bank or ditch	0.301	Medium	4	Moderate	2	Low Strategic Significance	1	2.408	Like for like or better

Post development/ post intervention habitats										
Proposed (Pre-Populated but can be overridden)	Change in distinctiveness and condition		Length KM	Distinctiveness		Condition		Strategic significance		
	Distinctiveness movement	Condition movement		Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier
Native Hedgerow with trees - Associated with bank or ditch	Medium - High	Lower Distinctiveness Habitat - Moderate	0.301	High	6	Moderate	2	Area/compensation not in local strategy/ no local strategy	Low Strategic Significance	1
			0.30							

Temporal multiplier						Difficulty risk multipliers				Hedge units delivered	Comments	
Standard Time to target condition/years	Habitat enhanced in advance/years	Delay in starting habitat enhancement/years	Standard or adjusted time to target condition	Final time to target condition/years	Final Time to target multiplier	Standard difficulty of enhancement	Applied difficulty multiplier	Final difficulty of enhancement	Difficulty multiplier applied		Assessor comments	
10			Standard time to target condition applied	10	0.700	Low	Standard difficulty applied	Low	1	3.25	Trees added to gap up hedgerow	
										3.25		

C-1 Site River Baseline

Condense / Show Columns

Condense / Show Rows

Main Menu

Instructions

Existing river type			Habitat distinctiveness		Habitat condition		Strategic significance			Watercourse encroachment		Riparian encroachment		Suggested action	Ecological baseline	Retention category biodiversity value					
Baseline ref	River type	Length KM	Distinctiveness	Score	Condition	Score	Strategic significance	Strategic significance	Strategic position multiplier	Extent of encroachment	Multiplier	Extent of encroachment	Multiplier		Total river units	Length retained	Length enhanced	Units retained	Units enhanced	Length Lost	Units Lost
1	Ditches	0.371	Medium	4	Poor	1	Low potential/action not identified in any plan	Low Strategic Significance	1	No Encroachment	1	No Encroachment	1	Restore	1.48	0.371		1.48	0.00	0.00	0.00
2																					
3																					
4																					
5																					
6																					
		0.37													1.48	0.37	0.00	1.48	0.00	0.00	0.00