

**Stonestreet Green Solar**  
**Environmental Statement**  
**Volume 4: Appendices**  
**Chapter 9: Biodiversity**  
**Appendix 9.5: Baseline Survey Reports**  
**Appendices 9.5a - 9.5f**

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# Stonestreet Green Solar

## Appendix 9.5a: Hedgerow Condition and Importance Assessment

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## 1. EXECUTIVE SUMMARY

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- S.1 This Hedgerow Condition and Assessment report has been prepared on behalf of EPL 001 Limited ('the Applicant') to assess on-site hedgerows (habitat condition assessment and an assessment of hedgerow 'importance' under The Hedgerows Regulations 1997) in relation to the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').
- S.2 The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- S.3 The Site comprises a series of existing fields of varying sizes, with boundary habitats including hedgerow. The survey to determine the condition and inform the assessment of importance of the hedgerows was undertaken in June - August 2022.
- S.4 Of the 56 hedgerows that were surveyed, 31 were found to be in 'good' condition, 17 in 'moderate' condition and eight in 'poor' condition. 33 hedgerows were assessed as being likely 'Important' and meeting the necessary criteria under The Hedgerows Regulations 1997, qualifying under a mixture of ecological or heritage criteria (historic landscape assessment included within **ES Volume 2, Chapter 7: Cultural Heritage (Doc Ref. 5.2)**).
- S.5 43 hedgerows are in a condition where enhancement would be possible to either improve their condition from poor / moderate to good condition (25 hedgerows fall into this category) or improve the condition of already good hedgerows that fail some condition criteria (18 hedgerows fall into this category). This will include planting to fill gaps (improving scores for criteria B2) and improving species diversity and hedgerow structure as a result, and control of undesirable perennial vegetation that has established as a result of agricultural nutrient enrichment (improving scores for criteria C2).
- S.6 In addition to the above, 16 boundaries that currently have no hedgerow would be suitable locations for the creation of additional hedgerows.
- S.7 To ensure the delivery of a coordinated and integrated ecology strategy, mitigation, compensation and enhancement measures relating to hedgerows are not detailed in this report. These measures are set out in detail within **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the ecology management prescriptions forming part of the **Outline Landscape and Ecological Management Plan (LEMP) (Doc Ref. 7.10)**.

## 2. INTRODUCTION

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- 2.1 This Hedgerow Condition and Assessment report has been prepared on behalf of EPL 001 Limited ('the Applicant') to assess on-site hedgerows (habitat condition assessment and an assessment of hedgerow 'importance' under The Hedgerows Regulations 1997) in relation to the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').
- 2.2 This Hedgerow Condition and Assessment report is **Appendix 9.5a to ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### THE PROJECT

- 2.3 The Project comprises the construction, operation, maintenance, and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.4 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.
- 2.5 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

### SITE DESCRIPTION

- 2.6 The Site area is approximately 192 ha located Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- 2.7 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.
- 2.8 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.9 Fields are described in relation to the Project as follows:
- The South Western Area, Fields 1 to 9.

- The Central Area, Fields 10 to 19 and 23 to 25.
- The South Eastern Area, Fields 20 to 22.
- The Northern Area, Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- 'Cable Route Corridor' (export of electricity from the Project at 132 kilovolt ('kV') via underground cables (the 'Grid Connection Cable') to the Sellindge Substation). 'Cable Route Crossing' (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link ('HS1') railway or through Horizontal Directional Drilling ('HDD') beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

## OBJECTIVES

2.10 The objectives of this survey and report are to: -

- Document the distribution, character and any special attributes of hedgerows in the survey area;
- Establish the state of the hedgerows, in terms of the length and condition;
- Establish whether hedgerows are likely to meet the criteria for qualification as an 'Important Hedgerow' under the 'The Hedgerows Regulations 1997', through combined assessment of ecological, arboricultural and heritage information; and
- Identify those hedgerows that are of particular importance for wildlife.

### 3. METHOD

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#### HEDGEROW SURVEY

- 3.1 The hedgerow survey (comprising two visits) was undertaken in accordance with the Hedgerow Survey Handbook (2nd edition) (DEFRA, 2007) in conjunction with the Biodiversity Metric 3.1 Habitat Condition Assessment Sheets (updated 18/05/2022).
- 3.2 Note that while the survey was undertaken in accordance with Biodiversity Metric 3.1 (Natural; England, 2022), the method and results have been reviewed for compatibility with the Department for Environment, Food & Rural Affairs ('DEFRA')'s "Statutory Biodiversity Metric" being the current metric version in use at the time of report finalisation.
- 3.3 The lengths of all hedgerows were surveyed, and plant species were noted along the entirety of the hedgerows on Site. Each hedgerow section was split into a hedgerow unit and given a reference number. Both sides of each hedgerow were surveyed.
- 3.4 Hedgerows were broken down into units (hedgerow lengths assigned a number as shown in Appendix 4, which were delineated based on the following: -
- Any point of connection between two, or more, hedgerows or to other features e.g., fences, walls, ditches, roads;
  - The point at which a hedgerow stops and there is a gap of more than 20m to the next hedgerow (e.g., where the hedgerow ends in the middle of a field); and/or
  - The point at which the hedgerow links to a woodland or other semi-natural habitat such as a pond.
- 3.5 A 'species rich' hedgerow is characterised by sections of hedgerow 30m or greater in length that comprise at least five native structural 'woody' species.
- 3.6 Hedgerows were provided with individual reference numbers to aid survey, noting that these will vary from the hedgerow reference codes used in **ES Volume 4, Appendix 9.3: Arboricultural Impact Assessment (Doc Ref. 5.4)**. The hedgerows are also further geographically referenced in accordance with the field in which they were present, with fields numbered in accordance with the layout version available at the time (Evolution Power, 2022).
- 3.7 Refer to Annex 4: Hedgerow survey plan for hedgerow locations and reference numbers.

#### SURVEY DATES AND PERSONNEL

- 3.8 Survey visits were undertaken in June - August 2022 by a competent expert.

#### HEDGEROW CONDITION ASSESSMENT

- 3.9 Habitat condition assessment entails assessment against specific requirements listed within the guidance documents (Natural England (2022)). These



requirements are specific to each habitat type and relate to physical characteristics, structural attributes, typical species present and positive and negative indicators, such as the presence of invasive species.

- 3.10 The condition assessment uses agreed standards and methodology tailored to each habitat type, which is similar to that used for Common Standards Monitoring ('CSM') and supersede the previously used Farm Environment Plan methodology, which can be difficult to apply for non-agricultural schemes.
- 3.11 Notes were taken on the qualitative features of the hedgerows on Site, such as connections to ditches, how functionally intact a hedgerow is (gappy hedgerows are termed as 'defunct') and approximate thickness of the hedgerow.
- 3.12 Hedgerow condition assessment uses three categories - poor, moderate and good. This is determined through a set of eight criteria for meeting 'favourable condition' as outlined in the *Hedgerow Survey Handbook*. Each of the categories is given a pass or fail for each hedgerow unit, the cumulative score providing the indication of hedgerow condition.
- 3.13 Criteria for establishing favourable condition are: -
- A1 - Height
  - A2 - Width
  - B1 - Gap at hedge base
  - B2 - Gap at hedge canopy
  - C1 - Undisturbed ground perennial vegetation
  - C2 - Undesirable perennial vegetation
  - D1 - Invasive and neophyte species
  - D2 - Current damage (from human activities).

#### *HEDGEROW REGULATION ASSESSMENT (THE HEDGEROWS REGULATIONS 1997)*

- 3.14 Heritage and arboricultural information were used to inform Important Hedgerow Assessment. The relevant reports in relation to the Project (**ES Volume 4, Appendix 7.1: Archaeological Desk Based Assessment (Doc Ref. 5.4)**, and **ES Volume 4: Appendix 9.3: Arboricultural Impact Assessment (Doc Ref. 5.4)**) were reviewed in combination with the hedgerow condition assessment survey results, to determine whether a hedgerow was likely to qualify as 'Important'.
- 3.15 To qualify as important under the Regulations, the hedgerow must comply with the following list of criteria:
- The hedgerow must have a continuous length of or exceeding 20 metres;
  - The hedgerow has a continuous length of less than 20 metres, but meets another hedgerow (by intersection or junction) at each end; and
  - The hedgerow must be more than 30 years old.
  - In addition to the above, to be deemed 'important' a hedgerow must meet one or more of the following criteria:

1. The hedgerow marks the boundary of a historic parish or township existing before 1850;
2. The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate;
3. The hedgerow is a part of or associated with a field system predating the Enclosure Acts;
4. The hedgerow contains species in Part I of Schedule 1; Schedule 5; or Schedule 8 of The Wildlife and Countryside Act 1981; or various other defined species including certain Red Data Book species;
5. The hedgerow is adjacent to a public right of way (not counting an adopted highway) and includes at least four woody species as defined in Schedule 3 of the regulations plus at least two Associated Features;
6. The hedgerow includes one or more of the following within a 30m sample area:
  - At least seven woody species.
  - At least six woody species plus at least three Associated Features (see below).
  - At least six woody species including a black poplar; large-leaved lime, small-leaved lime or wild service tree.
  - At least five woody species and at least four Associated Features.

3.16 For hedgerows located within particular northern counties, the regulations state that the number of woody species should be reduced by one in the criteria.

3.17 The Associated Features mentioned above, as part of The Hedgerows Regulations 1997 criteria, are as follows:

- A bank or wall for at least half the length of the hedgerow;
- A ditch for at least half the length of the hedgerow;
- Gaps over no more than 10% of the length of the hedgerow;
- On average, at least 1 standard tree per 50 metres of hedgerow;
- At least three woodland species from a list of 57 woodland plants (as defined in Schedule 2 of the Regulations) within 1m of the hedgerow;
- Connections scoring 4 or more points, where connection with a hedgerow counts as one, a broad-leaved woodland or pond counts as two; and
- A parallel hedge within 15m.

3.18 In addition to the above, the heritage assessment (**ES Volume 4, Appendix 7.1: Archaeological Desk Based Assessment (Doc Ref. 5.4)**) assessed 'Historic Hedgerows' as being likely 'Important' on archaeological or historic grounds based upon the following criteria set out within Hedgerows Regulations (1997) Schedule 1 Part II - Archaeology & History) as follows:

- *"Heritage criteria 1. The hedgerow marks the boundary, or part of the boundary, of at least one historic parish or township; and for this purpose "historic" means existing before 1850.*
- *Heritage criteria 2. The hedgerow incorporates an archaeological feature which is—*

*(a) included in the schedule of monuments compiled by the Secretary of State under section 1 (schedule of monuments) of the Ancient Monuments and Archaeological Areas Act 1979; or*

*(b) recorded at the relevant date in a Sites and Monuments Record.*

- *Heritage criteria 3. The hedgerow -*

*(a) is situated wholly or partly within an archaeological site included or recorded as mentioned in paragraph 2 or on land adjacent to and associated with such a site; and*

*(b) is associated with any monument or feature on that site.*

- *Heritage criteria 4. The hedgerow -*

*(a) marks the boundary of a pre-1600 AD estate or manor recorded at the relevant date in a Sites and Monuments Record or in a document held at that date at a Record Office; or*

*(b) is visibly related to any building or other feature of such an estate or manor.*

- *Heritage criteria 5. The hedgerow -*

*(a) is recorded in a document held at the relevant date at a Record Office as an integral part of a field system pre-dating the Inclosure Acts; or*

*(b) is part of, or visibly related to, any building or other feature associated with such a system, and that system—*

*(i) is substantially complete; or*

*(ii) is of a pattern which is recorded in a document prepared before the relevant date by a local planning authority, within the meaning of the 1990 Act, for the purposes of development control within the authority's area, as a key landscape characteristic."*

## LIMITATIONS

- 3.19** The hedgerow survey was undertaken during the typical growing season for woody and other hedgerow plants in the UK, with most species being readily identifiable. As such, there were no significant constraints or limitations on the survey in relation to seasonality.
- 3.20** An ecological survey represents a 'snapshot' in time of the ecological condition of a site. The ecological character of a site can change substantially throughout both the course of a year, and from year to year impacting on the extent and quality of habitats.

- 3.21 The survey focused on the woody species within the hedgerows and so did not make note of plant species at the base of the hedges unless these were of particular interest (notable species such as Ancient Woodland Indicator (AWI) or otherwise rare or scarce plants). However, this approach is in line with guidance provided in the *Hedgerow Survey Handbook*.
- 3.22 Based on the above, there are no material limitations to the survey conducted or the evaluation set out in this report. The survey work conducted was thorough and followed good practice guidelines.

## 4. RESULTS

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### HEDGEROW SURVEY

#### *HABITATS OF PRINCIPAL IMPORTANCE: HEDGEROWS*

- 4.1 55 of the 56 hedgerows surveyed were native species hedgerows with at least one native woody species. As such, the 55 native hedgerows on site qualify as Habitat of Principal Importance (HPI).
- 4.2 Many of the hedgerows were defunct but retained enough length to provide ecologically functional hedgerow habitat.

### CONDITION ASSESSMENT

- 4.3 Of the 56 hedgerows surveyed on site, 31 of the hedgerows are classed as being in 'good' condition, 17 in 'moderate' condition and eight in 'poor' condition.
- 4.4 Further detail of the survey results, by criteria, are provided below.
- 4.5 Annex 1 provides a summary of the condition assessment results for each surveyed hedgerow.

#### *A: HEDGEROW SIZE*

- 4.6 Nine of the hedgerows were found to be below the qualifying height category of greater than 1.5 meters. The remainder of the hedgerows passed this category.
- 4.7 14 of the hedgerows were found to be below the qualifying width category of greater than 1.5 meters. The remainder of the hedgerows passed this category.

#### *B: HEDGEROW FUNCTION*

- 4.8 The base layer heights for 15 hedgerows were found to be above the half metre range (between canopy and ground level) failing this condition threshold.
- 4.9 Of the 56 hedgerows, 29 failed the criteria for hedge canopy continuity. Several of the hedgerows on Site are defunct having many gaps of varying sizes and incomplete sections.

#### *C: GROUND VEGETATION*

- 4.10 The ground around most of the hedgerows was found to be undisturbed, with only 14 hedgerows showing signs of significant disturbance. All the other hedgerow assessed on Site were recorded as meeting this condition criteria, having greater than 1m of undisturbed ground level herbaceous plant growth for over 90% of the hedgerow length.
- 4.11 24 of the hedgerows were found to have excessive growth of undesirable perennial vegetation associated with excessive nutrient enrichment.

**D: NON-NATIVE SPECIES AND HUMAN DAMAGE**

- 4.12 Three hedgerows (11A, 11B and 21A) were found to comprise mostly non-native tree or shrub species along its length. The remainder of the hedgerows found on Site comprised native species without non-native plant species.
- 4.13 Only one hedgerow (106A) was found to have evidence of disturbed ground along a significant proportion of the hedgerow length.

**IMPORTANT HEDGEROW ASSESSMENT**

- 4.14 Of the 56 hedgerows surveyed across the Site, thirty-three hedgerows were classified as being 'important' through meeting the necessary criteria under the Hedgerows Regulations 1997.
- 4.15 Overall, the Site contains an extensive network of historic hedgerows (over 30 years old) with most hedgerows being in excess of 20m length and meeting at least one of the additional criteria. Many hedgerows on Site however lack sufficient species diversity to qualify as 'species rich', which is a pre-requisite for being classed as 'Important' under many of the ecological criteria.
- 4.16 The hedgerows that are species rich do however often meet the number of associated features through hedgerows being generally intact, forming part of a well-connected hedgerow network and often with tree standards, banks or ditches present.
- 4.17 Many hedgerows are however adjacent to PRowS (lowering the qualifying criteria for associated features).
- 4.18 Several hedgerows have been confirmed to support hazel dormouse (*Muscardinus avellanarius*), and so qualify as important under this criteria (Criteria 2: contains a species listed within Schedule 5 of the Wildlife & Countryside Act, 1981 (as amended)).
- 4.19 The qualifying criteria for each hedgerow are summarised in Annex 2.
- 4.20 The location of each 'important' hedgerow is shown in Annex 5

## 5. EVALUATION

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- 5.1 Of the 56 hedgerows surveyed on site, 31 of the hedgerows are classed as being in 'good' condition, 17 in 'moderate' condition and eight in 'poor' condition.
- 5.2 33 hedgerows meet the necessary criteria under The Hedgerows Regulations 1997 and qualify as 'important'.
- 5.3 Most intact mature hedgerows on Site are sufficiently diverse in species, height and structure as to be ecologically valuable. These hedgerows comprise more than 80% native woody species over their lengths, which qualifies them as a Habitat of Principal Importance.
- 5.4 None of the hedgerows were found to contain any protected or rare plant species of conservation significance (noting that a full ground layer vegetation survey was not undertaken), but the mature hedgerows do have intrinsic ecological importance, providing habitat and habitat connectivity for a range of ecologically important fauna species found on Site. Hazel dormouse is known to be present within the hedgerow network, based on the results of surveys of the Site for this species.
- 5.5 43 hedgerows are in a condition where enhancement would be possible to either improve their condition from poor / moderate to good condition (25 hedgerows fall into this category) or improve the condition of already good hedgerows that fail some condition criteria (18 hedgerows fall into this category). This will include planting to fill gaps (improving scores for criteria B2) and improving species diversity and hedgerow structure as a result, and control of undesirable perennial vegetation that has established as a result of agricultural nutrient enrichment (improving scores for criteria C2).
- 5.6 To ensure the delivery of a coordinated and integrated ecology strategy, mitigation, compensation and enhancement measures relating to hedgerows are not detailed in this report. These measures are set out in detail within **ES Volume 2, Chapter 9 Biodiversity (Doc Ref. 5.2)** and the ecology management prescriptions forming part of the **Outline LEMP (Doc Ref. 7.10)**.

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**7. ANNEX 1: HEDGEROW CONDITION ASSESSMENT RESULTS TABLE**

\*Green denotes condition criteria pass, red denotes condition criteria fail

Field I.D	Hedgrow	A1	A2	B1	B2	C1	C2	D1	D2	condition
1	A	Green	Green	Green	Green	Green	Green	Green	Green	Good
2	A	Green	Green	Green	Green	Green	Green	Green	Green	Good
	B	Red	Red	Green	Green	Green	Green	Green	Green	Moderate
	C	Red	Green	Red	Green	Green	Green	Green	Green	Good
	D	Red	Red	Red	Red	Green	Green	Green	Green	Poor
	E	Green	Green	Green	Green	Green	Green	Green	Green	Good
3	A	Green	Green	Green	Red	Red	Green	Green	Green	Good
	B	Green	Green	Green	Green	Green	Green	Green	Green	Good
4	A	Green	Green	Green	Green	Green	Red	Green	Green	Good
	B	Green	Green	Green	Green	Green	Green	Green	Green	Good
	C	Green	Green	Green	Red	Green	Red	Green	Green	Good
5	A	Green	Green	Green	Red	Red	Green	Green	Green	Good
	B	Green	Green	Green	Green	Green	Red	Green	Green	Good
	C	Green	Green	Green	Green	Green	Green	Green	Green	Good
6	A	Green	Green	Green	Green	Green	Green	Green	Green	Good
	B	Green	Green	Green	Red	Green	Red	Green	Green	Good
	C	Green	Red	Red	Red	Red	Red	Green	Green	Poor
	D	Red	Red	Red	Red	Red	Green	Green	Green	Poor
7	A	Green	Green	Green	Green	Green	Green	Green	Green	Good
	B	Red	Red	Red	Red	Green	Green	Green	Green	Poor
	D	Red	Red	Red	Red	Red	Green	Green	Green	Moderate
	E	Green	Green	Green	Green	Red	Red	Green	Green	Moderate
	F	Green	Green	Green	Red	Red	Green	Green	Green	Good
	G	Green	Red	Red	Red	Green	Red	Green	Red	Poor
	H	Green	Green	Green	Green	Green	Green	Green	Green	Good
	I	Green	Green	Green	Green	Green	Green	Green	Green	Good
	J	Green	Red	Red	Red	Green	Green	Green	Green	Moderate
8	A	Red	Red	Green	Red	Red	Red	Green	Green	Moderate
9	A	Red	Red	Red	Red	Red	Green	Green	Green	Poor
	B	Green	Red	Red	Red	Green	Green	Green	Green	Moderate
11	A	Green	Green	Green	Green	Green	Red	Red	Green	Good
	B	Green	Green	Green	Red	Red	Green	Red	Green	Moderate
	C	Green	Red	Red	Red	Red	Red	Green	Green	Moderate
	D	Green	Green	Green	Green	Green	Green	Green	Green	Good
13	A	Green	Green	Green	Red	Red	Green	Green	Green	Good
	B	Green	Green	Green	Green	Green	Green	Green	Green	Good
	C	Green	Red	Green	Green	Green	Red	Green	Green	Moderate
	D	Green	Green	Green	Green	Red	Red	Green	Green	Moderate
	E	Green	Green	Green	Green	Red	Red	Green	Green	Moderate
14	A	Green	Green	Green	Green	Red	Red	Green	Green	Good
	B	Green	Green	Green	Green	Green	Red	Green	Green	Moderate
	C	Green	Green	Red	Red	Green	Red	Green	Green	Moderate
15	A	Green	Green	Red	Green	Green	Green	Green	Green	Good
	B	Green	Green	Green	Green	Red	Red	Green	Green	Moderate
	C	Red	Red	Red	Red	Green	Red	Green	Green	Poor
16	A	Green	Green	Green	Green	Green	Green	Green	Green	Good
	B	Green	Green	Green	Green	Green	Green	Green	Green	Good
17	A	Green	Green	Green	Red	Green	Red	Green	Green	Good
	B	Red	Red	Green	Red	Green	Green	Green	Green	Moderate
19	A	Red	Green	Green	Red	Green	Red	Green	Green	Moderate
	B	Green	Green	Green	Green	Green	Red	Green	Green	Good
21	A	Green	Green	Red	Green	Green	Red	Red	Green	Moderate
	B	Green	Green	Green	Green	Green	Red	Green	Green	Good
22	A	Green	Green	Green	Red	Green	Red	Green	Green	Good
	B	Green	Green	Green	Red	Green	Red	Green	Green	Good
106	A	Red	Red	Red	Red	Green	Green	Green	Red	Poor

**8. ANNEX 2: IMPORTANT HEDGEROW ASSESSMENT SUMMARY TABLE**

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
1A	H3	Heritage Criteria 5: pre-dating the Inclosure Acts Species rich Associated Features <4 (Ditch, gaps less than 10%, parallel hedge)	Important
1D	H1 H2	NOT species rich, with trees	No
2A	H6	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
2B	G11 G12	Species rich, with trees Associated Features <4 (gaps less than 10%, 1 standard tree per 50m)	No
2C	H9	Species rich, with trees Associated Features <4 (gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	No
2D	H8	NOT species rich, with trees	No
2E	H5	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	No
2F	H4	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich Contains Species on Schedule 5 of Wildlife and Countryside Act 1981 (as amended) - hazel dormouse	Important
3A	H12	Heritage Criteria 2: (Roman Road) The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate; NOT species rich Associated Features <4 (Bank, gaps less than 10%, connections scoring 4 or more points)	Important
3B	H13	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
4A	H10 H14	Heritage Criteria 5: pre-dating the Inclosure Acts Adjacent to PRow - with four woody species present Species rich Associated Features >2 (Ditch, bank gaps less than 10%, connections scoring 4 or more points, parallel hedge)	Important
4B	H9	Heritage Criteria 5: pre-dating the Inclosure Acts Species rich, with trees Associated Features >4 (Bank, gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points,)	Important
4C	H9	Species rich, with trees Associated Features <4 (Ditch, gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points,)	Important
5A	H12	Heritage Criteria 2: (Roman Road) The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate; Species rich Associated Features <4 (Banks, gaps less than 10%, connections scoring 4 or more points parallel hedge)	Important
5B	H10	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
5C	H11 H14	Heritage Criteria 5: pre-dating the Inclosure Acts Species rich, with trees Associated Features >4 (Bank, Gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points, parallel hedge)	Important
6A	H23	Heritage Criteria 2: (Roman Road) The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate; NOT species rich	Important

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
6B	H18	Species rich Associated Features <4 (connections scoring 4 or more points)	No
6C	H19	NOT species rich Contains Species on Schedule 5 of Wildlife and Countryside Act 1981 (as amended) - hazel dormouse	Important
6D	H20 H21	NOT species rich, with trees Contains Species on Schedule 5 of Wildlife and Countryside Act 1981 (as amended) - hazel dormouse	Important
7A	H26	Heritage Criteria 2: (Roman Road) The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate; NOT species rich	Important
7B	H26	Adjacent to PRow - with four woody species present Species rich Associated Features >2 (Gaps less than 10%, parallel hedge)	Important
7D	G35	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
7E	H28	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich, with trees	Important
7F	H29	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich, with trees	Important
7G	G37 G38	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
7H	H30	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich, with trees	Important

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
7I	H25	Heritage Criteria 5: pre-dating the Inclosure Acts Adjacent to PRoW - with four woody species present NOT species rich, with trees Associated Features >2 (Gaps less than 10%, ditch)	Important
7J	H24	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
8A	H16	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
9B	G24	NOT species rich, with trees	No
11A	G58	Scoped out as primarily treeline / scrub	No
11B	H37	NOT species rich	No
11C	H35	NOT species rich	No
11D	H34	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich	Important
13A	G79- G85	Adjacent to PRoW - with four woody species present Species rich, with trees Associated Features >2 (Bank, Gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	Important
13B	H43	Adjacent to PRoW - with four woody species present NOT species rich, with trees Associated Features >2 (Ditch, Gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	Important

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
13C	G66-77, H42	Heritage Criteria 5: pre-dating the Inclosure Acts Species rich, with trees Associated Features >4 (Ditch, bank, gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	Important
13D	G62-G65	Species rich, with trees Scoped out as primarily treeline / scrub	No
13E	G59-G61	Species rich, with trees Scoped out as primarily treeline / scrub	No
14A	H41	Adjacent to PRoW - with four woody species present Species rich, with trees Associated Features >2 (Bank, gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	Important
14B	G76-G78	NOT species rich, with trees	No
14C (only western half)	H40	Heritage Criteria 5: pre-dating the Inclosure Acts NOT species rich, with trees	Important
14C eastern half	H40	NOT species rich, with trees	No
15A	H51	Adjacent to PRoW - with four woody species present NOT species rich, with trees Associated Features >2 (Ditch, gaps less than 10%, 1 standard tree per 50m, connections scoring 4 or more points)	Important
15B	H52	NOT species rich	No
15C	G105-G112	Scoped out as primarily treeline / scrub	No

Hedge row Reference	AIA Report Ref.	Applicable Important Hedgerow Qualification Criteria	Hedgerow Likely Important / Not Important
16A	H54	NOT species rich, with trees	No
16B	H53	Adjacent to PRow - BUT without four woody species present NOT species rich	No
17A	G125-G127	Species rich with trees Scoped out as primarily treeline / scrub	No
17B	G119-G120	Species rich with trees Scoped out as primarily treeline / scrub	No
19A	G122	NOT species rich	No
19B	H55	NOT species rich, with trees	No
21A	G49 G48	NOT species rich	No
21B	H33	Adjacent to PRow - with four woody species present Species rich, with trees Associated Features >2 (Gaps less than 10%, 1 standard tree per 50m), parallel hedge	Important
22A	H49	Heritage Criteria 5: pre-dating the Inclosure Acts NOT Species rich Associated Features <4 (parallel hedge)	Important
22B	H50	NOT species rich)	No
106A	H31	NOT species rich	No

## 9. ANNEX 3: LEGISLATION AND NATIONAL PLANNING POLICY

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### *THE HEDGEROWS REGULATIONS 1997*

- 9.1 The Hedgerows Regulations 1997 (under the Environment Act 1995) were introduced to protect hedgerows as characteristic elements of the countryside. The regulations prohibit the removals of hedgerows without first submitting a hedgerow removal notice to the Local Planning Authority (LPA). The regulations set out the criteria to be used by the LPA to enable which hedgerows are important.

### *INDIVIDUAL PLANTS*

- 9.2 The specific legal protection afforded to individual plant species can be found within the relevant sections and schedules of the legislation.
- 9.3 Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists plant species for which it is an offence (subject to exceptions) to '*intentionally pick, uproot or destroy*'.
- 9.4 Schedule 9 of The Wildlife and Countryside Act 1981 (as amended) lists plant species for which it is an offence for a person to plant, or otherwise cause to grow in the wild.
- 9.5 Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) (as amended) requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers, including local and regional authorities, in implementing their duty under Section 40 of the act to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 9.6 S41 lists 56 Habitats of Principal Importance and 943 Species of Principal Importance.

### *NATIONAL PLANNING POLICY FRAMEWORK (NPPF)*

- 9.7 In addition to primary legislation, the government published the National Planning Policy Framework on 20th July 2021, with the latest update during December 2023. Within the NPPF, Chapter 15 is headed *Conserving and enhancing the natural environment* (Paragraphs 180 to 188).
- 9.8 Of relevance are the following statements: -  
*'Planning policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'* (Paragraph 180d).
- 9.9 When determining planning applications, local planning authorities should apply the following principles (Paragraph 186): -  
*'a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts),*



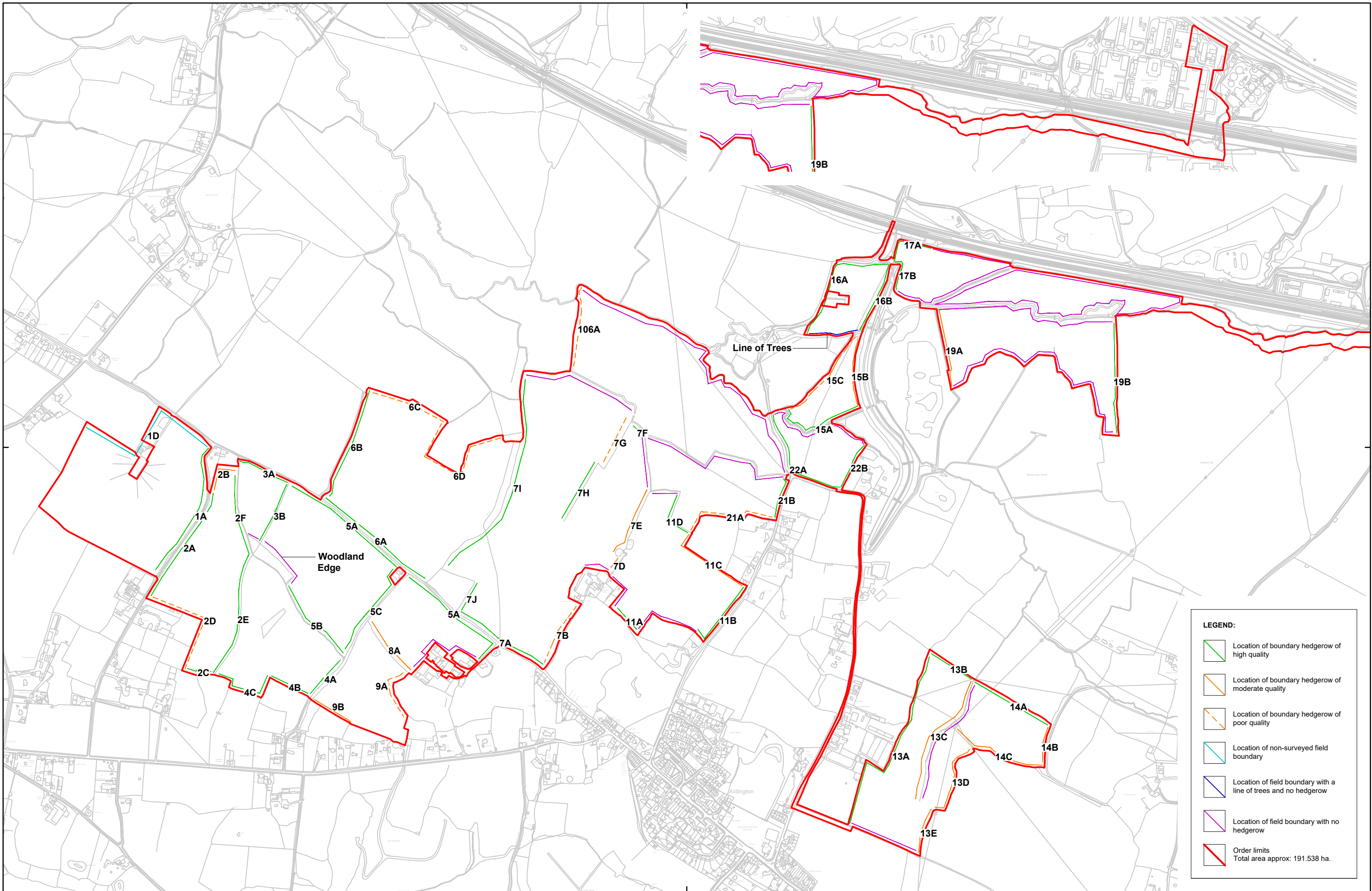
*adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused; ...*

*c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.'*








**10. ANNEX 4: HEDGEROW SURVEY PLAN**

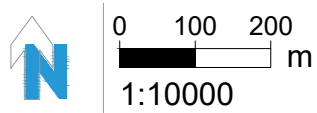
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***SEE OVERLEAF***



**LEGEND:**

-  Location of boundary hedgerow of high quality
-  Location of boundary hedgerow of moderate quality
-  Location of boundary hedgerow of poor quality
-  Location of non-surveyed field boundary
-  Location of field boundary with a line of trees and no hedgerow
-  Location of field boundary with no hedgerow
-  Order limits  
Total area approx: 191.538 ha.



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rev. rev. date auth. rev. note  
C01 14/05/24 MW Client approved for submission.

rev. rev. date auth. rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
**Kent**

drawing no. **5535-LLB-XX-DR-Ec-0056** rev. **C01**  
 drawing title: **Hedgerow Survey Plan**  
**Hedgerow Condition Assessment**

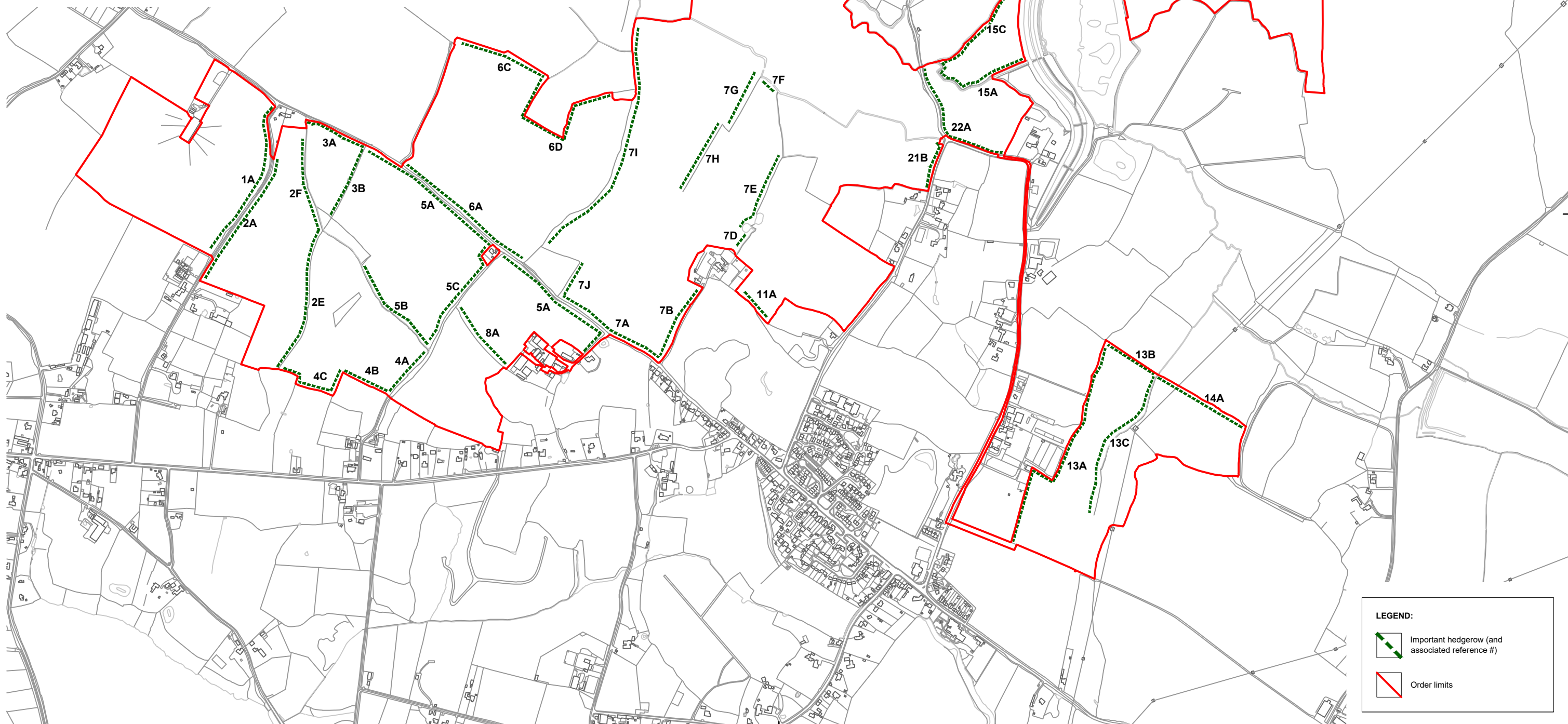
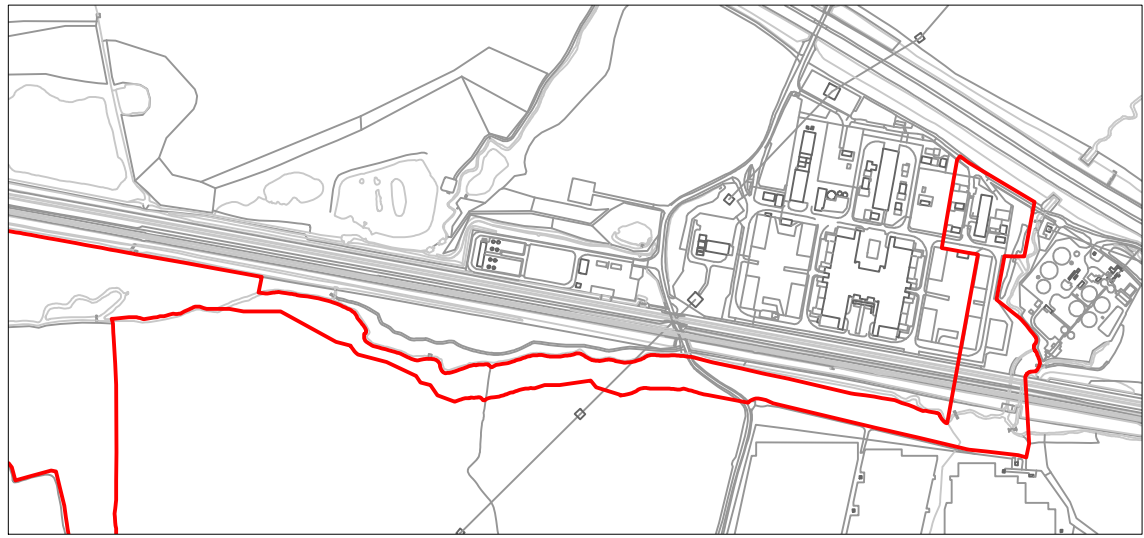
scale: **1:10000**  
 sheet: **A3**  
 drawn: **NA**  
 checked: **MW**

**lloyd bore** landscape ecology arboriculture  
 33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
 www.lloyd bore.co.uk mail@lloyd bore.co.uk



**11. ANNEX 5: IMPORTANT HEDGEROW PLAN**

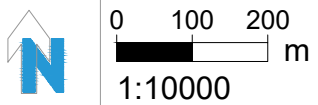
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***SEE OVERLEAF***



**LEGEND:**

-  Important hedgerow (and associated reference #)
-  Order limits



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rev. rev. date auth. rev. note  
 C01 14/05/24 MW Client approved for submission.

rev. rev. date auth. rev. note

client **EPL 001 Limited**  
 project **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0064**  
 drawing title **Important Hedgerow Plan Hedgerow**  
**Importance Assessment**

rev. **C01** rev date **14/05/24**  
 sub. **A4** scale **1:10000**  
 APPF **5(2)(f)(ii)** sheet **A3**  
 drawn **NA**  
 checked **MW**



33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
 www.lloydbore.co.uk mail@lloydbore.co.uk



## Stonestreet Green Solar

Appendix 9.5b: Invertebrate Survey Report  
- Part 1

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## Executive Summary

Lloydbore Ltd was instructed to undertake invertebrate surveys of land located to the north and west of the village of Aldington (the 'Site'), to inform the proposed Stonestreet Green Solar scheme (the 'Project').

Surveys of terrestrial and aquatic invertebrates were carried out across the compartments on the following dates:- 24<sup>th</sup> May, 19<sup>th</sup> June, 10<sup>th</sup>, 24<sup>th</sup> July and 11<sup>th</sup> October 2020.

A total of 836 invertebrate taxa were identified in 2020, yielding 2325 compartment specific records. Of these 39 had conservation designations, assessed as 'rare' or 'notable'.

The 39 notable species recorded are summarised below, with the following status (refer to Annex 2 for further detail)

- NS – GB Rarity Status National Scarce
- NR - GB Rarity Status National Rare
- Na - Nationally Scarce Category A - Notable A (Na)
- Nb - Nationally Scarce Category A - Notable B (Nb)
- RDB K – Red Data Book first record for Kent

The recorded rare and notable species are listed below.

### Rare and notable species recorded

Species	Common name	order	status
<i>Rhagonycha lutea</i>	A soldier beetle	Coleoptera	NS
<i>Ophonus azureus</i>	A ground beetle	Coleoptera	NS
<i>Stenolophus skrimshiranus</i>	A ground beetle	Coleoptera	NS
<i>Longitarsus rutilus</i>	A flea beetle	Coleoptera	NS
<i>Plateumaris rustica</i>	A reed beetle	Coleoptera	NS
<i>Orsodacne humeralis</i>	A leaf beetle	Coleoptera	NS
<i>Podagrica fuscicornis</i>	A flea beetle	Coleoptera	NS
<i>Opilo mollis</i>	A clerid beetle	Coleoptera	NS
<i>Platynaspis luteorubra</i>	Hairy 4-spot ladybird	Coleoptera	NA
<i>Gymnetron veronicae</i>	A weevil	Coleoptera	Nb
<i>Liparus coronatus</i>	A weevil	Coleoptera	Nb
<i>Tychius pusillus</i>	A weevil	Coleoptera	Nb
<i>Anthocomus fasciatus</i>	A malachite beetle	Coleoptera	NS
<i>Orchesia minor</i>	A melandryid beetle	Coleoptera	NS
<i>Variimorda villosa</i>	A Mordellid beetle	Coleoptera	NS
<i>Lissodema denticolle</i>	A salpingid beetle	Coleoptera	NS
<i>Elodes elongata</i>	A marsh beetle	Coleoptera	NS
<i>Anaspis costai</i>	A scryptid beetle	Coleoptera	NS
<i>Anaspis thoracica</i>	A scryptid beetle	Coleoptera	NS
<i>Astenus immaculatus</i>	A rove beetle	Coleoptera	Notable
<i>Stenus butrintensis</i>	A camphor beetle	Coleoptera	Notable

<i>Tetratoma desmarestii</i>	A fungus beetle	Coleoptera	NS
<i>Dolichopus virgultorum</i>	A marsh fly	Diptera	NS
<i>Keroplatus testaceus</i>	A fungus gnat	Diptera	(LR);NS
<i>Cicadula flori</i>	A plant hopper	Hemiptera	Nb
<i>Iassus scutellaris</i>	A plant hopper	Hemiptera	Na
<i>Reptalus panzeri</i>	A Cixiid hopper	Hemiptera	Nb
<i>Bathysolen nubilus</i>	Cryptic leatherbug	Hemiptera	NS
<i>Peribalus strictus</i>	Vernal shieldbug	Hemiptera	NR
<i>Brachycarenum tigrinus</i>	A squash bug	Hemiptera	NS
<i>Nomada flavopicta</i>	Blunthorn nomad bee	Hymenoptera	[Nb]
<i>Lasioglossum malachurum</i>	A solitary bee	Hymenoptera	[Nb]
<i>Lasioglossum pauxillum</i>	A solitary bee	Hymenoptera	[Na]
<i>Heriades truncorum</i>	A resin beetle	Hymenoptera	[RDB K]
<i>Dasypoda hirtipes</i>	Hairy-legged bee	Hymenoptera	[Nb]

#### Species of Principal Importance / NERC Act Section 41 species

<i>Bembidion q adrimaculatum</i>	A ground beetle	Coleoptera	local
<i>Tyria jacobaeae</i>	Cinnabar moth	Lepidoptera	common
<i>Timandra comae</i>	Blood-vein moth	Lepidoptera	common
<i>Coenonympha pamphilus</i>	Small heath	Lepidoptera	common

#### New vice-county records

*Cicadula flori*

*Heriades truncorum*

There is currently no standard framework for evaluating the invertebrate value of a site as part of Ecological Impact Assessment, however most active invertebrate ecologists have adopted the Pantheon programme (<http://www.brc.ac.uk/pantheon/about/pantheon>) to assess sites. PANTHEON analysis recorded four specific assemblage types in favourable condition namely:- Scrub edge, rich flower resource, fungal fruiting bodies and bark & sapwood decay.

Assessment of the invertebrate assemblage is provided within **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline Landscape and Ecological Management Plan (LEMP) (Doc Ref. 7.10)** provides detail of avoidance, mitigation and compensation measures relating to notable invertebrates.



## INTRODUCTION

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This Invertebrate Survey Report has been prepared on behalf of EPL 001 Limited ('the Applicant') to provide results of the baseline invertebrate survey of the Site commissioned in May 2020 in relation to the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').

This 2020 Invertebrate Survey Report is part 1 of **Appendix 9.5b** to **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**. Part 2 comprises the 2022 report.

### The Project

The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.

The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.

The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

## EXPERTISE

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The invertebrate surveys were conducted by a competent expert.

## SURVEYS AND SITE VISITS

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A baseline invertebrate survey of the Site (divided into survey compartments) was commissioned in May 2020. Special attention was paid to the Great Stour as there are some concerns in the literature that aquatic invertebrates can be drawn away from waterbodies and may attempt to egg lay over solar panels (mistaking them for open water) (Horvath et al 2010).

The Site was visited on the following dates:- 24<sup>th</sup> May, 19<sup>th</sup> June, 10<sup>th</sup>, 24<sup>th</sup> July and 11<sup>th</sup> October 2020.

Standard field techniques were employed to sample the invertebrate fauna across the site. These included sweeping vegetation with a wide mouthed sweep net, beating trees and bushes over a beating tray, and grubbing amongst tussocks and key host plant rosettes etc. *Because it is impracticable to survey all the potential invertebrates within any given site, only specific groups of species were examined during fieldwork. These groups are sufficiently well known as to allow meaningful comparisons to be made with other sites,*

*both locally and nationally. They are also important as indicators of the quality of a site and the habitats present (see Brooks 1993).*

A 0.5mm mesh GB nets net was used to sample the ponds and flowing water.

Groups covered during the survey were:

- Mollusca (slugs and snails)
- Arachnida (spiders, harvestmen & pseudoscorpions)
- Isopoda (woodlice)
- Thysanura (bristletails)
- Ephemeroptera (mayflies)
- Odonata (dragonflies & damselflies)
- Plecoptera (stoneflies)
- Orthoptera (grasshoppers & crickets)
- Dictyoptera (cockroaches)
- Dermaptera (earwigs)
- Hemiptera-Heteroptera (true-bugs)
- Hemiptera-Homoptera (hoppers)
- Neuroptera (lace-wings)
- Mecoptera (scorpion-flies)
- Lepidoptera (butterflies & moths)
- Trichoptera (caddis flies)
- Diptera (true flies)
- Aculeate Hymenoptera (ants, bees & wasps)
- Coleoptera (beetles)

The Site was divided into survey compartments A to J as shown within Annex 4.

Fields are described in relation to the Project as follows:

- The South Western Area Field 1 to 9.
- The Central Area Fields 10 to 19 and 23 to 25.
- The South Eastern Area Fields 20 to 22.
- The Northern Area Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- ‘Cable Route Corridor’ (export of electricity from the Project at 132 kilovolt (‘kV’) via underground cables (the ‘Grid Connection Cable’) to the Sellindge Substation). ‘Cable Route Crossing’ (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link (‘HS1’) railway or through Horizontal Directional Drilling (‘HDD’) beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

A table specifying the invertebrate survey compartments present within each of the above Site areas is provided within the Results section.

## RESULTS

In all 836 taxa were recorded in 2020, yielding 2326 compartment specific records. In all 39 species with conservation designations. The full list of species recorded is shown in Annex 1.

The richest compartment was that straddling the Great Stour and adjacent fen area, but it yielded very few river flies (a group which includes swarming species which have been a major concern in association with solar panning (Horvath et al , 2010)).

Compartment B including the only woodland on Site yielded 396 species.

**Table 1. Number of species per compartment**

COMPARTMENTS	Field References	Total species	Total notables
A	Field 1 and 2 and additional field to southwest now outside Site	102	0
B	Fields 3 to 6	396	10
C	Fields 8 and 9 and additional fields to southeast now outside Site	273	6
D	Fields 10 and 11	94	3
E	Fields 12 to 16	220	4
F	Fields 17 and 18	175	2
G	Off site field to south of Field 20	122	0
H	Fields 20 to 22 and additional fields to south now outside Site	224	5
I	Fields 24 and 25	489	15
J	Fields 26 to 29	232	3
<b>Total</b>		<b>2326</b>	

The rare and Notable species are listed below (the criteria for the statuses are given in annex 2) and full descriptions of the taxa are given in Annex 3.

The status (refer to Annex 2 for further detail) abbreviations used are as follows:

- NS – GB Rarity Status National Scarce
- NR - GB Rarity Status National Rare
- Na - Nationally Scarce Category A - Notable A (Na)
- Nb - Nationally Scarce Category A - Notable B (Nb)
- RDB K – Red Data Book first record for Kent

**Table 2. Rare and notable species recorded**

Species	Common name	order	status
<i>Rhagonycha lutea</i>	A soldier beetle	Coleoptera	NS
<i>Ophonus azureus</i>	A ground beetle	Coleoptera	NS
<i>Stenolophus skrimshiranus</i>	A ground beetle	Coleoptera	NS
<i>Longitarsus rutilus</i>	A flea beetle	Coleoptera	NS

Species	Common name	order	status
<i>Orsodacne humeralis</i>	A leaf beetle	Coleoptera	NS
<i>Plateumaris rustica</i>	A reed beetle	Coleoptera	NS
<i>Podagrica fuscicornis</i>	A flea beetle	Coleoptera	NS
<i>Opilo mollis</i>	A clerid beetle	Coleoptera	NS
<i>Platynaspis luteorubra</i>	Hairy 4-spot ladybird	Coleoptera	NA
<i>Gymnetron veronicae</i>	A weevil	Coleoptera	Nb
<i>Liparus coronatus</i>	A weevil	Coleoptera	Nb
<i>Tychius pusillus</i>	A weevil	Coleoptera	Nb
<i>Anthocomus fasciatus</i>	A malachite beetle	Coleoptera	NS
<i>Orchesia minor</i>	A melandryid beetle	Coleoptera	NS
<i>Variimorda villosa</i>	A Mordellid beetle	Coleoptera	NS
<i>Lissodema denticolle</i>	A salpingid beetle	Coleoptera	NS
<i>Elodes elongata</i>	A marsh beetle	Coleoptera	NS
<i>Anaspis costai</i>	A scraetid beetle	Coleoptera	NS
<i>Anaspis thoracica</i>	A scraetid beetle	Coleoptera	NS
<i>Astenus immaculatus</i>	A rove beetle	Coleoptera	Notable
<i>Stenus butrintensis</i>	A camphor beetle	Coleoptera	Notable
<i>Tetratoma desmarestii</i>	A fungus beetle	Coleoptera	NS
<i>Dolichopus virgultorum</i>	A marsh fly	Diptera	NS
<i>Keroplatus testaceus</i>	A fungus gnat	Diptera	(LR);NS
<i>Cicadula flori</i>	A plant hopper	Hemiptera	Nb
<i>lassus scutellaris</i>	A plant hopper	Hemiptera	NA
<i>Reptalus panzeri</i>	A Cixiid hopper	Hemiptera	Nb
<i>Bathysolen nubilus</i>	Cryptic leatherbug	Hemiptera	NS
<i>Peribalus strictus</i>	Vernal shieldbug	Hemiptera	NR
<i>Brachycarenum tigrinus</i>	A squash bug	Hemiptera	NS
<i>Nomada flavopicta</i>	Blunthorn nomad bee	Hymenoptera	[Nb]
<i>Lasioglossum malachurum</i>	A solitary bee	Hymenoptera	[Nb]
<i>Lasioglossum pauxillum</i>	A solitary bee	Hymenoptera	[Na]
<i>Heriades truncorum</i>	A resin beetle	Hymenoptera	[RDB K]
<i>Dasygaster hirtipes</i>	Hairy-legged bee	Hymenoptera	[Nb]

**Table 3. Species of Principal Importance / NERC act Section 41 species recorded**

Species	Common name	order	status
<i>Bembidion quadrimaculatum</i>	A ground beetle	Coleoptera	local
<i>Tyria jacobaeae</i>	Cinnabar moth	Lepidoptera	common
<i>Timandra comae</i>	Blood-vein moth	Lepidoptera	common
<i>Coenonympha pamphilus</i>	Small heath	Lepidoptera	common

## HABITAT ASSESSMENT- USING PANTHEON TO MEASURE SITE QUALITY

There is currently no standard framework for evaluating the invertebrate value of a site as part of Ecological Impact Assessment, however most active invertebrate ecologists have adopted the Pantheon programme to assess sites. Pantheon was developed by

Natural England and the Centre for Ecology & Hydrology to analyse invertebrate sample data and assess assemblage data for favourable versus unfavourable condition by SSSI standards. Hence if one or more assemblages are found to be in favourable condition this would indicate that the site is likely to be of significant importance for invertebrates. Further information on Pantheon is available here: <http://www.brc.ac.uk/pantheon/about/pantheon>

Users import lists of invertebrates (called “samples”) into Pantheon, which then matches the species to the preferred name in the *UK species inventory* (A list of species maintained by the Natural History Museum). Not all macro-invertebrate taxa are included in the database. To date over c13,000 species have been assessed, this being about a quarter of the total macro-invertebrate fauna (estimated at 37,000). It remains limited to those taxa and families where there is enough ecological information to give a fair level of coding accuracy. These include species such as beetles, flies, bugs and hoppers, moths, ants, bees, wasps, spiders and molluscs.

The method for defining species resources was broadly similar to that followed in Natural England Research Report 024 (Webb *et. al.*, 2010).

*‘For each species, a literature search was undertaken. All relevant ecological information was extracted and added to a spreadsheet. This included ‘structural elements of the habitats that the species is generally associated with (e.g. emergent vegetation, seed heads) and/or other environmental factors that it requires, host plant and/or animal species alongside ecological guild of larvae as well as adults where these differed, (e.g. herbivore, carnivore). Only those resources which were considered important to the species in completing its life cycle were included’.*

The assemblage types are labelled in terms that relate to their favoured habitats in order to make them accessible to non-specialists. However, they are actually defined by lists of characteristic species that are generally found together in nature. Two levels are recognised in the classification. Broad assemblage types (BATs) are a comprehensive series of assemblage types that are characterised by more widespread species. They can be expressed in lists from a wide range of sites. Specific assemblage types (SATs) are characterised by ecologically restricted species and are generally only expressed in lists from sites with conservation value. Since 2008 there has also been a third category of assemblage types that cut across this classification. They are mainly defined by lists of species dependent on a particular environmental resource, such as flowers as a source of pollen and nectar. The assemblage type classification is given below. Textual descriptions of each assemblage type and its habitats have been prepared for incorporation into a web-based database. See Table 4.

**Table 4. A break-down of the available PANTHEON assemblage types with number of species assigned to each assemblage.**

Arboreal assemblage types	
A1 arboreal canopy (846)	-
A2 wood decay (1118)	A211 heartwood decay (175)
	A212 bark & sapwood decay (503)
	A213 fungal fruiting bodies (89)

Arboreal assemblage types	
	A215 epiphyte fauna (20)

Field layer assemblage types	
F1 Open Habitats	F001 scrub edge (179)
	F002 rich flower resource (241)
	F003 scrub-heath and moorland (344)
	F006 dung (99)
F1 unshaded early successional mosaic (1188)	F111 bare sand & chalk (440)
	F112 open short sward (200)
F2 grassland & scrub matrix (1910)	F221 montane & upland (101)
F3 shaded field & ground layer (480)	-

**Table 5. Specific Assemblage Types (SAT)**

Code	SAT	No. of species	% representation	SQI	Reported condition
A212	bark & sapwood decay	36	7	16 7	Favourable
F002	rich flower resource	28	12	11 1	Favourable
F001	scrub edge	19	8	10 0	Favourable
A213	fungal fruiting bodies	8	9	13 8	Favourable
F112	open short sward	9	4	13 3	Unfavourable (9 of 13 species)
F111	bare sand & chalk	7	2	14 3	Unfavourable (7 of 19 species)
A211	heartwood decay	6	3	15 0	Favourable
A215	epiphyte fauna	2	10	10 0	Unfavourable (2 of 3 species)
W31 4	reed-fen & pools	2	2	25 0	Unfavourable (2 of 11 species)
A215	epiphyte fauna	1	5	10 0	Unfavourable (1 of 3 species)
W12 5	slow-flowing rivers	1	4	10 0	Unfavourable (1 of 4 species)
W12 6	seepage	1	2	10 0	Unfavourable (1 of 6 species)

The survey recorded four specific assemblage types (SATs) in favourable condition namely:- Scrub edge, rich flower resource, fungal fruiting bodies and bark & sapwood decay.

### COMPARTMENT A

Largely arable with hawthorn dominated manicured hedging around periphery, plus the chicken foraging area (which was not sampled). There were areas of ruderals around the

yard and a manure heap at the south corner. Note the yard and most southern field of the compartment are now located outside the Site.

#### **COMPARTMENT B**

A very diverse compartment on account of it including the only copse across the compartments. It also has pasture fields with herb-rich headlands, mixed hedgerows, the largest field was fallow in 2020 and had seeded wildflower margins.

#### **COMPARTMENT C**

Encompassing the farm and farm pond, the surrounding fields were pasture to the south and east (now located outside the Site) and cereals to the north and west. There were areas of ruderals around the farm.

#### **COMPARTMENT D**

Down as arable (cereals) in 2020 with limited peripheral hedging, a very dull compartment with negligible value for invertebrates.

#### **COMPARTMENT E**

Down as arable (Lucerne) in 2020. The peripheral wildflower 'beetle bank' sown headlands were species rich and yielded some interesting finds including numbers of the recently established ox-eye daisy feeding longhorn beetle *Agapanthia cardui*. The most significant capture was the vernal shieldbug.

#### **COMPARTMENT F**

The field was down as arable but the peripheral hedgerow especially the willows along the southern margin.

#### **COMPARTMENT G**

Set with maize in 2020 this field was poor for invertebrates with exception of the grassy access track running west-east which was herb rich with hogweed stands which yielded *Liparus coronatus*. This compartment is now located outside the Site.

#### **COMPARTMENT H**

The stream line in area H is the likely breeding site of the scarce marsh beetle *Elodes elongata* and the soldier flies *Oxycera nigricornis* and *Stratiomys potamida* adults were also taken nearby and in absence of other standing water may well also be breeding here. *Liparus coronatus* was frequent on the hogweed on the verges.

#### **COMPARTMENT I**

The fen edge is particularly rich. The swift flowing section between the two sections in area I had *Nebrioporus elegans* and *Elmia aenea*, but river flies were generally scarce.

## COMPARTMENT J

The slow flowing section through area J had large rafts of broad-leaved pondweed *Potamogeton natans*. The margins were dominated by reed canary-grass with important potential host plants including marsh woundwort, but despite targeted sampling this failed to yield any of the scarce associated phytophagous species.

## LIMITATIONS OF SURVEY

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Clearly diurnal surveys will miss the vast majority of night flying species (moths, many Ichneumons etc.). Surveys were suspended from mid- July until October and didn't commence until mid-May. The spring March-May was an almost unbroken period of dry and warm conditions which meant spring blossoms etc. were over before the surveys commenced.

An ecological survey represents a 'snapshot' in time of the ecological condition of a site. The ecological character of a site can change substantially throughout both the course of a year, and from year to year impacting on the extent and quality of habitats potential to support species.

The aim of a desk study is to help characterise the baseline context of the site and provide valuable background information that would not be captured by a single site survey alone. Information obtained during a desk study was dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Project

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## Annex 2. Species List 2020

**Table 6. Full species list, conservation status and compartment**

1= present in compartment

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Gammarus pulex sens. str.	Gammaridae	Amphipoda	common									1	1
Agelena labyrinthica	Agelenidae	Araneae	common	1	1	1	1	1	1	1	1	1	
Eratigena duellica	Agelenidae	Araneae	common			1							
Amaurobius fenestralis	Amaurobiidae	Araneae	common	1	1	1	1	1	1	1	1	1	1
Amaurobius similis	Amaurobiidae	Araneae	common			1							
Segestria senoculata	Segestridae	Araneae	common			1							
Araneus diadematus	Araneidae	Araneae	common	1	1	1	1	1	1	1	1	1	1
Araneus triguttatus	Araneidae	Araneae	common		1								
Araniella cucurbitina	Araneidae	Araneae	common			1					1		
Araniella opisthographa	Araneidae	Araneae	common								1	1	
Larinioides cornutus	Araneidae	Araneae	common			1					1	1	
Larinioides sclopetarius	Araneidae	Araneae	local									1	
Mangora acalypha	Araneidae	Araneae	common	1	1	1	1		1	1	1	1	1
Nuctenea umbratica	Araneidae	Araneae	common	1	1	1	1	1	1	1	1	1	1
Clubiona comta	Clubionidae	Araneae	common		1			1			1		
Clubiona corticalis	Clubionidae	Araneae	common		1								
Clubiona phragmitis	Clubionidae	Araneae	common			1						1	1
Clubiona terrestris	Clubionidae	Araneae	common			1		1		1			
Dictyna arundinacea	Dictynidae	Araneae	common		1		1						
Dictyna latens	Dictynidae	Araneae	common		1								
Dictyna uncinata	Dictynidae	Araneae	common			1				1			1
Harpactea hombergi	Dysderidae	Araneae	common	1	1	1	1	1	1	1	1	1	1

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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Zelotes latreillei	Gnaphosidae	Araneae	common										
Erigone atra	Linyphiidae	Araneae	common			1		1		1		1	
Erigone dentipalpis	Linyphiidae	Araneae	common			1							1
Hylyphantes graminicola	Linyphiidae	Araneae	common			1							
Hypomma bituberculatum	Linyphiidae	Araneae	common			1						1	1
Hypomma cornutum	Linyphiidae	Araneae	common		1								
Lepthyphantes tenuis	Linyphiidae	Araneae	common		1					1		1	1
Linyphia triangularis	Linyphiidae	Araneae	common	1	1	1		1	1	1	1	1	
Meioneta rurestris	Linyphiidae	Araneae	common		1		1						
Neriere peltata	Linyphiidae	Araneae	common		1								
Tenuiphantes menzei	Linyphiidae	Araneae	common									1	
Pardosa amentata	Lycosidae	Araneae	common		1	1							
Pardosa prativaga	Lycosidae	Araneae	common				1					1	
Pardosa pullata	Lycosidae	Araneae	common									1	
Pirata piraticus	Lycosidae	Araneae	common			1						1	
Philodromus albidus	Philodromidae	Araneae	common		1	1							
Philodromus aureolus	Philodromidae	Araneae	common		1							1	
Philodromus cespitum	Philodromidae	Araneae	common		1			1					
Philodromus dispar	Philodromidae	Araneae	common		1	1							
Tibellus oblongus	Philodromidae	Araneae	common					1				1	1
Pholcus phalangioides	Pholcidae	Araneae	common			1							
Pisaura mirabilis	Pisauridae	Araneae	common	1	1	1	1	1	1	1	1	1	1
Euophrys frontalis	Salticidae	Araneae	common				1						
Heliophanus flavipes	Salticidae	Araneae	common			1		1					
Salticus scenicus	Salticidae	Araneae	common			1							
Metellina menzei	Tetragnathidae	Araneae	common	1	1	1		1	1	1	1	1	1
Metellina segmentata	Tetragnathidae	Araneae	common	1	1	1		1	1	1	1	1	1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Pachygnatha clercki	Tetragnathidae	Araneae	common									1	
Tetragnatha extensa	Tetragnathidae	Araneae	common								1	1	1
Tetragnatha montana	Tetragnathidae	Araneae	common		1				1		1	1	
Anelosimus vittatus	Theridiidae	Araneae	common		1	1		1	1	1	1	1	1
Asagena phalerata	Theridiidae	Araneae	local			1							
Enoplognatha ovata	Theridiidae	Araneae	common		1	1		1	1	1	1		1
Neottiura bimaculata	Theridiidae	Araneae	common		1						1	1	
Paidiscura pallens	Theridiidae	Araneae	common	1	1				1	1	1	1	
Parasteatoda lunata	Theridiidae	Araneae	Local		1								
Misumena vatia	Thomisidae	Araneae	common			1			1		1	1	1
Ozyptila praticola	Thomisidae	Araneae	common		1								
Xysticus cristatus	Thomisidae	Araneae	common		1								1
Xysticus kochi	Thomisidae	Araneae	common		1			1					
Xysticus lanio	Thomisidae	Araneae	common		1								
Zora spinimana	Zoridae	Araneae	common			1						1	
Erpobdella octoculata	Erpobdellidae	Arhynchobdellida	common									1	
Anobium fulvicorne	Anobiidae	Coleoptera	common		1								
Anobium punctatum	Anobiidae	Coleoptera	common			1							
Hedobia imperialis	Anobiidae	Coleoptera	local		1								
Ptilinus pectinicornis	Anobiidae	Coleoptera	local		1								
Anthicus antherinus	Anthiidae	Coleoptera	common	1	1								
Omonadus floralis	Anthiidae	Coleoptera	common	1		1						1	
Apion frumentarium	Apionidae	Coleoptera	common						1			1	
Aspidapion aeneum	Apionidae	Coleoptera	common			1				1		1	
Ceratapion gibbirostre	Apionidae	Coleoptera	common									1	
Ceratapion onopordi	Apionidae	Coleoptera	common		1			1				1	

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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Eutrichapion ervi	Apionidae	Coleoptera	common								1	1	
Ischnopterapion loti	Apionidae	Coleoptera	common						1				
Ischnopterapion virens	Apionidae	Coleoptera	common									1	
Kalcapion pallipes	Apionidae	Coleoptera	local		1								
Malvapion malvae	Apionidae	Coleoptera	common			1				1			
Perapion hydrolapathi	Apionidae	Coleoptera	common									1	1
Perapion violaceum	Apionidae	Coleoptera	common			1					1	1	1
Protapion apicans	Apionidae	Coleoptera	common			1							
Protapion assimile	Apionidae	Coleoptera	common		1	1							
Protapion fulvipes	Apionidae	Coleoptera	common		1	1			1		1	1	
Protapion nigritarse	Apionidae	Coleoptera	common		1								
Pseudapion rufirostre	Apionidae	Coleoptera	common			1				1			
Stenopterapion tenue	Apionidae	Coleoptera	common			1							
Apoderus coryli	Attelabidae	Coleoptera	common			1							
Agrilus sinuatus	Buprestidae	Coleoptera	common		1				1	1			
Cantharis cryptica	Cantharidae	Coleoptera	common					1				1	1
Cantharis lateralis	Cantharidae	Coleoptera	common		1	1		1	1			1	1
Cantharis livida	Cantharidae	Coleoptera	common			1		1					
Cantharis nigra (=thoracica)	Cantharidae	Coleoptera	common		1			1		1	1	1	1
Cantharis pellucida	Cantharidae	Coleoptera	common									1	
Cantharis rufa	Cantharidae	Coleoptera	common									1	
Cantharis rustica	Cantharidae	Coleoptera	common		1			1	1			1	
Malthinus flaveolus	Cantharidae	Coleoptera	common		1								
Malthinus seriepunctatus	Cantharidae	Coleoptera	common		1							1	
Malthodes marginatus	Cantharidae	Coleoptera	common		1				1				
Malthodes minimus	Cantharidae	Coleoptera	common		1							1	1
Rhagonycha fulva	Cantharidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1

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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Rhagonycha lignosa	Cantharidae	Coleoptera	common					1	1				
Rhagonycha limbata	Cantharidae	Coleoptera	common					1				1	
Rhagonycha lutea	Cantharidae	Coleoptera	NS			1		1					
Acupalpus meridianus	Carabidae	Coleoptera	common									1	
Amara eurynota	Carabidae	Coleoptera	common			1		1					
Amara similata	Carabidae	Coleoptera	common		1	1							
Bembidion lampros	Carabidae	Coleoptera	common		1	1							
Bembidion lunulatum	Carabidae	Coleoptera	common									1	
Bembidion quadrimaculatum	Carabidae	Coleoptera	local									1	
Calodromius spilotus	Carabidae	Coleoptera	common		1								
Demetrias atricapillus	Carabidae	Coleoptera	common					1				1	
Dromius meridionalis	Carabidae	Coleoptera	common		1								
Dromius quadrimaculatus	Carabidae	Coleoptera	common						1			1	
Harpalus affinis	Carabidae	Coleoptera	common		1	1		1		1		1	
Harpalus rufipes	Carabidae	Coleoptera	common			1						1	
Leistus fulvibarbis	Carabidae	Coleoptera	common		1			1					
Leistus spinibarbis	Carabidae	Coleoptera	common			1							
Nebria brevicollis	Carabidae	Coleoptera	common			1		1					
Ophonus azureus	Carabidae	Coleoptera	NS			1							
Oxypselaphus obscurus	Carabidae	Coleoptera	common			1	1	1					
Paradromius linearis	Carabidae	Coleoptera	common		1			1				1	1
Philorhizus melanocephalus	Carabidae	Coleoptera	common		1	1							
Pterostichus madidus	Carabidae	Coleoptera	common	1	1		1	1	1	1	1	1	1
Pterostichus melanarius	Carabidae	Coleoptera	common			1		1				1	
Pterostichus niger	Carabidae	Coleoptera	common							1		1	
Stenolophus skrimshiranus	Carabidae	Coleoptera	NS									1	
Syntomus obscuroguttatus	Carabidae	Coleoptera	common										

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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
<i>Syntomus truncatellus</i>	Carabidae	Coleoptera	local				1						
<i>Agapanthia cardui</i>	Cerambycidae	Coleoptera	NS		1	1	1						
<i>Agapanthia villosoviridescens</i>	Cerambycidae	Coleoptera	local		1	1			1			1	
<i>Clytus arietis</i>	Cerambycidae	Coleoptera	common		1								
<i>Grammoptera ruficornis</i>	Cerambycidae	Coleoptera	common	1	1	1		1	1	1	1	1	
<i>Pseudovadonia livida</i>	Cerambycidae	Coleoptera	local		1	1		1	1				
<i>Rhagium mordax</i>	Cerambycidae	Coleoptera	common		1								
<i>Rutpela maculata</i>	Cerambycidae	Coleoptera	common		1			1				1	
<i>Stenurella melanura</i>	Cerambycidae	Coleoptera	common		1			1					
<i>Altica lythri</i>	Chrysomelidae	Coleoptera	common			1						1	1
<i>Altica palustris</i>	Chrysomelidae	Coleoptera	common									1	
<i>Aphthona euphorbiae</i>	Chrysomelidae	Coleoptera	common	1	1	1		1	1	1	1	1	1
<i>Bruchidius varius</i>	Chrysomelidae	Coleoptera	common		1	1		1	1	1	1		
<i>Bruchus loti</i>	Chrysomelidae	Coleoptera	common									1	
<i>Bruchus rufimanus</i>	Chrysomelidae	Coleoptera	common	1	1	1		1	1	1	1	1	1
<i>Bruchus rufipes</i>	Chrysomelidae	Coleoptera	common		1								
<i>Cassida viridis</i>	Chrysomelidae	Coleoptera	common									1	
<i>Crepidodera aurata</i>	Chrysomelidae	Coleoptera	common						1		1	1	1
<i>Crepidodera fulvicornis</i>	Chrysomelidae	Coleoptera	common										1
<i>Crepidodera plutus</i>	Chrysomelidae	Coleoptera	common						1	1	1	1	
<i>Cryptocephalus fulvus</i>	Chrysomelidae	Coleoptera	local		1							1	
<i>Cryptocephalus pusillus</i>	Chrysomelidae	Coleoptera	common									1	
<i>Donacia simplex</i>	Chrysomelidae	Coleoptera	common									1	1
<i>Epitrix pubescens</i>	Chrysomelidae	Coleoptera	local									1	
<i>Gastrophysa viridula</i>	Chrysomelidae	Coleoptera	common									1	1
<i>Hermaphysa mercurialis</i>	Chrysomelidae	Coleoptera	local		1								
<i>Longitarsus flavicornis</i>	Chrysomelidae	Coleoptera	common			1			1			1	



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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Longitarsus luridus	Chrysomelidae	Coleoptera	common				1		1				
Longitarsus parvulus	Chrysomelidae	Coleoptera	common		1	1		1	1				
Longitarsus rubiginosus	Chrysomelidae	Coleoptera	common								1		
Longitarsus rutilus	Chrysomelidae	Coleoptera	NS									1	
Neocrepidodera ferruginea	Chrysomelidae	Coleoptera	common				1					1	
Neocrepidodera transversa	Chrysomelidae	Coleoptera	common				1					1	
Orsodacne humeralis	Chrysomelidae	Coleoptera	common						1			1	
Oulema obscura	Chrysomelidae	Coleoptera	common									1	
Oulema rufocyanea	Chrysomelidae	Coleoptera	common			1	1					1	
Phaedon armoraciae	Chrysomelidae	Coleoptera	common									1	
Phaedon cochleariae	Chrysomelidae	Coleoptera	common									1	
Phaedon tumidulus	Chrysomelidae	Coleoptera	common									1	
Phyllotreta undulata	Chrysomelidae	Coleoptera	common			1						1	1
Phyllotreta vittula	Chrysomelidae	Coleoptera	common									1	
Plateumaris rustica	Chrysomelidae	Coleoptera	NS									1	1
Podagrica fuscicornis	Chrysomelidae	Coleoptera	NS				1				1	1	
Prasocuris junci	Chrysomelidae	Coleoptera	local									1	
Psylliodes affinis	Chrysomelidae	Coleoptera	common			1						1	
Psylliodes chrysocephala	Chrysomelidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Cis boleti	Ciidae	Coleoptera	common		1								
Ennearthron cornutum	Ciidae	Coleoptera	common		1								
Octotemnus glabriculus	Ciidae	Coleoptera	common		1								
Orthocis alni	Ciidae	Coleoptera	common		1								
Opilo mollis	Cleridae	Coleoptera	NS		1								
Adalia decempunctata	Coccinellidae	Coleoptera	common	1	1	1		1	1		1	1	
Anisosticta novemdecimpunctata	Coccinellidae	Coleoptera	local									1	

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
<i>Calvia quattuordecimguttata</i>	Coccinellidae	Coleoptera	common		1								
<i>Coccidula rufa</i>	Coccinellidae	Coleoptera	local									1	
<i>Coccinella septempunctata</i>	Coccinellidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Harmonia axyridis</i>	Coccinellidae	Coleoptera	common		1	1				1		1	1
<i>Platynaspis luteorubra</i>	Coccinellidae	Coleoptera	NA		1								
<i>Propylea quattuordecimpunctata</i>	Coccinellidae	Coleoptera	common		1	1			1	1	1	1	
<i>Psyllobora vigintiduopunctata</i>	Coccinellidae	Coleoptera	common			1					1	1	1
<i>Rhyzobius litura</i>	Coccinellidae	Coleoptera	common			1		1			1		
<i>Subcoccinella vigintiquatuor punctata</i>	Coccinellidae	Coleoptera	common		1	1		1			1		
<i>Tytthaspis sedecimpunctata</i>	Coccinellidae	Coleoptera	common		1	1		1			1	1	
<i>Antherophagus pallens</i>	Cryptophagidae	Coleoptera	local								1		
<i>Atomaria apicalis</i>	Cryptophagidae	Coleoptera	common									1	
<i>Atomaria fuscata</i>	Cryptophagidae	Coleoptera	common		1							1	
<i>Telmatophilus caricis</i>	Cryptophagidae	Coleoptera	common									1	
<i>Telmatophilus typhae</i>	Cryptophagidae	Coleoptera	common									1	
<i>Acalles misellus</i>	Curculionidae	Coleoptera	local		1								
<i>Anthonomus pedicularius</i>	Curculionidae	Coleoptera	common		1	1		1	1	1	1		
<i>Anthonomus rubi</i>	Curculionidae	Coleoptera	common		1				1				
<i>Archarius salicivorus</i>	Curculionidae	Coleoptera	common		1							1	
<i>Ceutorhynchus obstrictus</i>	Curculionidae	Coleoptera	common		1	1							
<i>Ceutorhynchus pallidactylus</i>	Curculionidae	Coleoptera	common			1						1	
<i>Ceutorhynchus typhae</i>	Curculionidae	Coleoptera	common			1			1				
<i>Cionus tuberculatus</i>	Curculionidae	Coleoptera	common									1	
<i>Curculio glandium</i>	Curculionidae	Coleoptera	common		1								
<i>Datonychus melanostictus</i>	Curculionidae	Coleoptera	local									1	

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Dorytomus rufatus	Curculionidae	Coleoptera	local								1	1	
Dorytomus taeniatus	Curculionidae	Coleoptera	common									1	
Euophryum confine	Curculionidae	Coleoptera	common		1								
Gymnetron veronicae	Curculionidae	Coleoptera	Nb									1	
Gymnetron villosulum	Curculionidae	Coleoptera	local									1	
Hypera meles	Curculionidae	Coleoptera	local					1					
Hypera nigrirostris	Curculionidae	Coleoptera	common						1				
Hypera pollux	Curculionidae	Coleoptera	common									1	
Hypera postica	Curculionidae	Coleoptera	common					1					
Liophloeus tessulatus	Curculionidae	Coleoptera	common		1							1	
Liparus coronatus	Curculionidae	Coleoptera	Nb								1		
Mecinus pascuorum	Curculionidae	Coleoptera	common		1	1		1			1		
Mecinus pyraeter	Curculionidae	Coleoptera	common			1							
Microplontus campestris	Curculionidae	Coleoptera	local		1	1		1	1				
Microplontus melanostigma	Curculionidae	Coleoptera	local			1			1				
Nedyus quadrimaculatus	Curculionidae	Coleoptera	common		1	1		1	1		1	1	1
Otiorhynchus rugosostriatus	Curculionidae	Coleoptera	common										1
Parethelcus pollinarius	Curculionidae	Coleoptera	common		1	1			1			1	
Phyllobius argentatus	Curculionidae	Coleoptera	common					1				1	
Phyllobius pomaceus	Curculionidae	Coleoptera	common		1	1		1				1	
Phyllobius roboretanus	Curculionidae	Coleoptera	common						1		1	1	
Polydrusus formosus	Curculionidae	Coleoptera	[Na]									1	
Polydrusus pterygomalis	Curculionidae	Coleoptera	common		1			1					
Rhinoncus leucostigma	Curculionidae	Coleoptera	common								1	1	
Sitona hispidulus	Curculionidae	Coleoptera	common		1								
Sitona lineatus	Curculionidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Trichosirocalus troglodytes	Curculionidae	Coleoptera	common					1	1				

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Tychius picirostris	Curculionidae	Coleoptera	common		1			1				1	
Tychius pusillus	Curculionidae	Coleoptera	Nb		1	1							
Anthrenus verbasci	Dermestidae	Coleoptera	common		1	1		1				1	
Agabus bipustulatus	Dytiscidae	Coleoptera	common									1	
Hydroporus planus	Dytiscidae	Coleoptera	common			1							
Ilybius fuliginosus	Dytiscidae	Coleoptera	common									1	1
Nebrioporus elegans	Dytiscidae	Coleoptera	common									1	
Adrastus pallens	Elateridae	Coleoptera	common									1	
Agriotes acuminatus	Elateridae	Coleoptera	common						1				
Agriotes lineatus	Elateridae	Coleoptera	common								1		
Agriotes sputator	Elateridae	Coleoptera	common		1	1							
Hemicrepidius hirtus	Elateridae	Coleoptera	common		1			1					
Hister unicolor	Histeridae	Coleoptera	common		1	1							
Cercyon haemorrhoidalis	Hydrophilidae	Coleoptera	common			1		1					
Cercyon impressus	Hydrophilidae	Coleoptera	common			1							
Cercyon lateralis	Hydrophilidae	Coleoptera	common			1		1					
Cercyon pygmaeus	Hydrophilidae	Coleoptera	common			1		1					
Cercyon quisquilius	Hydrophilidae	Coleoptera	common			1							
Enochrus coarctatus	Hydrophilidae	Coleoptera	local			1							
Enochrus testaceus	Hydrophilidae	Coleoptera	common									1	
Helophorus brevipalpis	Hydrophilidae	Coleoptera	common			1						1	
Hydrobius fuscipes	Hydrophilidae	Coleoptera	common			1						1	
Sphaeridium scarabaeoides	Hydrophilidae	Coleoptera	common			1		1				1	
Brachypterus glaber	Kateretidae	Coleoptera	common	1	1	1		1	1	1	1	1	1
Brachypterus urticae	Kateretidae	Coleoptera	common			1		1				1	1
Cartodere bifasciata	Latridiidae	Coleoptera	common			1						1	
Cartodere nodifer	Latridiidae	Coleoptera	common			1							

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Enicmus histrio	Latridiidae	Coleoptera	common		1							1	
Melanophthalma suturalis	Latridiidae	Coleoptera	local		1								
Dorcus parallelipedus	Lucanidae	Coleoptera	common		1								
Anthocomus fasciatus	Malachiidae	Coleoptera	NS			1							
Cordylepherus viridis	Malachiidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Malachius bipustulatus	Malachiidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Orchesia minor	Melndryidae	Coleoptera	NS		1								
Mordellochroa abdominalis	Mordellidae	Coleoptera	local		1							1	
Variimorda villosa	Mordellidae	Coleoptera	NS				1						
Mycetophagus multipunctatus	Mycetophagidae	Coleoptera	common		1								
Mycetophagus quadripustulatus	Mycetophagidae	Coleoptera	common		1								
Meligethes aeneus	Nitidulidae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Meligethes carinulatus	Nitidulidae	Coleoptera	common			1							
Meligethes ruficornis	Nitidulidae	Coleoptera	common									1	
Oedemera lurida	Oedemeridae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Oedemera nobilis	Oedemeridae	Coleoptera	common	1	1	1	1	1	1	1	1	1	1
Olibrus aeneus	Phalacridae	Coleoptera	common									1	
Phalacrus fimetarius	Phalacridae	Coleoptera	common									1	
Neocoenorrhinus aequatus	Rhynchitidae	Coleoptera	common	1	1				1				
Neocoenorrhinus minutus	Rhynchitidae	Coleoptera	local					1					
Lissodema denticolle	Salpingidae	Coleoptera	NS		1								
Salpingus planirostris	Salpingidae	Coleoptera	common		1								
Vincenzellus ruficollis	Salpingidae	Coleoptera	local		1								
Aphodius fossor	Scarabaeidae	Coleoptera	common			1							
Aphodius rufipes	Scarabaeidae	Coleoptera	common			1							
Cyphon coarctatus	Scirtidae	Coleoptera	common									1	

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Cyphon laevipennis	Scirtidae	Coleoptera	local			1						1	1
Cyphon palustris	Scirtidae	Coleoptera	local									1	
Elodes elongata	Scirtidae	Coleoptera	NS								1		
Anaspis costai	Scraptiidae	Coleoptera	NS		1								
Anaspis fasciata	Scraptiidae	Coleoptera	common		1						1	1	1
Anaspis maculata	Scraptiidae	Coleoptera	common	1	1	1					1	1	1
Anaspis regimbarti	Scraptiidae	Coleoptera	common		1								1
Anaspis rufilabris	Scraptiidae	Coleoptera	common						1				1
Anaspis thoracica	Scraptiidae	Coleoptera	NS						1				
Psammoecus bipunctatus	Silvanidae	Coleoptera	local									1	
Aleochara lanuginosa	Staphylinidae	Coleoptera	common		1		1						
Anotylus rugosus	Staphylinidae	Coleoptera	common	1								1	
Anotylus tetracarinatus	Staphylinidae	Coleoptera	common	1	1							1	
Astenus immaculatus	Staphylinidae	Coleoptera	NS		1								
Atheta liturata	Staphylinidae	Coleoptera	common		1								
Atheta vaga	Staphylinidae	Coleoptera	common		1								
Autalia impressa	Staphylinidae	Coleoptera	common		1								
Autalia longicornis	Staphylinidae	Coleoptera	local		1								
Cypha longicornis	Staphylinidae	Coleoptera	common	1	1			1	1	1	1	1	1
Drusilla canaliculata	Staphylinidae	Coleoptera	common	1	1	1		1		1		1	
Gabrius splendidulus	Staphylinidae	Coleoptera	common		1								
Leptusa fumida	Staphylinidae	Coleoptera	common		1								
Oxypoda alternans	Staphylinidae	Coleoptera	common		1								
Paederus littoralis	Staphylinidae	Coleoptera	common						1				
Philonthus cognatus	Staphylinidae	Coleoptera	common									1	
Philonthus decorus	Staphylinidae	Coleoptera	common		1								
Phloeonomus punctipennis	Staphylinidae	Coleoptera	common		1								

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Proteinus brachypterus	Staphylinidae	Coleoptera	common		1								
Quedius cinctus	Staphylinidae	Coleoptera	common		1								
Quedius cruentus	Staphylinidae	Coleoptera	common						1			1	
Quedius fumatus	Staphylinidae	Coleoptera	local									1	
Rugilus orbiculatus	Staphylinidae	Coleoptera	common		1								
Sepedophilus marshami	Staphylinidae	Coleoptera	common		1								1
Siagonium quadricorne	Staphylinidae	Coleoptera	local		1								
Stenus binotatus	Staphylinidae	Coleoptera	local									1	
Stenus brunripes	Staphylinidae	Coleoptera	common			1							
Stenus butrintensis	Staphylinidae	Coleoptera	Notable									1	
Stenus cicindeloides	Staphylinidae	Coleoptera	common									1	1
Stenus pallitarsis	Staphylinidae	Coleoptera	common									1	
Stenus solutus	Staphylinidae	Coleoptera	common									1	
Tachinus rufipes	Staphylinidae	Coleoptera	common		1			1				1	
Tachyporus chrysomelinus	Staphylinidae	Coleoptera	common	1	1			1				1	1
Tachyporus hypnorum	Staphylinidae	Coleoptera	common					1				1	1
Tachyporus nitidulus	Staphylinidae	Coleoptera	common									1	
Tachyporus obtusus	Staphylinidae	Coleoptera	common									1	
Lagria hirta	Tenebrionidae	Coleoptera	common		1							1	
Nalassus laevioctostriatus	Tenebrionidae	Coleoptera	common		1								
Prionychus ater	Tenebrionidae	Coleoptera	local		1								
Tetratoma desmaresti	Tetratomidae	Coleoptera	NS		1								
Trixagus dermestoides	Throscidae	Coleoptera	common		1								
Cyphoderus albinus	Cyphoderidae	Collembola	common		1	1							
Orchesella cincta	Entomobryidae	Collembola	common		1					1		1	
Dicyrtomina ornata	Dicyrtomiyidae	Collembola	common		1								
Forficula auricularia	Forficulidae	Dermaptera	common	1	1	1	1	1	1	1	1	1	1

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Forficula lesnei	Forficulidae	Dermaptera	local									1	
Agromyza alnivora	Agromyzidae	Diptera	common					1				1	
Phytomyza angelicae	Agromyzidae	Diptera	common									1	
Phytomyza lappae	Agromyzidae	Diptera	common									1	
Phytomyza spondylii	Agromyzidae	Diptera	common									1	
Phytomyza vitalbae	Agromyzidae	Diptera	common		1								
Sylvicola cinctus	Anisopodidae	Diptera	common			1							
Eustalomyia festiva	Anthomyiidae	Diptera	common		1								
Pegomya solennis	Anthomyiidae	Diptera	common		1				1	1	1	1	1
Dioctria baumhaueri	Asilidae	Diptera	common		1						1	1	
Leptogaster cylindrica	Asilidae	Diptera	common		1			1			1	1	1
Dilophus febrilis	Bibionidae	Diptera	common	1	1	1		1	1	1	1	1	1
Dilophus femoratus	Bibionidae	Diptera	common		1								
Calliphora vicina	Calliphoridae	Diptera	common		1	1							
Calliphora vomitoria	Calliphoridae	Diptera	common	1		1			1		1	1	1
Lucilia sericata	Calliphoridae	Diptera	common		1	1			1		1	1	1
Cystiphora sonchi	Cecidomyiidae	Diptera	common						1		1		
Dasineura ulmaria	Cecidomyiidae	Diptera	common									1	1
Dasineura urticae	Cecidomyiidae	Diptera	common			1					1	1	1
Chlorops frontosus	Chloropidae	Diptera	local									1	
Chlorops pumilionis	Chloropidae	Diptera	local		1	1						1	
Meromyza femorata	Chloropidae	Diptera	common		1								
Oscinella frit	Chloropidae	Diptera	common			1						1	
Thaumatomyia glabra	Chloropidae	Diptera	common				1			1		1	
Thaumatomyia notata	Chloropidae	Diptera	common			1	1			1			
Sicus ferrugineus	Conopidae	Diptera	common			1						1	
Chrysotus blepharosceles	Dolichopodidae	Diptera	common					1					



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Dolichopus festivus	Dolichopodidae	Diptera	common								1	1	1
Dolichopus trivialis	Dolichopodidae	Diptera	common		1								
Dolichopus virgultorum	Dolichopodidae	Diptera	NS									1	
Medetera truncorum	Dolichopodidae	Diptera	common		1								
Poecilobothrus nobilitatus	Dolichopodidae	Diptera	common			1						1	1
Drosophila sukuzii	Drosophilidae	Diptera	common		1								
Neuroctena anilis	Dryomyzidae	Diptera	common		1								
Clinocera stagnalis	Empididae	Diptera	common					1					
Empis livida	Empididae	Diptera	common	1	1	1	1	1	1	1	1	1	1
Empis longipes	Empididae	Diptera	common										
Empis planetica	Empididae	Diptera	local					1				1	
Empis tessellata	Empididae	Diptera	common	1	1	1	1	1	1	1	1	1	1
Rhamphomyia longipes	Empididae	Diptera	common									1	
Fannia serena	Fanniidae	Diptera	local								1		
Keroplatus testaceus	Keroplatidae	Diptera	local		1								
Calliopum simillimum	Lauxaniidae	Diptera	common								1		
Calliopum tuberculosum	Lauxaniidae	Diptera	common									1	
Minettia fasciata	Lauxaniidae	Diptera	common		1								
Sapromyza quadripunctata	Lauxaniidae	Diptera	common									1	
Tricholauxania praeusta	Lauxaniidae	Diptera	common		1								
Ellipteroides lateralis	Limoniidae	Diptera	common		1								
Lonchoptera lutea	Lonchopteridae	Diptera	common		1							1	
Lispe tentaculata	Muscidae	Diptera	common										1
Mesembrina meridiana	Muscidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
Musca autumnalis	Muscidae	Diptera	common		1			1	1	1	1	1	
Phaonia pallida	Muscidae	Diptera	common		1								
Opomyza florum	Opomyzidae	Diptera	common									1	

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<i>Opomyza germinationis</i>	Opomyzidae	Diptera	common									1	
<i>Pallopthera muliebris</i>	Palloptheridae	Diptera	common		1								
<i>Platystoma seminatiois</i>	Platystomatidae	Diptera	common	1	1	1	1		1		1	1	
<i>Pollenia rudis</i>	Polleniidae	Diptera	common			1				1		1	
<i>Ptychoptera contaminata</i>	Ptychopteridae	Diptera	common									1	1
<i>Chrysopilus cristatus</i>	Rhagionidae	Diptera	common								1	1	1
<i>Stevenia atramentaria</i>	Rhinophoridae	Diptera	local						1				
<i>Nyctia halterata</i>	Sarcophagidae	Diptera	common		1						1	1	
<i>Sarcophaga carnaria</i>	Sarcophagidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
<i>Scathophaga furcata</i>	Scathophagidae	Diptera	common	1	1								
<i>Scathophaga stercoraria</i>	Scathophagidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
<i>Limnia paludicola</i>	Sciomyzidae	Diptera	common									1	
<i>Limnia unguicornis</i>	Sciomyzidae	Diptera	common			1							
<i>Tetanocera ferruginea</i>	Sciomyzidae	Diptera	common									1	
<i>Sepsis violacea</i>	Sepsidae	Diptera	local					1					
<i>Copromyza stercoraria</i>	Sphaeroceridae	Diptera	common								1		
<i>Oxycera nigricornis</i>	Stratiomyidae	Diptera	local								1		
<i>Stratiomys potamida</i>	Stratiomyidae	Diptera	local								1		
<i>Beris chalybata</i>	Stratiomyidae	Diptera	common			1							
<i>Beris vallata</i>	Stratiomyidae	Diptera	common		1								
<i>Chloromyia formosa</i>	Stratiomyidae	Diptera	common		1		1	1					1
<i>Pachygaster atra</i>	Stratiomyidae	Diptera	common		1			1			1	1	
<i>Pachygaster leachii</i>	Stratiomyidae	Diptera	common									1	
<i>Baccha elongata</i>	Syrphidae	Diptera	common		1								
<i>Cheilosia albitarsis sensu lat.</i>	Syrphidae	Diptera	common		1							1	1
<i>Cheilosia illustrata</i>	Syrphidae	Diptera	common		1								1
<i>Cheilosia impressa</i>	Syrphidae	Diptera	common									1	1

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Cheilosia pagana	Syrphidae	Diptera	common									1	
Chrysogaster solstitialis	Syrphidae	Diptera	common									1	1
Chrysotoxum bicinctum	Syrphidae	Diptera	common								1	1	
Chrysotoxum cautum	Syrphidae	Diptera	local		1			1				1	
Chrysotoxum verralli	Syrphidae	Diptera	local								1		
Episyrphus balteatus	Syrphidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
Eristalinus sepulchralis	Syrphidae	Diptera	local									1	1
Eristalis arbustorum	Syrphidae	Diptera	common					1				1	1
Eristalis pertinax	Syrphidae	Diptera	common	1	1	1		1	1	1	1	1	1
Eristalis tenax	Syrphidae	Diptera	common	1									1
Eupeodes corollae	Syrphidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
Eupeodes luniger	Syrphidae	Diptera	common					1				1	1
Helophilus hybridus	Syrphidae	Diptera	local									1	
Helophilus pendulus	Syrphidae	Diptera	common			1						1	1
Lejogaster metallina	Syrphidae	Diptera	common									1	1
Melanogaster hirtella	Syrphidae	Diptera	common			1					1	1	1
Melanostoma mellinum	Syrphidae	Diptera	common			1						1	
Melanostoma scalare	Syrphidae	Diptera	common	1	1	1		1	1	1	1	1	1
Merodon equestris	Syrphidae	Diptera	common		1	1							
Myathropa florea	Syrphidae	Diptera	common		1						1		
Neoascia tenur	Syrphidae	Diptera	common									1	
Platycheirus albimanus	Syrphidae	Diptera	common	1	1	1		1	1	1	1	1	1
Platycheirus rosarum	Syrphidae	Diptera	common									1	1
Platycheirus scutatus sensu lato	Syrphidae	Diptera	common									1	
Rhingia campestris	Syrphidae	Diptera	common									1	
Scaeva pyrastris	Syrphidae	Diptera	common		1	1			1			1	1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
<i>Sphaerophoria scripta</i>	Syrphidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
<i>Syrpitta pipiens</i>	Syrphidae	Diptera	common		1						1	1	1
<i>Syrphus ribesii</i>	Syrphidae	Diptera	common		1	1		1	1		1	1	1
<i>Volucella bombylans</i>	Syrphidae	Diptera	common									1	
<i>Volucella pellucens</i>	Syrphidae	Diptera	common		1							1	
<i>Volucella zonaria</i>	Syrphidae	Diptera	local								1		
<i>Haematopota pluvialis</i>	Tabanidae	Diptera	common		1							1	1
<i>Tabanus bromius</i>	Tabanidae	Diptera	common			1						1	
<i>Eriothrix rufomaculata</i>	Tachinidae	Diptera	common	1	1	1	1	1	1	1	1	1	1
<i>Phasia pusilla</i>	Tachinidae	Diptera	common			1		1				1	1
<i>Siphona geniculata</i>	Tachinidae	Diptera	common						1		1	1	1
<i>Chaetorellia jaceae</i>	Tephritidae	Diptera	common			1			1	1		1	1
<i>Chaetostomella cylindrica</i>	Tephritidae	Diptera	common		1							1	
<i>Euleia heraclei</i>	Tephritidae	Diptera	common					1			1	1	1
<i>Tephritis formosa</i>	Tephritidae	Diptera	common		1	1		1	1			1	1
<i>Tephritis neesii</i>	Tephritidae	Diptera	common		1			1				1	
<i>Terellia tussilaginis</i>	Tephritidae	Diptera	common									1	
<i>Urophora quadrifasciata</i>	Tephritidae	Diptera	common	1	1	1		1	1			1	1
<i>Urophora stylata</i>	Tephritidae	Diptera	common								1	1	
<i>Xyphosia miliaria</i>	Tephritidae	Diptera	common								1	1	
<i>Nephrotoma appendiculata</i>	Tipulidae	Diptera	common			1							
<i>Nephrotoma flavescens</i>	Tipulidae	Diptera	common			1		1			1	1	1
<i>Nephrotoma quadrifaria</i>	Tipulidae	Diptera	common			1		1					
<i>Tipula irrorata</i>	Tipulidae	Diptera	common		1								
<i>Tipula lateralis</i>	Tipulidae	Diptera	common									1	
<i>Tipula lunata</i>	Tipulidae	Diptera	common			1		1	1				
<i>Tipula oleracea</i>	Tipulidae	Diptera	common	1	1	1		1	1	1	1	1	1

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Tipula paludosa	Tipulidae	Diptera	common	1	1	1	1	1	1	1	1	1	
Cloeon dipterum	Baetidae	Ephemeroptera	common								1	1	1
Ephemera danica	Ephemeridae	Ephemeroptera	common									1	1
Geophilus carpophagus	Geophilidae	Geophilomorpha	common		1								
Geophilus flavus	Geophilidae	Geophilomorpha	common		1								
Acanthosoma haemorrhoidale	Acanthosomatidae	Hemiptera	common		1			1	1		1	1	
Elasmucha grisea	Acanthosomatidae	Hemiptera	common		1						1	1	
Anthocoris confusus	Anthocoridae	Hemiptera	common	1	1	1		1	1	1		1	1
Anthocoris nemoralis	Anthocoridae	Hemiptera	common		1			1			1	1	
Anthocoris nemorum	Anthocoridae	Hemiptera	common			1					1	1	1
Cardiastethus fasciventris	Anthocoridae	Hemiptera	local		1								
Lyctocoris campestris	Anthocoridae	Hemiptera	common	1									
Orius laticollis	Anthocoridae	Hemiptera	common					1				1	
Temnostethus pusillus	Anthocoridae	Hemiptera	local		1								
Xylocoris curtisans	Anthocoridae	Hemiptera	local		1								
Aphis fabae	Aphididae	Hemiptera	common	1	1	1		1		1	1	1	
Drepanosiphum platanoidis	Aphididae	Hemiptera	common			1					1		
Macrosiphoniella artemisiae	Aphididae	Hemiptera	common	1									
Aphrophoraalni	Aphrophoridae	Hemiptera	common		1		1	1			1	1	1
Neophilaenus lineatus	Aphrophoridae	Hemiptera	common		1	1						1	
Philaenus spumarius	Aphrophoridae	Hemiptera	common	1	1	1	1	1	1	1	1	1	1
Cercopis vulnerata	Cercopidae	Hemiptera	common		1							1	
Acericerus ribauti	Cicadellidae	Hemiptera	local		1						1		

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<i>Acericerus vittifrons</i>	Cicadellidae	Hemiptera	common		1						1		
<i>Alebra albostriella</i>	Cicadellidae	Hemiptera	common		1								
<i>Alnetoidea alneti</i>	Cicadellidae	Hemiptera	common								1	1	1
<i>Aphrodes makarovi</i>	Cicadellidae	Hemiptera	common		1	1	1	1					
<i>Cicadella viridis</i>	Cicadellidae	Hemiptera	common									1	
<i>Cicadula flori</i>	Cicadellidae	Hemiptera	Nb									1	
<i>Eupteryx aurata</i>	Cicadellidae	Hemiptera	common			1						1	
<i>Eurhadina pulchella</i>	Cicadellidae	Hemiptera	common					1				1	
<i>Evacanthus interruptus</i>	Cicadellidae	Hemiptera	local	1									
<i>lassus lanio</i>	Cicadellidae	Hemiptera	common		1			1					
<i>lassus scutellaris</i>	Cicadellidae	Hemiptera	NA									1	
<i>Idiocerus stigmatalis</i>	Cicadellidae	Hemiptera	common									1	
<i>Kybos virgator</i>	Cicadellidae	Hemiptera	common								1	1	1
<i>Macropsis albae</i>	Cicadellidae	Hemiptera	common								1	1	1
<i>Oncopsis avellanae</i>	Cicadellidae	Hemiptera	common		1			1					
<i>Zonocyba bifasciata</i>	Cicadellidae	Hemiptera	local		1								
<i>Cixius nervosus</i>	Cixiidae	Hemiptera	common								1		
<i>Reptalus panzeri</i>	Cixiidae	Hemiptera	Nb		1							1	
<i>Bathysolen nubilus</i>	Coreidae	Hemiptera	NS					1					
<i>Coreus marginatus</i>	Coreidae	Hemiptera	common	1	1	1		1	1		1	1	1
<i>Coriomeris denticulatus</i>	Coreidae	Hemiptera	common		1	1		1	1				
<i>Sigara dorsalis</i>	Corixidae	Hemiptera	common									1	
<i>Tritomegas bicolor</i>	Cydnidae	Hemiptera	common									1	
<i>Conomelus anceps</i>	Delphacidae	Hemiptera	common									1	
<i>Dicranotropis hamata</i>	Delphacidae	Hemiptera	common									1	
<i>Javesella pellucida</i>	Delphacidae	Hemiptera	common									1	
<i>Stenocranus major</i>	Delphacidae	Hemiptera	common									1	1

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Gerris lacustris	Gerridae	Hemiptera	common			1						1	1
Cymus glandicolor	Lygaeidae	Hemiptera	common									1	
Cymus melanocephalus	Lygaeidae	Hemiptera	common									1	
Drymus sylvaticus	Lygaeidae	Hemiptera	common		1								
Heterogaster urticae	Lygaeidae	Hemiptera	common		1	1	1	1	1		1	1	
Ischnodemus sabuleti	Lygaeidae	Hemiptera	common									1	1
Kleidocerys resedae	Lygaeidae	Hemiptera	common								1		
Metopoplax ditomoides	Lygaeidae	Hemiptera	local		1	1							
Nysius huttoni	Lygaeidae	Hemiptera	common			1							
Nysius senecionis	Lygaeidae	Hemiptera	common		1			1	1		1	1	1
Peritrechus geniculatus	Lygaeidae	Hemiptera	common		1			1				1	
Scolopostethus affinis	Lygaeidae	Hemiptera	common								1	1	
Scolopostethus thomsoni	Lygaeidae	Hemiptera	common									1	
Taphropeltus contractus	Lygaeidae	Hemiptera	common		1								
Loricula elegantula	Microphysidae	Hemiptera	common		1								
Loricula pselaphiformis	Microphysidae	Hemiptera	local		1								
Acetropis gimmerthalii	Miridae	Hemiptera	common									1	
Amblytylus nasutus	Miridae	Hemiptera	common		1	1		1				1	1
Atractotomus mali	Miridae	Hemiptera	common	1	1			1					
Blepharidopterus angulatus	Miridae	Hemiptera	common									1	
Campyloneura virgula	Miridae	Hemiptera	common								1		
Capsus ater	Miridae	Hemiptera	common		1	1		1	1	1	1	1	1
Calocoris stysi	Miridae	Hemiptera	common				1						
Closterotomus norwegicus	Miridae	Hemiptera	common	1	1	1	1	1	1	1	1	1	1
Deraeocoris flavilinea	Miridae	Hemiptera	common		1			1			1		
Deraeocoris ruber	Miridae	Hemiptera	common									1	
Deraeocoris lutescens	Miridae	Hemiptera	common		1						1	1	

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Dicyphus epilobii	Miridae	Hemiptera	common				1	1			1	1	1
Dicyphus stachydis	Miridae	Hemiptera	common						1		1	1	
Grypocoris stysi	Miridae	Hemiptera	common										
Heterotoma planicornis	Miridae	Hemiptera	common	1	1	1		1	1	1	1		1
Leptopterna dolabrata	Miridae	Hemiptera	common	1	1	1	1	1	1	1	1	1	1
Liocoris tripustulatus	Miridae	Hemiptera	common	1	1	1	1	1	1	1	1	1	1
Lygocoris pabulinus	Miridae	Hemiptera	common		1							1	
Lygocoris rugicollis	Miridae	Hemiptera	common									1	
Lygus pratensis	Miridae	Hemiptera	local			1		1	1			1	1
Lygus rugulipennis	Miridae	Hemiptera	common			1			1				
Lygocoris viridis	Miridae	Hemiptera	common			1		1	1				
Macrotylus solitarius	Miridae	Hemiptera	local										
Megaloceroea recticornis	Miridae	Hemiptera	common		1	1		1	1		1	1	1
Miridius quadrivirgatus	Miridae	Hemiptera	local			1			1				
Miris striatus	Miridae	Hemiptera	common		1								
Notostira elongata	Miridae	Hemiptera	common		1	1		1			1	1	1
Oncotylus viridiflavus	Miridae	Hemiptera	common					1	1			1	
Orthocephalus saltator	Miridae	Hemiptera	common					1				1	
Orthonotus rufifrons	Miridae	Hemiptera	common									1	
Orthops campestris	Miridae	Hemiptera	common		1						1	1	1
Orthops kalmii	Miridae	Hemiptera	common		1				1		1	1	1
Orthotylus marginalis	Miridae	Hemiptera	common								1	1	
Orthotylus ochrotrichus	Miridae	Hemiptera	common	1				1				1	
Pantilius tunicatus	Miridae	Hemiptera	common								1	1	
Phylus coryli	Miridae	Hemiptera	common		1			1					
Phylus melanocephalus	Miridae	Hemiptera	common		1	1							
Phytocoris ulmi	Miridae	Hemiptera	common		1							1	



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Phytocoris varipes	Miridae	Hemiptera	common		1	1		1	1		1	1	1
Pilophorus perplexus	Miridae	Hemiptera	common		1								
Pinalitus cervinus	Miridae	Hemiptera	common			1							
Pithanus maerkelii	Miridae	Hemiptera	common					1	1				
Plagiognathus arbustorum	Miridae	Hemiptera	common	1	1	1	1		1	1	1	1	
Plagiognathus chrysanthemi	Miridae	Hemiptera	common	1	1	1		1	1	1	1	1	1
Polymerus nigrita	Miridae	Hemiptera	local			1							
Psallus assimilis	Miridae	Hemiptera	common		1								
Psallus perrisi	Miridae	Hemiptera	common		1				1				
Psallus salicis	Miridae	Hemiptera	common									1	
Psallus varians	Miridae	Hemiptera	common		1				1				
Rhabdomiris striatellus	Miridae	Hemiptera	common		1								
Salicarus roseri	Miridae	Hemiptera	local								1		
Stenodema calcarata	Miridae	Hemiptera	common									1	
Stenodema laevigata	Miridae	Hemiptera	common		1	1		1	1		1	1	
Stenotus binotatus	Miridae	Hemiptera	common		1	1		1		1	1	1	1
Sthenarus rotermundi	Miridae	Hemiptera	local									1	1
Trigonotylus ruficornis	Miridae	Hemiptera	common									1	
Himacerus major	Nabidae	Hemiptera	common										
Himacerus mirmicoides	Nabidae	Hemiptera	common		1	1	1					1	
Himacerus apterus	Nabidae	Hemiptera	common		1							1	
Nabis limbatus	Nabidae	Hemiptera	common									1	
Nabis flavomarginatus	Nabidae	Hemiptera	common									1	1
Nabis ferus	Nabidae	Hemiptera	common		1			1			1	1	
Nabis rugosus	Nabidae	Hemiptera	common		1			1				1	
Notonecta glauca	Notonectidae	Hemiptera	common									1	
Aelia acuminata	Pentatomidae	Hemiptera	common	1	1	1		1	1	1	1		

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
<i>Dolycoris baccarum</i>	Pentatomidae	Hemiptera	common	1	1	1		1	1	1	1	1	
<i>Eurydema oleracea</i>	Pentatomidae	Hemiptera	common			1						1	1
<i>Eysarcoris venustissimus</i>	Pentatomidae	Hemiptera	common					1	1		1	1	
<i>Legnotus limbosus</i>	Pentatomidae	Hemiptera	common		1	1							
<i>Palomena prasina</i>	Pentatomidae	Hemiptera	common	1	1	1		1	1	1	1		
<i>Pentatoma rufipes</i>	Pentatomidae	Hemiptera	common	1	1	1		1	1	1	1		
<i>Peribalus strictus</i>	Pentatomidae	Hemiptera	NR					1					
<i>Podops inuncta</i>	Pentatomidae	Hemiptera	common		1			1				1	
<i>Troilus luridus</i>	Pentatomidae	Hemiptera	common		1							1	
<i>Piesma maculatum</i>	Piesmatidae	Hemiptera	local									1	
<i>Cacopsylla peregrina</i>	Psyllidae	Hemiptera	common		1	1		1		1			
<i>Psylla alni</i>	Psyllidae	Hemiptera	common					1				1	1
<i>Psyllopsis fraxini</i>	Psyllidae	Hemiptera	common					1					
<i>Psyllopsis fraxinicola</i>	Psyllidae	Hemiptera	common					1					
<i>Brachycarenum tigrinus</i>	Rhopalidae	Hemiptera	NS			1							
<i>Corizus hyoscyami</i>	Rhopalidae	Hemiptera	local			1					1	1	
<i>Rhopalus subrufus</i>	Rhopalidae	Hemiptera	common					1	1				
<i>Stictopleurus abutilon</i>	Rhopalidae	Hemiptera	local			1		1				1	
<i>Stictopleurus punctatonevrosus</i>	Rhopalidae	Hemiptera	local			1						1	
<i>Eurygaster testudinaria</i>	Scutelleridae	Hemiptera	common					1				1	1
<i>Dictyla convergens</i>	Tingidae	Hemiptera	common									1	1
<i>Tingis ampliata</i>	Tingidae	Hemiptera	common									1	
<i>Tingis cardui</i>	Tingidae	Hemiptera	common								1	1	
<i>Velia caprai</i>	Veliidae	Hemiptera	common								1	1	1
<i>Galba truncatula</i>	Lymnaeidae	Hygrophila	common									1	1
<i>Lymnaea stagnalis</i>	Lymnaeidae	Hygrophila	common									1	1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Radix balthica	Lymnaeidae	Hygrophila	common									1	1
Stagnicola palustris/fuscus/ agg.	Lymnaeidae	Hygrophila	local									1	
Anisus vortex	Planorbidae	Hygrophila	common									1	
Planorbis planorbis	Planorbidae	Hygrophila	common									1	1
Andrena bicolor	Andrenidae	Hymenoptera	common									1	
Andrena chrysoseles	Andrenidae	Hymenoptera	common								1	1	1
Andrena cineraria	Andrenidae	Hymenoptera	common							1			
Andrena dorsata	Andrenidae	Hymenoptera	common									1	1
Andrena flavipes	Andrenidae	Hymenoptera	common									1	1
Andrena minutula	Andrenidae	Hymenoptera	common										1
Andrena subopaca	Andrenidae	Hymenoptera	common		1								
Apis mellifera	Apidae	Hymenoptera	common		1	1	1		1	1	1	1	1
Bombus lapidarius	Apidae	Hymenoptera	common		1					1		1	1
Bombus lucorum sensu lato	Apidae	Hymenoptera	common		1	1	1	1	1	1	1	1	1
Bombus pascuorum	Apidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Bombus pratorum	Apidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Bombus terrestris	Apidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Bombus vestalis	Apidae	Hymenoptera	common		1						1		
Nomada fabriciana	Apidae	Hymenoptera	common		1						1		
Nomada flavoguttata	Apidae	Hymenoptera	common								1		
Nomada flavopicta	Apidae	Hymenoptera	[Nb]								1		
Arge gracilicornis	Argidae	Hymenoptera	common		1								
Bethylus boops	Bethylidae	Hymenoptera	common		1			1					
Cephus spinipes	Cephidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Colletes hederæ	Colletidae	Hymenoptera	common				1						
Hylaeus brevicornis	Colletidae	Hymenoptera	common									1	

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<i>Hylaeus communis</i>	Colletidae	Hymenoptera	common		1						1	1	
<i>Argogorytes mystaceus</i>	Crabronidae	Hymenoptera	common					1			1	1	1
<i>Cerceris rybyensis</i>	Crabronidae	Hymenoptera	common				1						
<i>Crossocerus podagricus</i>	Crabronidae	Hymenoptera	common		1								
<i>Ectemnius continuus</i>	Crabronidae	Hymenoptera	common		1							1	1
<i>Ectemnius lapidarius</i>	Crabronidae	Hymenoptera	common									1	
<i>Ectemnius lituratus</i>	Crabronidae	Hymenoptera	common		1								
<i>Entomognathus brevis</i>	Crabronidae	Hymenoptera	common									1	
<i>Pemphredon lugubris</i>	Crabronidae	Hymenoptera	common									1	
<i>Psenulus concolor</i>	Crabronidae	Hymenoptera	common		1			1					
<i>Andricus aries</i>	Cynipidae	Hymenoptera	common		1								
<i>Andricus kollari</i>	Cynipidae	Hymenoptera	common		1								
<i>Diplolepis rosae</i>	Cynipidae	Hymenoptera	common		1				1			1	
<i>Neuroterus numismalis</i>	Cynipidae	Hymenoptera	common		1							1	
<i>Neuroterus quercusbaccarum</i>	Cynipidae	Hymenoptera	common		1								
<i>Callaspidia defonscolombeii</i>	Figitidae	Hymenoptera	common									1	
<i>Lasius niger</i>	Formicidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Lasius platythorax</i>	Formicidae	Hymenoptera	common		1								
<i>Myrmica rubra</i>	Formicidae	Hymenoptera	common									1	
<i>Stenamma debile</i>	Formicidae	Hymenoptera	local		1								
<i>Temnothorax nylanderi</i>	Formicidae	Hymenoptera	local		1				1				
<i>Gasteruption assectator</i>	Gasteruptionidae	Hymenoptera	local		1								
<i>Lasioglossum albipes</i>	Halictidae	Hymenoptera	common		1							1	
<i>Lasioglossum laevigatum</i>	Halictidae	Hymenoptera	common		1								
<i>Lasioglossum lativentre</i>	Halictidae	Hymenoptera	common					1	1		1		
<i>Lasioglossum malachurum</i>	Halictidae	Hymenoptera	[Nb]						1		1	1	1
<i>Lasioglossum morio</i>	Halictidae	Hymenoptera	common		1							1	

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Lasioglossum pauxillum	Halictidae	Hymenoptera	[Na]									1	
Lasioglossum villosulum	Halictidae	Hymenoptera	common		1						1	1	1
Sphecodes ephippius	Halictidae	Hymenoptera	common					1					
Sphecodes monilicornis	Halictidae	Hymenoptera	common									1	
Amblyteles armatorius	Ichneumonidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Diplazon laetatorius	Ichneumonidae	Hymenoptera	common									1	1
Ichneumon sarcitorius	Ichneumonidae	Hymenoptera	common		1	1	1	1			1	1	
Pimpla contemplator	Ichneumonidae	Hymenoptera	common			1							
Pimpla rufipes	Ichneumonidae	Hymenoptera	common								1		
Heriades truncorum	Megachilidae	Hymenoptera	[RDB K]									1	1
Dasypoda hirtipes	Melittidae	Hymenoptera	[Nb]									1	
Priocnemis exaltata	Pompilidae	Hymenoptera	common		1								1
Athalia circularis	Tenthredinidae	Hymenoptera	common									1	
Athalia rosae	Tenthredinidae	Hymenoptera	common	1			1	1	1			1	1
Dolerus haematodes	Tenthredinidae	Hymenoptera	common						1			1	
Dolerus vestigialis	Tenthredinidae	Hymenoptera	local									1	
Tenthredo brevicornis	Tenthredinidae	Hymenoptera	common		1	1	1	1		1	1	1	
Bootanomyia dorsalis	Torymidae	Hymenoptera	common							1			
Torymus varians	Torymidae	Hymenoptera	common									1	1
Vespa crabro	Vespidae	Hymenoptera	local		1	1	1		1		1	1	1
Vespa vulgaris	Vespidae	Hymenoptera	common	1	1	1	1	1	1	1	1	1	1
Armadillidium vulgare	Armadillidiidae	Isopoda	common		1	1			1				
Proasellus meridianus	Asellidae	Isopoda	common									1	1
Oniscus asellus	Oniscidae	Isopoda	common	1	1	1	1	1	1	1	1	1	1
Philoscia muscorum	Philosciidae	Isopoda	common	1	1	1	1	1	1	1	1	1	1
Porcellio scaber	Porcellionidae	Isopoda	common	1	1	1	1	1	1	1	1	1	1
Trichoniscus pusillus sensu lato	Trichoniscidae	Isopoda	common		1								

STONESTREET GREEN SOLAR  
 ENVIRONMENTAL STATEMENT VOLUME 4, APPENDIX 9.5A: INVERTEBRATE REPORT – PART 1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Tachypodoiulus niger	Julidae	Julida	common	1	1				1	1		1	
Blastobasis adustella	Blastobasidae	Lepidoptera	common		1								
Anthophila fabriciana	Choreutidae	Lepidoptera	common		1						1	1	1
Agriphila straminella	Crambidae	Lepidoptera	common			1						1	1
Anania coronata	Crambidae	Lepidoptera	common		1								
Cataclysta lemnata	Crambidae	Lepidoptera	common									1	1
Chrysoteuchia culmella	Crambidae	Lepidoptera	common									1	1
Crambus lathoniellus	Crambidae	Lepidoptera	common		1						1	1	1
Depressaria daucella	Depressariidae	Lepidoptera	common								1	1	
Depressaria radiella	Depressariidae	Lepidoptera	common								1	1	
Epermenia chaerophyllella	Epermeniidae	Lepidoptera	common								1	1	1
Eilema griseola	Erebidae	Lepidoptera	common										1
Euclidia glyphica	Erebidae	Lepidoptera	common				1	1					
Euclidia mi	Erebidae	Lepidoptera	common					1					
Orgyia antiqua	Erebidae	Lepidoptera	common		1								
Tyria jacobaeae	Erebidae	Lepidoptera	common									1	
Cabera pusaria	Geometridae	Lepidoptera	common									1	
Camptogramma bilineata	Geometridae	Lepidoptera	common					1				1	
Timandra comae	Geometridae	Lepidoptera	common		1				1				
Glyphipterix simpliciella	Glyphipterigidae	Lepidoptera	common			1			1		1	1	1
Caloptilia elongella	Gracillariidae	Lepidoptera	common										
Cameraria ohridella	Gracillariidae	Lepidoptera	common		1								
Gracillaria syringella	Gracillariidae	Lepidoptera	common						1				
Phyllonorycter acerifoliella	Gracillariidae	Lepidoptera	common					1					
Phyllonorycter froelichiella	Gracillariidae	Lepidoptera	common									1	
Phyllonorycter klemannella	Gracillariidae	Lepidoptera	common									1	
Phyllonorycter stettinensis	Gracillariidae	Lepidoptera	common		1							1	

STONESTREET GREEN SOLAR  
 ENVIRONMENTAL STATEMENT VOLUME 4, APPENDIX 9.5A: INVERTEBRATE REPORT – PART 1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
<i>Ochlodes sylvanus</i>	Hesperiidae	Lepidoptera	common		1			1		1	1	1	1
<i>Incurvaria pectinea</i>	Incurvariidae	Lepidoptera	common		1								
<i>Aricia agestis</i>	Lycaenidae	Lepidoptera	local			1							
<i>Polyommatus icarus</i>	Lycaenidae	Lepidoptera	common			1			1	1	1	1	
<i>Stigmella aceris</i>	Nepticulidae	Lepidoptera	common		1								
<i>Stigmella aurella</i>	Nepticulidae	Lepidoptera	common		1	1		1			1		
<i>Stigmella hemargyrella</i>	Nepticulidae	Lepidoptera	common		1								
<i>Stigmella tityrella</i>	Nepticulidae	Lepidoptera	common		1								
<i>Autographa gamma</i>	Noctuidae	Lepidoptera	common		1			1	1				
<i>Nonagria typhae</i>	Noctuidae	Lepidoptera	common			1							
<i>Noctua pronuba</i>	Noctuidae	Lepidoptera	common			1	1			1			
<i>Aglais io</i>	Nymphalidae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Aglais urticae</i>	Nymphalidae	Lepidoptera	common				1	1		1	1	1	1
<i>Aphantopus hyperantus</i>	Nymphalidae	Lepidoptera	common									1	1
<i>Coenonympha pamphilus</i>	Nymphalidae	Lepidoptera	local			1	1		1		1	1	1
<i>Maniola jurtina</i>	Nymphalidae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Melanargia galathea</i>	Nymphalidae	Lepidoptera	common		1	1	1		1	1	1	1	1
<i>Pararge aegeria</i>	Nymphalidae	Lepidoptera	common		1						1		
<i>Polygonia c-album</i>	Nymphalidae	Lepidoptera	common			1		1			1	1	
<i>Pyronia tithonus</i>	Nymphalidae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Vanessa atalanta</i>	Nymphalidae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Esperia sulphurella</i>	Oecophoridae	Lepidoptera	local		1								
<i>Colias croceus</i>	Pieridae	Lepidoptera	common				1						
<i>Pieris brassicae</i>	Pieridae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Pieris rapae</i>	Pieridae	Lepidoptera	common	1	1	1	1	1	1	1	1	1	1
<i>Prays fraxinella</i>	Prayidae	Lepidoptera	common		1						1		
<i>Luffia ferchaultella</i>	Psychidae	Lepidoptera	common		1	1				1			

STONESTREET GREEN SOLAR  
 ENVIRONMENTAL STATEMENT VOLUME 4, APPENDIX 9.5A: INVERTEBRATE REPORT – PART 1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Psyche casta	Psychidae	Lepidoptera	common		1								
Pyrausta aurata	Pyralidae	Lepidoptera	common		1	1							
Pleuroptya ruralis	Pyralidae	Lepidoptera	common		1		1	1	1		1	1	
Deilephila elpenor	Sphingidae	Lepidoptera	common								1	1	
Dichrorampha alpinana	Tortricidae	Lepidoptera	common									1	
Pammene aurana	Tortricidae	Lepidoptera	common									1	
Yponomeuta cagnagella	Yponomeutidae	Lepidoptera	common									1	
Lithobius forficatus	Lithobiidae	Lithobiomorpha	common	1	1	1	1	1	1	1	1		
Lithobius variegatus	Lithobiidae	Lithobiomorpha	common		1								
Bithynia tentaculata	Bithyniidae	Littorinimorpha	common									1	1
Panorpa germanica	Panorpidae	Mecoptera	common		1				1				
Sialis lutaria	Sialidae	Megaloptera	common								1	1	1
Chrysoperla carnea group	Chrysopidae	Neuroptera	common		1	1		1				1	
Aeshna mixta	Aeshnidae	Odonata	common			1						1	1
Anax imperator	Aeshnidae	Odonata	common									1	1
Brachytron pratense	Aeshnidae	Odonata	common									1	1
Calopteryx splendens	Calopterygidae	Odonata	common									1	1
Coenagrion puella	Coenagrionidae	Odonata	common									1	1
Enallagma cyathigerum	Coenagrionidae	Odonata	common									1	1
Ischnura elegans	Coenagrionidae	Odonata	common									1	1
Pyrrhosoma nymphula	Coenagrionidae	Odonata	common									1	1
Libellula depressa	Libellulidae	Odonata	common									1	
Sympetrum striolatum	Libellulidae	Odonata	common			1						1	1
Platycnemis pennipes	Platycnemididae	Odonata	local									1	1
Leiobunum rotundum	Phalangiidae	Opiliones	common		1	1							
Dicranopalpus ramosus	Phalangiidae	Opiliones	common	1	1	1	1	1	1	1	1	1	1
Oligolophus tridens	Phalangiidae	Opiliones	common		1								1



STONESTREET GREEN SOLAR  
ENVIRONMENTAL STATEMENT VOLUME 4, APPENDIX 9.5A: INVERTEBRATE REPORT – PART 1

Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Paroligolophus agrestis	Phalangiidae	Opiliones	common	1	1	1	1				1	1	
Chorthippus brunneus	Acrididae	Orthoptera	common	1	1	1	1	1	1	1	1	1	1
Chorthippus parallelus	Acrididae	Orthoptera	common	1	1	1	1	1	1	1	1	1	1
Conocephalus fuscus	Conocephalidae	Orthoptera	common										
Meconema thalassinum	Conocephalidae	Orthoptera	common		1								
Meconema meridionale	Meconematidae	Orthoptera	local		1								
Leptophyes punctatissima	Phaneropteridae	Orthoptera	common		1	1	1		1	1		1	
Tetrix subulata	Tetrigidae	Orthoptera	common									1	
Metrioptera roeselii	Tettigoniidae	Orthoptera	common	1	1	1		1	1	1	1	1	1
Pholidoptera griseoptera	Tettigoniidae	Orthoptera	common	1								1	
Polydesmus angustus	Polydesmidae	Polydesmida	common		1								
Polyxenus lagurus	Polyxenidae	Polyxenida	common		1								
Ectopsocus briggsi sensu stricto	Ectopsocidae	Psocoptera	common		1								
Graphopsocus cruciatus	Stenopsocidae	Psocoptera	common	1	1	1		1	1	1	1	1	1
Lehmannia marginata	Limacidae	Pulmonata	common		1								
Arion ater	Arionidae	Pulmonata	common			1							
Arion subfuscus	Arionidae	Pulmonata	common		1	1							
Arianta arbustorum	Helicidae	Pulmonata	local								1	1	1
Deroceras reticulatum	Agriolimacidae	Pulmonata	common		1	1					1		
Cepaea hortensis	Helicidae	Pulmonata	common		1	1		1	1	1	1	1	1
Cornu aspersum	Helicidae	Pulmonata	common		1	1							
Candidula intersecta	Hygromiidae	Pulmonata	common								1		
Monacha cantiana	Hygromiidae	Pulmonata	common	1	1	1		1	1	1	1	1	1
Trochulus hispidus	Hygromiidae	Pulmonata	common		1							1	
Aegopinella nitidula	Oxychilidae	Pulmonata	common		1	1						1	
Discus rotundatus	Patulidae	Pulmonata	common		1			1				1	
Oxyloma elegans	Succineidae	Pulmonata	common									1	1

STONESTREET GREEN SOLAR  
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Species	Family	Order	Conservation status	A	B	C	D	E	F	G	H	I	J
Succinea putris	Succineidae	Pulmonata	common									1	1
Glossiphonia complanata	Glossiphoniidae	Rhynchobdellida	common									1	1
Piscicola geometra	Piscicolidae	Rhynchobdellida	common									1	1
Polycelis nigra	Planariidae	Seriata	common									1	1
Suocerathrips lingus	Thripidae	Thysanoptera	common			1		1	1				
Mystacides nigra	Leptoceridae	Trichoptera	common									1	1
Limnephilus affinis	Limnephilidae	Trichoptera	common									1	1
Acalitus brevitarsus	Eriophyidae	Trombidiformes	common								1	1	
Aceria aceriscampestris	Eriophyidae	Trombidiformes	common									1	1
Eriophyes inangulis	Eriophyidae	Trombidiformes	common									1	
Eriophyes laevis	Eriophyidae	Trombidiformes	common		1								
Eriophyes similis	Eriophyidae	Trombidiformes	common								1		
Eriophyes tiliae	Eriophyidae	Trombidiformes	common			1							
Pisidium nitidum	Sphaeriidae	Veneroida	common									1	1
Pisidium subtruncatum	Sphaeriidae	Veneroida	common									1	1
Sphaerium corneum	Sphaeriidae	Veneroida	common										1
<b>TOTALS 836</b>				<b>102</b>	<b>395</b>	<b>272</b>	<b>94</b>	<b>220</b>	<b>175</b>	<b>122</b>	<b>224</b>	<b>489</b>	<b>232</b>

## Annex 2. Status categories for rare and Notable species

### Red Data Book Category 1 (RDB 1) – Endangered

#### Definition.

Taxa in danger of extinction *in Great Britain* and whose survival is unlikely if the causal factors continue operating.

Included are those taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are *some* taxa that are *possibly* extinct.

#### Criteria.

Species which are known *or believed to occur* as only a single population within one 10 km square of the National Grid.

Species which only occur in habitats known to be especially vulnerable.

Species which have shown a rapid or continuous decline over the last twenty years and are now *estimated* to exist in five or fewer 10 km squares.

Species which are *possibly* extinct *but have been recorded this century* and if rediscovered would need protection.

### Red Data Book Category 2 (RDB 2) - Vulnerable

#### Definition.

Taxa *believed* likely to move into the endangered category in the near future if the causal factors continue operating.

Included are taxa of which most or all of the populations are decreasing because of *over-exploitation*, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

#### Criteria.

Species declining throughout their range.

Species in vulnerable habitats.

### Red Data Book Category 3 (RDB 3) – Rare

#### Definition.

Taxa with small populations *in Great Britain* that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

**Criterion.**

Species which are estimated to exist in only fifteen or fewer 10 km squares. *This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat.*

**Nationally Scarce Category A - Notable A (Na)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

**Nationally Scarce Category B - Notable B (Nb)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

**Nationally Scarce - Notable (N)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

**Summary of the IUCN categories and criteria.**

- **REGIONALLY EXTINCT (RE)**  
A taxon is Extinct when there is no reasonable doubt that the last individual has died. In this review the last date for a record is set at fifty years before publication.
- **CRITICALLY ENDANGERED (CR)**  
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered.
- **ENDANGERED (EN)**  
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered.
- **VULNERABLE (VU)**

A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable.

- **NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- **LEAST CONCERN (LC)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

- **DATA DEFICIENT (DD)**

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

- **NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

## **GB Rarity Status categories and criteria**

- **Nationally Rare (NR)**

Native species which have not been recorded from more than 15 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species which are probably extinct.

- **Nationally Scarce (NS)**

Native species which are not regarded as Nationally Rare AND which have not been recorded from more than 100 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

## **Other species status terminology.**

- **Local.** Species that are restricted in distribution either geographically or by habitat. Also used for species that are widespread but infrequently encountered, e.g. encountered in no more than 300 10km squares of the national Ordnance Survey grid since 1970. Or those species listed as such, based upon modern geographical data, by ISIS (2010) and/or relevant recording schemes.
- **Widely Scattered.** Generally distributed but at low densities.
- **Southern.** Mainly or completely confined to southern England and/or its westerly or easterly regions – as indicated.
- **Common.** Generally widespread throughout the UK.

- **Unknown.** Usually indicates a lack of available data for difficult taxa but may also imply recent taxonomic confusion.

### **Annex 3. Descriptions of nationally scarce and rare species.**

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#### **HEMIPTERA**

##### **Pentatomidae**

###### ***Peribalus stictus* - Vernal Shieldbug- RDB3 (RARE)**

Formerly known as *Holcostethus vernalis*, this is one of the rarest shieldbugs and until recently was considered an occasional migrant.

##### *Coreidae*

###### ***Bathysolen nubilus*- Cryptic leatherbug (Nationally Scarce B)**

A dull ground dwelling squash bug associated with low growing medicks especially Black Medick. Very local and restricted to South-East England. First vice-county record for East Kent (Rob Ryan pers. Comm.).

##### ***Rhopalidae***

###### ***Brachycarenum tigrinus* - (pNationally Scarce)**

A straw-coloured ground-dwelling squash bug, first found in UK in 2003 in London, with subsequent records from the Thames Gateway area and several from Surrey and Oxfordshire. The bug has usually been found in warm and sparsely-vegetated brownfield situations. First vice-county record for East Kent (Rob Ryan pers. Comm.) (Denton, 2020b).

##### **Cicadellidae**

###### ***Cicadula flori* - RDBK – New vice-county record**

A yellow plant hopper associated with sedges in fen areas. Local but widespread. Found beside the Great Stour near Evegat Mill (Denton, 2020a)

###### ***Iassus scutellaris* (Nationally Scarce A)**

A green hopper which lives on elm, local but widespread in the South-East.

##### **Cixiidae**

###### ***Oliarus panzeri* (Nationally Scarce)**

A cixid bug associated with areas of open grassland that crack in summer. Very patchily distributed with a number of records from East Kent stretching down to Dungeness.

#### **HYMENOPTERA**

##### **Melittidae**

###### ***Dasypoda hirtipes* - Hairy-legged bee (Nationally Scarce B)**

A bee which forages on composites, nesting in bare sandy ground. Very local in sandy districts inland and on coastal dune systems in England and Wales. A male was found near the Great Stour, atypical habitat and in absence of sandy nesting ground on site, best regarded as a stray.

##### **Halictidae**

###### ***Lasioglossum malachurum* [Nb]**

A small solitary bee which has increased markedly this century and should be demoted to local. Frequent across Kent (Allen, 2009)

***Lasioglossum pauxillum*** [Na]

A small solitary bee which has increased markedly this century and should be demoted to local. Frequent across Kent (Allen, 2009)

***Heriades truncorum*** (RDBK)

A resin bee found increasingly widely across the south, where it nests in existing burrow holes in timber. This appears to be the first record for East Kent (Geoff Allen pers. Comm.)

***Nomada flavopicta*** (Nationally Scarce B)

A local wasp bee which parasitizes *Andrena* species. Found at southern edge of east field.

**DIPTERA**

**Dolichopodidae**

***Dolichopus virgultorum*** NS

A marsh fly which has undergone a rapid expansion over past decade. It is found in woodland including dry sites. Numerous recent records from across Kent (Drake 2017).

**Keroplastidae**

***Keroplatus testaceus*** (LR): NS

A large fungus gnat found in mature deciduous woodland, where it develops on polyporous fungi. Widespread but local.

**COLEOPTERA (Beetles)**

**Carabidae**

***Ophonus azureus*** (Nationally Scarce)

A medium sized ground metallic blue ground beetle with pale legs. It is associated with open mainly arable fields and grassland. Genuinely scarce species scattered across southern England. Found in large fallow field west of Bank Farm.

***Stenolophus skrimshiranus*** (Nationally Scarce)

A medium sized ground orange-brown ground beetle, which is associated with marsh litter in fens and rich wetlands. Very localised but increasing in land in recent years.

**Staphylinidae**

***Astenus immaculatus*** (Nationally Scarce B)

An elongate rove beetle associated with various habitats with litter especially in marshes.

***Stenus butrintensis***

**A camphor beetle found in emergent vegetation around still and flowing water, typically on *Typha* stems. A localised species found across lowland England and Wales (Denton, 2013)**

**Scirtidae**



**Elodes elongata** (Nationally Scarce)

An orange marsh beetle associated with fens and streams in base rich areas. (Denton et al., 2020). Local but widespread in lowland Britain. Found in numbers on trees alongside stream in area.

**Coccinellidae.**

**Platynaspis luteorubra** (Na)

A small black ladybird with four red spots. It occurs in open dry areas where it is associated with the ant *Lasius niger*. This appears to be the first modern record from East Kent.

**Cleridae**

**Opilo mollis** (Nationally Scarce B)

A handsome checkered beetle which predates woodworms, including Xestobium. Adults were found in Bank Farm Wood.

**Melyridae**

**Anthocomus fasciatus** (Nationally Scarce)

A blue malachite beetle with red. Recently promoted to NS despite it occurring frequently in out house and other synanthropic sites as well as near hardwood trees where it is a predator of Anobiid species.

**Tetratomidae**

**Tetratoma desmaresti** (Nationally Scarce B)

A black fungus beetle found on branches of fungoid oak trees where it is winter active typically October-March. A widespread and chronically under-recorded species across lowland UK of albeit old woodland and hedgerow trees. Second modern East Kent record.

**Scaptiidae**

**Anaspis costai** (Nationally Scarce)

A small orange tumbling flower beetle found on blossoms in hedgerows and woodland where the larvae develop in deadwood. Local but widespread in southern Britain.

**Anaspis thoracica** (Nationally Scarce)

A small orange tumbling flower beetle found on blossoms in hedgerows and woodland where the larvae develop in deadwood. Local but widespread in southern Britain.

**Tenebrionidae**

**Scaphidema metallica** (Nationally Scarce B)

A squat shiny purple-bluish beetle found on smallwood branches on elm and also oak and hawthorn. Also found in manmade situations such as poultry sheds.

**Mordellidae**

**Variimorda villosa** (Nationally Scarce)

A tumbling flower beetle found primarily in calcareous grassland. Local but widespread across England and Wales.

### **Melandryidae**

#### ***Orchesia minor*** (Nationally scarce B)

A false darkling beetle which develops in bracket fungi especially *Inonotus*. Widespread and not uncommon in southern England, where it can be frequent on ash.

### **Salpingidae**

#### ***Lissodema denticolle*** (Nationally scarce B)

A narrow-waisted bark beetle, which lives on a variety of hardwoods where it predated the adults and larvae of other insects. Widespread and not uncommon in southern England, where it can be frequent on hawthorn, maple etc.

### **Cerambycidae**

#### ***Agapanthia cardui*** – (pNationally Scarce)

This black longhorn was discovered close to the Ashford International Station in 2017. It feeds on Ox-eye daisy and is clearly spreading as it was abundant around field margins around Bank Farm in May and June.

### **Chrysomelidae (leaf beetles)**

#### ***Plateumaris affinis*** (Nationally Scarce B)

A reed beetle associated with sedges primarily those growing besides flowing water. Found beside River Stour.

#### ***Orsodacne humeralis*** (Nationally Scarce B)

A very localised elongate blue or yellowish leaf beetle found on tree foliage often on Rosaceae such as hawthorns. The larvae develop on oak trees.

#### ***Longitarsus rutilus*** (Nationally Scarce B)

A very local and scarce reddish flea beetle associated with water figwort growing beside ponds, and ditches. Found besides the Great Stour.

#### ***Podagrica fuscipes*** (Nationally Scarce)

A small red and blue flea beetle which feeds on mallows. Local in South –East England, but not uncommon in Kent and Essex.

### **Curculionidae**

#### ***Tychius pusillus*** (Nationally Scarce B)

A very small weevil which feeds on legumes. Very local but locally not infrequent in south east England.

#### ***Liparus coronatus*** (Nationally Scarce B)

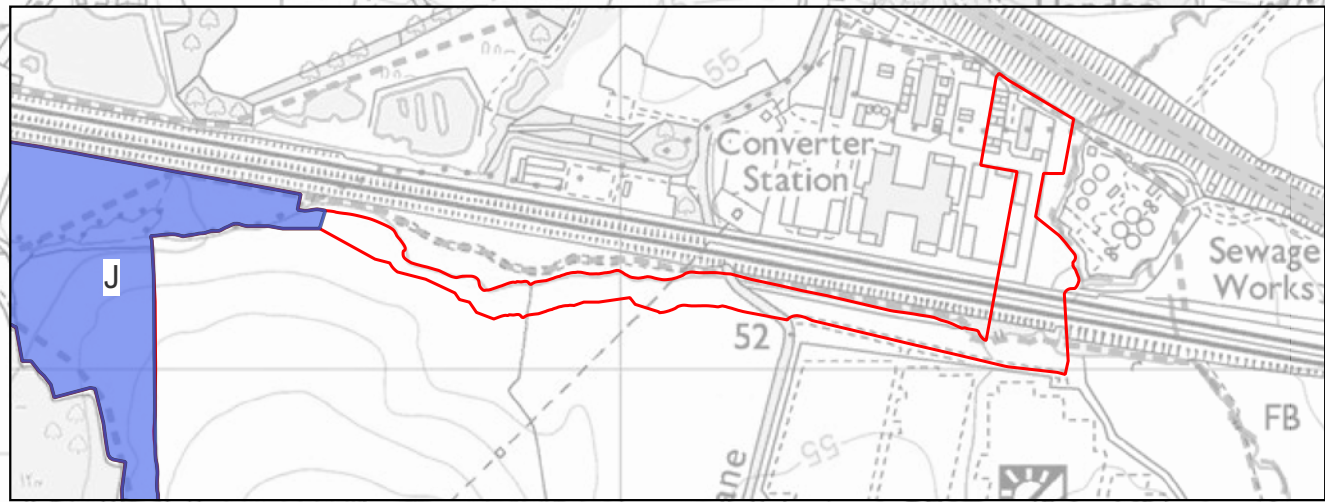
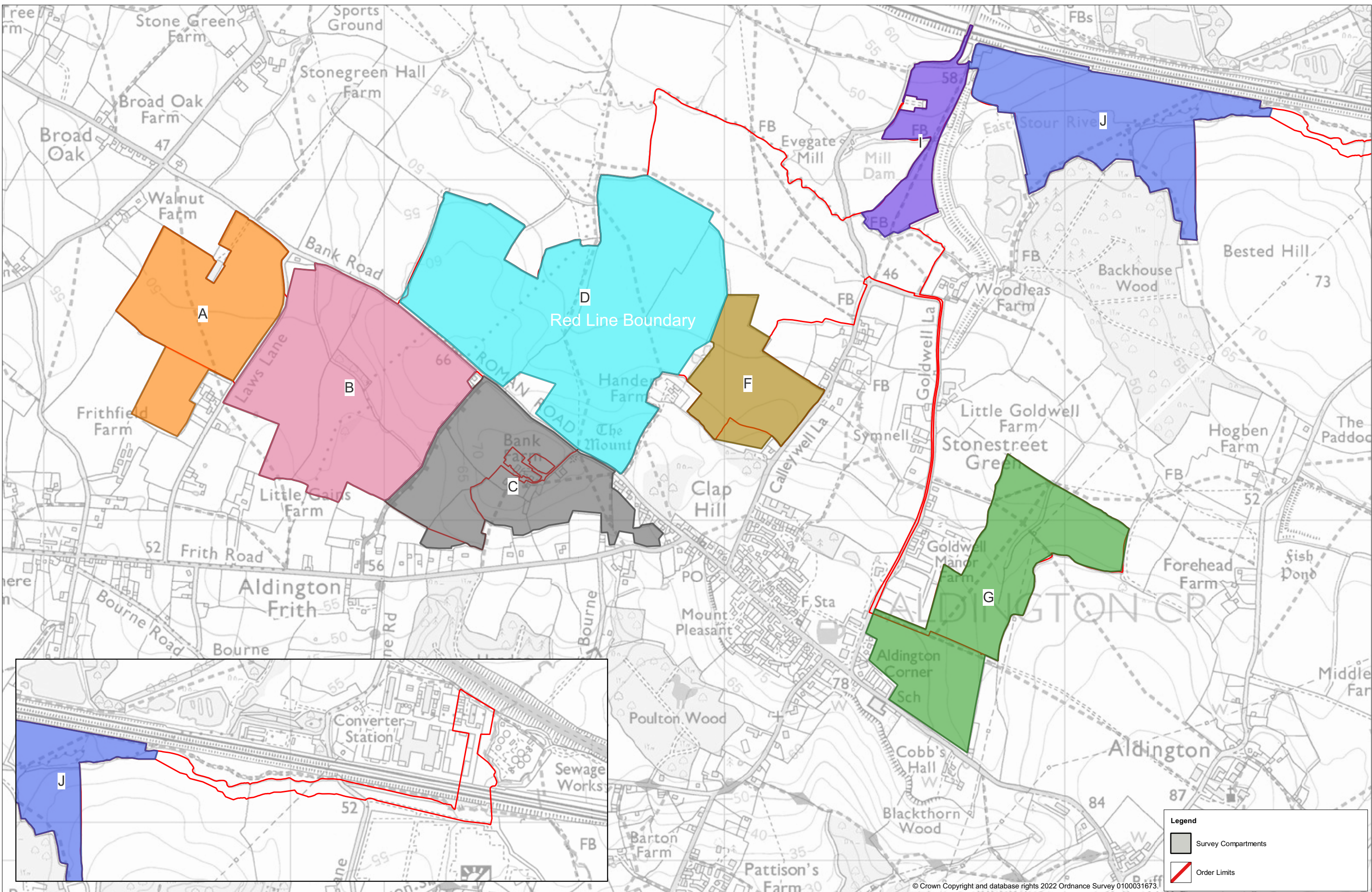
A large black weevil which feeds on cow parsley but in this instance several adults were found on hogweed in areas.

#### ***Gymnetron veronicae*** (Nationally scarce B)

A small but distinctive weevil which lives on Brooklime *Veronica beccabunga*. It is a very local species found only in Southern England. Found beside the Great Stour.

## **Annex 4. Survey compartments**

**[SEE OVERLEAF]**



**Legend**

- Survey Compartments
- Order Limits

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1:10000

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rev. rev. date auth. rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar Land North And West Of Aldington Kent**

drawing no. **5535-LLB-XX-XX-DR-Ec-0105** rev. **C01**  
 drawing title: **Invertebrate Survey 2020 Survey Compartments**

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 scale: **1:10000**  
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**lloyd bore** landscape ecology arboriculture  
 33 ST. GEORGE'S PLACE, CANTERBURY, KENT, CT1 1UT 01227 464 340  
 www.lloyd bore.co.uk mail@lloyd bore.co.uk



## Stonestreet Green Solar

Appendix 9.5b: Invertebrate Survey  
Report - Part 2

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## Summary

Lloydbore Ltd was instructed to undertake invertebrate surveys of land located to the north and west of the village of Aldington (the 'Site'), to inform the proposed Stonestreet Green Solar scheme (the 'Project').

Surveys of terrestrial and aquatic invertebrates were carried out in compartments K, L & M on the following dates;- 10<sup>th</sup> May, 7<sup>th</sup> June, 26<sup>th</sup> July, 18<sup>th</sup> September 2022. Compartment N was sampled on 18<sup>th</sup> September.

## Species total

In all 477 taxa were recorded (the list of species recorded are shown in Appendix 1) in 2022, yielding 926 compartment specific records.

The 39 notable species recorded are summarised below, with the following status (refer to Annex 2 for further detail):

- NS – GB Rarity Status National Scarce
- NA - Nationally Scarce Category A - Notable A (Na)
- Nb - Nationally Scarce Category A - Notable A (Na)
- NR - GB Rarity Status National Rare
- RDB K – Red Data Book first record for Kent

The recorded rare and notable species are listed below.

## Rare and notable species recorded

Species	Common name	order	status
<i>Reptalus panzeri</i>	A cixid hopper	Cixiidae	Nb
<i>Opilo mollis</i>	A clerid beetle	Coleoptera	NS
<i>Gymnetron veronicae</i>	A weevil	Coleoptera	Nb
<i>Grypus equiseti</i>	A weevil	Coleoptera	Nb

Assessment of the invertebrate assemblage is provided within the **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline Landscape and Ecological Management Plan ('LEMP') (Doc. Ref. 7.10)** provides detail of avoidance, mitigation and compensation measures relating to notable invertebrates.

## INTRODUCTION

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This Invertebrate Survey Report has been prepared on behalf of EPL 001 Limited ('the Applicant') to provide results of the baseline invertebrate survey of the Site commissioned in May 2020 in relation to the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').

This 2022 Invertebrate Survey Report is part 2 of **Appendix 9.5b** to **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**. Part 1 comprises the 2020 report.

### The Project

The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.

The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.

The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

## EXPERTISE

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The invertebrate surveys were conducted by a competent expert.

## SURVEYS AND SITE VISITS

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Baseline invertebrate surveys of the additional compartments were carried out on 10<sup>th</sup> May, 7<sup>th</sup> June, 26<sup>th</sup> July, and 18<sup>th</sup> September 2022.

Standard field techniques were employed to sample the invertebrate fauna across the site. These included sweeping vegetation with a wide mouthed sweep net, beating trees and bushes over a beating tray, and grubbing amongst tussocks and key host plant rosettes etc. *Because it is impracticable to survey all the potential invertebrates within any given site, only specific groups of species were examined during fieldwork. These groups are sufficiently well known as to allow meaningful comparisons to be made with other sites, both locally and nationally. They are also important as indicators of the quality of a site and the habitats present (see Brooks 1993).*

A 0.5mm mesh GB nets net was used to sample the ponds and flowing water.

Groups covered during the survey were:

- Mollusca (slugs and snails)
- Arachnida (spiders, harvestmen & pseudoscorpions)
- Isopoda (woodlice)
- Thysanura (bristletails)
- Ephemeroptera (mayflies)
- Odonata (dragonflies & damselflies)
- Plecoptera (stoneflies)
- Orthoptera (grasshoppers & crickets)
- Dictyoptera (cockroaches)
- Dermaptera (earwigs)
- Hemiptera-Heteroptera (true-bugs)
- Hemiptera-Homoptera (hoppers)
- Neuroptera (lace-wings)
- Mecoptera (scorpion-flies)
- Lepidoptera (butterflies & moths)
- Trichoptera (caddis flies)
- Diptera (true flies)
- Aculeate Hymenoptera (ants, bees & wasps)
- Coleoptera (beetles)

The Site was divided into survey compartments A to J as shown within Annex 4.

Fields are described in relation to the Project as follows:

- The South Western Area Field 1 to 9.
- The Central Area Fields 10 to 19 and 23 to 25.
- The South Eastern Area Fields 20 to 22.
- The Northern Area Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- ‘Cable Route Corridor’ (export of electricity from the Project at 132 kilovolt (‘kV’) via underground cables (the ‘Grid Connection Cable’) to the Sellindge Substation). ‘Cable Route Crossing’ (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link (‘HS1’) railway or through Horizontal Directional Drilling (‘HDD’) beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

## RESULTS

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In all 477 taxa were recorded (the list of species recorded are shown in Annex 1) in 2022, yielding 926 compartment specific records. The richest compartment was that straddling the Great Stour and adjacent fen area.

**Table 1. Number of species per compartment**

Compartments	Field references	Total species	Total notables
K	Field 18 and 19	244	4
L	Field 26 to 29 East Stour River corridor	328	1
M	Cable route (west)	261	0
N	Cable route (east) plus adjacent off-Site areas	93	0
<b>Total</b>		<b>477</b>	

The rare and Notable species are listed below (the criteria for the statuses are given in Annex 2).

**Table 2. Rare and notable species**

Species	Common name	order	status
<i>Reptalus panzeri</i>	A cixid hopper	Cixiidae	Nb
<i>Opilo mollis</i>	A clerid beetle	Coleoptera	NS
<i>Gymnetron veronicae</i>	A weevil	Coleoptera	Nb
<i>Grypus equiseti</i>	A weevil	Coleoptera	Nb

The only notable species not found during previous surveys was the weevil *Grypus equiseti* which feeds on horsetails. It was found beside the ditch in area K in May.

## **ECOLOGICAL ASSESSMENT**

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A total of 477 invertebrate taxa were identified during the 2022 invertebrate survey, yielding 926 compartment specific records. Of these records four of these species have conservation designations. Most invertebrate interest was recorded in field boundary habitats, with the most invertebrate species rich habitats being those located along the East Stour River riparian corridor, similar to the previous 2020 survey results.

A preliminary assessment of site importance for invertebrates indicates that the on-Site invertebrate assemblage is likely to be of up to local (district) importance.

Details of impact assessment, avoidance, mitigation, compensation and enhancement measures relating to invertebrates are not included in this report. Instead, these measures are set out in the associated **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline LEMP (Doc. Ref 7.10)**.



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**Annex 1. Species list 2022**

**Table 3. Full species list, conservation status and compartment**

1= present in compartment

Species	Family	Order	Conservation status	K	L	M	N
Armadillidium vulgare	Armadillidiidae	Isopoda	common		1	1	
Proasellus meridianus	Asellidae	Isopoda	common	1	1		
Oniscus asellus	Oniscidae	Isopoda	common	1	1	1	1
Philoscia muscorum	Philosciidae	Isopoda	common	1	1	1	1
Porcellio scaber	Porcellionidae	Isopoda	common	1	1	1	1
Trichoniscus pusillus sensu lato	Trichoniscidae	Isopoda	common		1		
Gammarus pulex sens. str.	Gammaridae	Amphipoda	common	1	1		
Polydesmus angustus	Polydesmidae	Polydesmida	common		1		
Tachypodoiulus niger	Julidae	Julida	common	1	1		
Lithobius forficatus	Lithobiidae	Lithobiomorpha	common	1	1	1	1
Lithobius variegatus	Lithobiidae	Lithobiomorpha	common			1	
Geophilus carpophagus	Geophilidae	Geophilomorpha	common		1		
Geophilus flavus	Geophilidae	Geophilomorpha	common		1		
Agelena labyrinthica	Agelenidae	Araneae	common			1	1
Amaurobius fenestralis	Amaurobiidae	Araneae	common			1	
Araneus diadematus	Araneidae	Araneae	common	1	1	1	1
Araniella cucurbitina	Araneidae	Araneae	common			1	
Araniella opisthographa	Araneidae	Araneae	common			1	
Larinioides cornutus	Araneidae	Araneae	common	1	1	1	

Larinioides sclopetarius	Araneidae	Araneae	local		1		
Mangora acalypha	Araneidae	Araneae	common	1	1	1	1
Nuctenea umbratica	Araneidae	Araneae	common	1	1	1	
Clubiona comta	Clubionidae	Araneae	common			1	
Clubiona phragmitis	Clubionidae	Araneae	common	1	1	1	
Dictyna latens	Dictynidae	Araneae	common		1		
Dictyna uncinata	Dictynidae	Araneae	common			1	
Harpactea hombergi	Dysderidae	Araneae	common	1	1	1	1
Zelotes latreillei	Gnaphosidae	Araneae	common	1			
Erigone atra	Linyphiidae	Araneae	common	1		1	1
Erigone dentipalpis	Linyphiidae	Araneae	common	1		1	
Hylyphantes graminicola	Linyphiidae	Araneae	common			1	
Hypomma bituberculatum	Linyphiidae	Araneae	common	1		1	
Hypomma cornutum	Linyphiidae	Araneae	common			1	
Lepthyphantes tenuis	Linyphiidae	Araneae	common		1		
Linyphia triangularis	Linyphiidae	Araneae	common	1	1	1	1
Meioneta rurestris	Linyphiidae	Araneae	common		1		
Neriere peltata	Linyphiidae	Araneae	common			1	
Pardosa amentata	Lycosidae	Araneae	common		1	1	
Pardosa prativaga	Lycosidae	Araneae	common	1			
Pardosa pullata	Lycosidae	Araneae	common		1		
Pirata piraticus	Lycosidae	Araneae	common	1	1	1	
Philodromus albidus	Philodromidae	Araneae	common			1	
Philodromus aureolus	Philodromidae	Araneae	common	1	1		
Philodromus cespitum	Philodromidae	Araneae	common		1		
Tibellus oblongus	Philodromidae	Araneae	common	1	1		
Pisaura mirabilis	Pisauridae	Araneae	common	1	1	1	1
Euophrys frontalis	Salticidae	Araneae	common	1			

<i>Heliophanus flavipes</i>	Salticidae	Araneae	common	1	1	1	1
<i>Metellina mengei</i>	Tetragnathidae	Araneae	common	1	1	1	
<i>Metellina segmentata</i>	Tetragnathidae	Araneae	common	1	1	1	1
<i>Pachygnatha clercki</i>	Tetragnathidae	Araneae	common	1		1	
<i>Tetragnatha extensa</i>	Tetragnathidae	Araneae	common	1	1	1	
<i>Tetragnatha montana</i>	Tetragnathidae	Araneae	common			1	1
<i>Anelosimus vittatus</i>	Theridiidae	Araneae	common	1		1	
<i>Enoplognatha ovata</i>	Theridiidae	Araneae	common	1	1	1	1
<i>Neottiura bimaculata</i>	Theridiidae	Araneae	common		1		
<i>Paidiscura pallens</i>	Theridiidae	Araneae	common	1		1	
<i>Misumena vatia</i>	Thomisidae	Araneae	common			1	
<i>Ozyptila praticola</i>	Thomisidae	Araneae	common		1	1	
<i>Xysticus cristatus</i>	Thomisidae	Araneae	common	1	1	1	1
<i>Xysticus lanio</i>	Thomisidae	Araneae	common		1		
<i>Zora spinimana</i>	Zoridae	Araneae	common	1	1	1	
<i>Erpobdella octoculata</i>	Erpobdellidae	Arhynchobdellida	common	1			
<i>Anobium punctatum</i>	Anobiidae	Coleoptera	common			1	
<i>Ptilinus pectinicornis</i>	Anobiidae	Coleoptera	local		1	1	
<i>Anthicus antherinus</i>	Anthiidae	Coleoptera	common	1	1		
<i>Apion frumentarium</i>	Apionidae	Coleoptera	common	1			
<i>Ceratapion onopordi</i>	Apionidae	Coleoptera	common		1		
<i>Malvapion malvae</i>	Apionidae	Coleoptera	common		1	1	
<i>Perapion hydrolapathi</i>	Apionidae	Coleoptera	common	1			
<i>Protapion fulvipes</i>	Apionidae	Coleoptera	common		1	1	
<i>Agrilus sinuatus</i>	Buprestidae	Coleoptera	common	1	1		
<i>Cantharis cryptica</i>	Cantharidae	Coleoptera	common	1		1	
<i>Cantharis lateralis</i>	Cantharidae	Coleoptera	common		1	1	

Cantharis livida	Cantharidae	Coleoptera	common			1	
Cantharis nigra (=thoracica)	Cantharidae	Coleoptera	common		1		
Cantharis rustica	Cantharidae	Coleoptera	common		1		
Rhagonycha fulva	Cantharidae	Coleoptera	common	1	1	1	1
Bembidion lampros	Carabidae	Coleoptera	common	1	1	1	
Bembidion biguttatum	Carabidae	Coleoptera	common	1			
Calodromius spilotus	Carabidae	Coleoptera	common			1	
Demetrias atricapillus	Carabidae	Coleoptera	common	1	1	1	
Dromius meridionalis	Carabidae	Coleoptera	common		1		
Harpalus affinis	Carabidae	Coleoptera	common		1	1	
Harpalus rufipes	Carabidae	Coleoptera	common			1	
Anchomenus dorsalis	Carabidae	Coleoptera	common	1		1	
Nebria brevicollis	Carabidae	Coleoptera	common	1			
Ophonus rufibarbis	Carabidae	Coleoptera	common	1			
Oxypselaphus obscurus	Carabidae	Coleoptera	common			1	1
Paradromius linearis	Carabidae	Coleoptera	common		1		
Philorhizus melanocephalus	Carabidae	Coleoptera	common		1	1	
Pterostichus madidus	Carabidae	Coleoptera	common	1	1	1	1
Pterostichus melanarius	Carabidae	Coleoptera	common			1	
Grammoptera ruficornis	Cerambycidae	Coleoptera	common	1	1	1	1
Pseudovadonia livida	Cerambycidae	Coleoptera	local		1	1	
Altica lythri	Chrysomelidae	Coleoptera	common	1	1	1	
Aphthona euphorbiae	Chrysomelidae	Coleoptera	common	1	1	1	
Bruchidius varius	Chrysomelidae	Coleoptera	common		1	1	
Bruchus rufimanus	Chrysomelidae	Coleoptera	common	1	1	1	
Crepidodera aurata	Chrysomelidae	Coleoptera	common		1		
Crepidodera fulvicornis	Chrysomelidae	Coleoptera	common	1			
Crepidodera plutus	Chrysomelidae	Coleoptera	common		1	1	

<i>Cryptocephalus fulvus</i>	Chrysomelidae	Coleoptera	local		1		
<i>Donacia simplex</i>	Chrysomelidae	Coleoptera	common	1			
<i>Epitrix pubescens</i>	Chrysomelidae	Coleoptera	local	1			
<i>Gastrophysa viridula</i>	Chrysomelidae	Coleoptera	common		1		
<i>Longitarsus flavicornis</i>	Chrysomelidae	Coleoptera	common			1	
<i>Longitarsus luridus</i>	Chrysomelidae	Coleoptera	common				1
<i>Longitarsus parvulus</i>	Chrysomelidae	Coleoptera	common	1	1	1	
<i>Longitarsus rubiginosus</i>	Chrysomelidae	Coleoptera	common				1
<i>Neocrepidodera transversa</i>	Chrysomelidae	Coleoptera	common				1
<i>Oulema melanopus</i> s.l.	Chrysomelidae	Coleoptera	common				1
<i>Oulema rufocyanea</i>	Chrysomelidae	Coleoptera	common			1	1
<i>Phaedon armoraciae</i>	Chrysomelidae	Coleoptera	common	1			
<i>Phaedon cochleariae</i>	Chrysomelidae	Coleoptera	common	1	1		
<i>Phaedon tumidulus</i>	Chrysomelidae	Coleoptera	common		1		
<i>Phyllotreta undulata</i>	Chrysomelidae	Coleoptera	common			1	
<i>Prasocuris junci</i>	Chrysomelidae	Coleoptera	local	1	1	1	
<i>Psylliodes affinis</i>	Chrysomelidae	Coleoptera	common			1	
<i>Psylliodes chrysocephala</i>	Chrysomelidae	Coleoptera	common	1	1	1	1
<i>Cis boleti</i>	Ciidae	Coleoptera	common	1	1		
<i>Opilo mollis</i>	Cleridae	Coleoptera	NS	1			
<i>Adalia decempunctata</i>	Coccinellidae	Coleoptera	common	1	1	1	
<i>Anisosticta novemdecimpunctata</i>	Coccinellidae	Coleoptera	local		1		
<i>Calvia quattuordecimguttata</i>	Coccinellidae	Coleoptera	common		1		
<i>Coccidula rufa</i>	Coccinellidae	Coleoptera	local		1		
<i>Coccinella septempunctata</i>	Coccinellidae	Coleoptera	common	1	1	1	1
<i>Harmonia axyridis</i>	Coccinellidae	Coleoptera	common		1	1	
<i>Propylea</i>	Coccinellidae	Coleoptera	common	1	1	1	1



quattuordecimpunctata							
Psyllobora vigintiduopunctata	Coccinellidae	Coleoptera	common			1	
Rhizobius litura	Coccinellidae	Coleoptera	common			1	
Subcoccinella vigintiquattuor punctata	Coccinellidae	Coleoptera	common		1	1	
Tytthaspis sedecimpunctata	Coccinellidae	Coleoptera	common		1	1	1
Atomaria fuscata	Cryptophagidae	Coleoptera	common		1		
Anthonomus pedicularius	Curculionidae	Coleoptera	common		1	1	
Anthonomus rubi	Curculionidae	Coleoptera	common		1		
Archarius salicivorus	Curculionidae	Coleoptera	common		1		
Ceutorhynchus obstrictus	Curculionidae	Coleoptera	common		1	1	
Ceutorhynchus pallidactylus	Curculionidae	Coleoptera	common			1	
Ceutorhynchus typhae	Curculionidae	Coleoptera	common			1	
Cionus alauda	Curculionidae	Coleoptera	common	1			
Grypus equiseti	Curculionidae	Coleoptera	Nb	1			
Gymnetron veronicae	Curculionidae	Coleoptera	Nb	1			
Hypera pollux	Curculionidae	Coleoptera	local	1			
Liophloeus tessulatus	Curculionidae	Coleoptera	common		1		
Mecinus pascuorum	Curculionidae	Coleoptera	common		1	1	
Nedyus quadrimaculatus	Curculionidae	Coleoptera	common		1	1	
Parethelcus pollinarius	Curculionidae	Coleoptera	common		1	1	
Phyllobius pomaceus	Curculionidae	Coleoptera	common		1	1	
Phyllobius roboretanus	Curculionidae	Coleoptera	common	1	1	1	
Polydrusus pterygomalis	Curculionidae	Coleoptera	common		1		
Sciaphilus asperatus	Curculionidae	Coleoptera	common	1			
Sitona lineatus	Curculionidae	Coleoptera	common	1	1	1	1
Anthrenus verbasci	Dermeestidae	Coleoptera	common		1	1	
Agabus bipustulatus	Dytiscidae	Coleoptera	common	1			

Hydroporus planus	Dytiscidae	Coleoptera	common	1		1	
Agriotes acuminatus	Elateridae	Coleoptera	common			1	
Agriotes lineatus	Elateridae	Coleoptera	common	1	1		
Agriotes sputator	Elateridae	Coleoptera	common	1	1	1	
Gyrinus substriatus	Gyrinidae	Coleoptera	common	1	1		
Helophorus brevipalpis	Helophoridae	Coleoptera	common			1	
Hydrobius fuscipes	Hydrophilidae	Coleoptera	common			1	
Brachypterus glaber	Kateretidae	Coleoptera	common	1	1	1	
Brachypterus urticae	Kateretidae	Coleoptera	common	1		1	
Cartodere nodifer	Latridiidae	Coleoptera	common			1	
Corticicara gibbosa	Latridiidae	Coleoptera	common	1	1	1	1
Cordylepherus viridis	Malachiidae	Coleoptera	common	1	1	1	
Malachius bipustulatus	Malachiidae	Coleoptera	common	1	1	1	
Meligethes aeneus	Nitidulidae	Coleoptera	common	1	1	1	1
Oedemera lurida	Oedemeridae	Coleoptera	common	1	1	1	
Oedemera nobilis	Oedemeridae	Coleoptera	common	1	1	1	
Olibrus aeneus	Phalacridae	Coleoptera	common	1	1		
Stilbus testaceus	Phalacridae	Coleoptera	common		1		
Neocoenorrhinus aequatus	Rhynchitidae	Coleoptera	common	1	1		
Salpingus planirostris	Salpingidae	Coleoptera	common		1		
Cyphon coarctatus	Scirtidae	Coleoptera	common	1			
Aphodius sticticus	Sphaeroceidae	Coleoptera	local			1	
Anaspis fasciata	Scraptiidae	Coleoptera	common	1	1		
Anaspis maculata	Scraptiidae	Coleoptera	common	1	1	1	
Psammoecus bipunctatus	Silvanidae	Coleoptera	local	1	1		
Aleochara lanuginosa	Staphylinidae	Coleoptera	common		1		1
Anotylus rugosus	Staphylinidae	Coleoptera	common	1			
Anotylus tetracarınatus	Staphylinidae	Coleoptera	common	1	1		

<i>Cypha longicornis</i>	Staphylinidae	Coleoptera	common	1	1		
<i>Drusilla canaliculata</i>	Staphylinidae	Coleoptera	common	1	1	1	
<i>Paederus littoralis</i>	Staphylinidae	Coleoptera	common	1			
<i>Rugilus orbiculatus</i>	Staphylinidae	Coleoptera	common	1	1		
<i>Stenus brunnipes</i>	Staphylinidae	Coleoptera	common			1	
<i>Stenus cicindeloides</i>	Staphylinidae	Coleoptera	common		1		
<i>Tachinus rufipes</i>	Staphylinidae	Coleoptera	common		1	1	
<i>Tachyporus chrysomelinus</i>	Staphylinidae	Coleoptera	common	1	1		
<i>Tachyporus hypnorum</i>	Staphylinidae	Coleoptera	common	1		1	
<i>Tachyporus nitidulus</i>	Staphylinidae	Coleoptera	common	1			
<i>Lagria hirta</i>	Tenebrionidae	Coleoptera	common		1		
<i>Cyphoderus albinus</i>	Cyphoderidae	Collembola	common		1	1	
<i>Forficula auricularia</i>	Forficulidae	Dermaptera	common	1	1	1	1
<i>Forficula lesnei</i>	Forficulidae	Dermaptera	local	1		1	
<i>Agromyza alnivora</i>	Agromyzidae	Diptera	common			1	
<i>Sylvicola cinctus</i>	Anisopodidae	Diptera	common			1	
<i>Pegomya solennis</i>	Anthomyiidae	Diptera	common	1	1	1	
<i>Dioctria baumhaueri</i>	Asilidae	Diptera	common		1		
<i>Leptogaster cylindrica</i>	Asilidae	Diptera	common	1	1		
<i>Dilophus febrilis</i>	Bibionidae	Diptera	common	1	1	1	
<i>Calliphora vicina</i>	Calliphoridae	Diptera	common		1	1	
<i>Calliphora vomitoria</i>	Calliphoridae	Diptera	common	1		1	
<i>Lucilia sericata</i>	Calliphoridae	Diptera	common	1	1	1	
<i>Dasineura urticae</i>	Cecidomyiidae	Diptera	common	1		1	
<i>Meromyza femorata</i>	Chloropidae	Diptera	common	1	1		
<i>Oscinella frit</i>	Chloropidae	Diptera	common	1		1	
<i>Thaumatomyia glabra</i>	Chloropidae	Diptera	common				1
<i>Thaumatomyia notata</i>	Chloropidae	Diptera	common		1	1	1

Medetera truncorum	Dolichopodidae	Diptera	common			1	
Poecilobothrus nobilitatus	Dolichopodidae	Diptera	common	1		1	
Empis livida	Empididae	Diptera	common	1	1	1	
Empis stercorea	Empididae	Diptera	common	1			
Empis tessellata	Empididae	Diptera	common	1	1	1	
Hydrellia griseola	Ephydriidae	Diptera	common	1	1	1	
Minettia fasciata	Lauxaniidae	Diptera	common		1		
Sapromyza quadripunctata	Lauxaniidae	Diptera	common			1	
Tricholauxania praeusta	Lauxaniidae	Diptera	common		1		
Ellipteroides lateralis	Limoniidae	Diptera	common		1		
Lonchoptera lutea	Lonchopteridae	Diptera	common	1	1		
Lispe tentaculata	Muscidae	Diptera	common		1		
Mesembrina meridiana	Muscidae	Diptera	common	1	1	1	1
Musca autumnalis	Muscidae	Diptera	common		1		
Graphomyia maculata	Muscidae	Diptera	common	1	1		
Opomyza germinationis	Opomyzidae	Diptera	common	1			
Platystoma seminatiois	Platystomatidae	Diptera	common	1	1	1	
Pollenia rudis	Polleniidae	Diptera	common			1	
Ptychoptera contaminata	Ptychopteridae	Diptera	common	1	1		
Chrysopilus cristatus	Rhagionidae	Diptera	common	1			
Nyctia halterata	Sarcophagidae	Diptera	common		1		
Sarcophaga carnaria agg.	Sarcophagidae	Diptera	common	1	1	1	1
Scathophaga furcata	Scathophagidae	Diptera	common	1	1		
Scathophaga stercoraria	Scathophagidae	Diptera	common	1	1	1	1
Limnia unguicornis	Sciomyzidae	Diptera	common	1		1	
Tetanocera ferruginea	Sciomyzidae	Diptera	common	1	1		
Beris chalybata	Stratiomyidae	Diptera	common			1	
Beris vallata	Stratiomyidae	Diptera	common		1		

<i>Chloromyia formosa</i>	Stratiomyidae	Diptera	common	1	1		
<i>Pachygaster atra</i>	Stratiomyidae	Diptera	common	1	1	1	
<i>Cheilosia illustrata</i>	Syrphidae	Diptera	common		1		
<i>Chrysogaster solstitialis</i>	Syrphidae	Diptera	common		1		
<i>Episyrphus balteatus</i>	Syrphidae	Diptera	common	1	1	1	1
<i>Eristalis arbustorum</i>	Syrphidae	Diptera	common	1			
<i>Eristalis pertinax</i>	Syrphidae	Diptera	common	1	1	1	
<i>Eristalis tenax</i>	Syrphidae	Diptera	common	1			
<i>Eupeodes corollae</i>	Syrphidae	Diptera	common	1	1	1	1
<i>Eupeodes luniger</i>	Syrphidae	Diptera	common	1			
<i>Helophilus pendulus</i>	Syrphidae	Diptera	common	1	1	1	
<i>Myathropa florea</i>	Syrphidae	Diptera	common	1	1		1
<i>Platycheirus albimanus</i>	Syrphidae	Diptera	common	1	1	1	
<i>Scaeva pyrastris</i>	Syrphidae	Diptera	common	1	1	1	
<i>Sphaerophoria scripta</i>	Syrphidae	Diptera	common	1	1	1	1
<i>Syritta pipiens</i>	Syrphidae	Diptera	common	1	1		
<i>Syrphus ribesii</i>	Syrphidae	Diptera	common		1	1	
<i>Haematopota pluvialis</i>	Tabanidae	Diptera	common		1		
<i>Eriothrix rufomaculata</i>	Tachinidae	Diptera	common	1	1	1	1
<i>Phasia pusilla</i>	Tachinidae	Diptera	common			1	
<i>Chaetostomella cylindrica</i>	Tephritidae	Diptera	common	1	1		
<i>Tephritis formosa</i>	Tephritidae	Diptera	common		1	1	
<i>Tephritis neesii</i>	Tephritidae	Diptera	common	1	1		1
<i>Orellia falcata</i>	Tephritidae	Diptera	local	1			
<i>Urophora quadrifasciata</i>	Tephritidae	Diptera	common	1	1	1	
<i>Urophora stylata</i>	Tephritidae	Diptera	common				1
<i>Nephrotoma appendiculata</i>	Tipulidae	Diptera	common			1	
<i>Nephrotoma flavescens</i>	Tipulidae	Diptera	common			1	

Tipula oleracea	Tipulidae	Diptera	common	1	1	1	1
Tipula paludosa	Tipulidae	Diptera	common	1	1	1	1
Cloeon dipterum	Baetidae	Ephemeroptera	common				
Ephemera danica	Ephemeridae	Ephemeroptera	common	1	1	1	
Acanthosoma haemorrhoidale	Acanthosomatidae	Hemiptera	common		1		1
Elasmucha grisea	Acanthosomatidae	Hemiptera	common		1		
Anthocoris confusus	Anthocoridae	Hemiptera	common	1	1	1	1
Anthocoris nemoralis	Anthocoridae	Hemiptera	common		1		
Anthocoris nemorum	Anthocoridae	Hemiptera	common	1		1	
Orius females	Anthocoridae	Hemiptera	common	1		1	
Temnostethus pusillus	Anthocoridae	Hemiptera	local		1		
Xylocoris curtisans	Anthocoridae	Hemiptera	local		1		
Aphrophora alni	Aphrophoridae	Hemiptera	common		1		1
Philaenus spumarius	Aphrophoridae	Hemiptera	common	1	1	1	1
Acericerus ribauti	Cicadellidae	Hemiptera	local		1		
Acericerus vittifrons	Cicadellidae	Hemiptera	common		1		
Alebra albostriella	Cicadellidae	Hemiptera	common		1		
Alnetoidea alneti	Cicadellidae	Hemiptera	common			1	
Aphrodes makarovi	Cicadellidae	Hemiptera	common		1	1	1
Eupteryx aurata	Cicadellidae	Hemiptera	common			1	
lassus lanio	Cicadellidae	Hemiptera	common		1		
Oncopsis avellanae	Cicadellidae	Hemiptera	common		1		
Macropsis prasina	Cicadellidae	Hemiptera	common	1	1		
Cixius nervosus	Cixiidae	Hemiptera	common			1	
Reptalus panzeri	Cixiidae	Hemiptera	Nb	1	1		
Coreus marginatus	Coreidae	Hemiptera	common	1	1	1	

<i>Coriomeris denticulatus</i>	Coreidae	Hemiptera	common		1	1	
<i>Dicranotropis hamata</i>	Delphacidae	Hemiptera	common	1			
<i>Stenocranus major</i>	Delphacidae	Hemiptera	common	1			
<i>Gerris lacustris</i>	Gerridae	Hemiptera	common	1		1	
<i>Drymus sylvaticus</i>	Lygaeidae	Hemiptera	common		1		
<i>Heterogaster urticae</i>	Lygaeidae	Hemiptera	common	1	1	1	1
<i>Ischnodemus sabuleti</i>	Lygaeidae	Hemiptera	common	1	1	1	
<i>Nysius senecionis</i>	Lygaeidae	Hemiptera	common		1		
<i>Peritrechus geniculatus</i>	Lygaeidae	Hemiptera	common		1		
<i>Scolopostethus thomsoni</i>	Lygaeidae	Hemiptera	common	1			
<i>Amblytylus nasutus</i>	Miridae	Hemiptera	common		1	1	
<i>Atractotomus mali</i>	Miridae	Hemiptera	common	1	1		
<i>Blepharidopterus angulatus</i>	Miridae	Hemiptera	common	1			
<i>Campyloneura virgula</i>	Miridae	Hemiptera	common			1	
<i>Capsus ater</i>	Miridae	Hemiptera	common	1	1	1	
<i>Closterotomus norwegicus</i>	Miridae	Hemiptera	common	1	1	1	1
<i>Deraeocoris flavilinea</i>	Miridae	Hemiptera	common		1		
<i>Deraeocoris lutescens</i>	Miridae	Hemiptera	common		1		
<i>Dicyphus epilobii</i>	Miridae	Hemiptera	common	1	1	1	1
<i>Dicyphus stachydis</i>	Miridae	Hemiptera	common		1		
<i>Heterotoma planicornis</i>	Miridae	Hemiptera	common	1	1	1	1
<i>Leptopterna dolabrata</i>	Miridae	Hemiptera	common	1	1	1	1
<i>Liocoris tripustulatus</i>	Miridae	Hemiptera	common	1	1	1	1
<i>Lygocoris pabulinus</i>	Miridae	Hemiptera	common		1		
<i>Lygocoris rugicollis</i>	Miridae	Hemiptera	common	1			
<i>Lygus pratensis</i>	Miridae	Hemiptera	local			1	
<i>Lygus rugulipennis</i>	Miridae	Hemiptera	common			1	
<i>Lygocoris viridis</i>	Miridae	Hemiptera	common	1		1	

Megaloceroea recticornis	Miridae	Hemiptera	common	1	1	1	
Miridius quadrivirgatus	Miridae	Hemiptera	local			1	
Notostira elongata	Miridae	Hemiptera	common	1	1	1	
Oncotylus viridiflavus	Miridae	Hemiptera	common	1	1		
Orthops campestris	Miridae	Hemiptera	common	1	1		1
Orthops kalmii	Miridae	Hemiptera	common	1	1		
Orthotylus marginalis	Miridae	Hemiptera	common				
Orthotylus ochrotrichus	Miridae	Hemiptera	common	1			
Pantilius tunicatus	Miridae	Hemiptera	common			1	
Phylus coryli	Miridae	Hemiptera	common		1		
Phytocoris varipes	Miridae	Hemiptera	common		1	1	
Plagiognathus arbustorum	Miridae	Hemiptera	common		1	1	1
Plagiognathus chrysanthemi	Miridae	Hemiptera	common	1	1	1	
Psallus varians	Miridae	Hemiptera	common		1		
Rhabdomiris striatellus	Miridae	Hemiptera	common		1		
Stenodema calcarata	Miridae	Hemiptera	common	1	1		
Stenodema laevigata	Miridae	Hemiptera	common	1	1	1	
Stenotus binotatus	Miridae	Hemiptera	common		1	1	
Himacerus apterus	Nabidae	Hemiptera	common		1		
Nabis flavomarginatus	Nabidae	Hemiptera	common		1		
Nabis rugosus	Nabidae	Hemiptera	common	1	1		
Nepa cinerea	Nepidae	Hemiptera	common		1		
Notonecta glauca	Notonectidae	Hemiptera	common		1		
Aelia acuminata	Pentatomidae	Hemiptera	common	1	1	1	
Dolycoris baccarum	Pentatomidae	Hemiptera	common	1	1	1	1
Eurydema oleracea	Pentatomidae	Hemiptera	common			1	
Palomena prasina	Pentatomidae	Hemiptera	common	1	1	1	
Pentatoma rufipes	Pentatomidae	Hemiptera	common			1	



Podops inuncta	Pentatomidae	Hemiptera	common	1	1		
Cacopsylla peregrina	Psyllidae	Hemiptera	common	1		1	
Psylla alni	Psyllidae	Hemiptera	common	1		1	
Stictopleurus abutilon	Rhopalidae	Hemiptera	local	1	1	1	
Stictopleurus punctatonervosus	Rhopalidae	Hemiptera	local	1		1	
Eurygaster testudinaria	Scutelleridae	Hemiptera	common	1			
Dictyla convergens	Tingidae	Hemiptera	common		1		
Velia caprai	Veliidae	Hemiptera	common	1	1		
Galba truncatula	Lymnaeidae	Hygrophila	common	1			
Lymnaea stagnalis	Lymnaeidae	Hygrophila	common	1	1		
Radix balthica	Lymnaeidae	Hygrophila	common	1	1		
Anisus vortex	Planorbidae	Hygrophila	common		1		
Planorbis planorbis	Planorbidae	Hygrophila	common	1			
Andrena chrysosceles	Andrenidae	Hymenoptera	common	1	1		
Andrena subopaca	Andrenidae	Hymenoptera	common		1		
Apis mellifera	Apidae	Hymenoptera	common	1	1	1	1
Bombus lapidarius	Apidae	Hymenoptera	common		1		
Bombus lucorum sensu lato	Apidae	Hymenoptera	common		1	1	1
Bombus pascuorum	Apidae	Hymenoptera	common	1	1	1	1
Bombus pratorum	Apidae	Hymenoptera	common	1	1	1	1
Bombus terrestris	Apidae	Hymenoptera	common	1	1	1	1
Nomada fabriciana	Apidae	Hymenoptera	common		1		
Cephus spinipes	Cephidae	Hymenoptera	common	1	1	1	1
Colletes hederæ	Colletidae	Hymenoptera	common			1	1
Hylaeus communis	Colletidae	Hymenoptera	common		1		
Crossocerus podagricus	Crabronidae	Hymenoptera	common		1		
Ectemnius continuus	Crabronidae	Hymenoptera	common		1		

<i>Psenulus concolor</i>	Crabronidae	Hymenoptera	common		1		
<i>Diplolepis rosae</i>	Cynipidae	Hymenoptera	common			1	
<i>Neuroterus numismalis</i>	Cynipidae	Hymenoptera	common			1	
<i>Neuroterus quercusbaccarum</i>	Cynipidae	Hymenoptera	common			1	
<i>Lasius niger</i>	Formicidae	Hymenoptera	common	1			1
<i>Lasius platythorax</i>	Formicidae	Hymenoptera	common		1	1	
<i>Myrmica rubra</i>	Formicidae	Hymenoptera	common	1	1	1	
<i>Gasteruption assectator</i>	Gasteruptionidae	Hymenoptera	local	1	1		
<i>Lasioglossum albipes</i>	Halictidae	Hymenoptera	common		1		
<i>Lasioglossum laevigatum</i>	Halictidae	Hymenoptera	common		1		
<i>Lasioglossum morio</i>	Halictidae	Hymenoptera	common		1		
<i>Amblyteles armatorius</i>	Ichneumonidae	Hymenoptera	common	1	1	1	1
<i>Ichneumon sarcitorius</i>	Ichneumonidae	Hymenoptera	common		1	1	1
<i>Pimpla contemplator</i>	Ichneumonidae	Hymenoptera	common			1	
<i>Priocnemis exaltata</i>	Pompilidae	Hymenoptera	common	1	1	1	
<i>Athalia rosae</i>	Tenthredinidae	Hymenoptera	common	1			1
<i>Tenthredo brevicornis</i>	Tenthredinidae	Hymenoptera	common		1	1	
<i>Vespula vulgaris</i>	Vespidae	Hymenoptera	common	1	1	1	1
<i>Blastobasis adustella</i>	Blastobasidae	Lepidoptera	common		1		
<i>Anthophila fabriciana</i>	Choreutidae	Lepidoptera	common		1		
<i>Agriphila straminella</i>	Crambidae	Lepidoptera	common			1	
<i>Anania coronata</i>	Crambidae	Lepidoptera	common		1		
<i>Cataclysta lemnata</i>	Crambidae	Lepidoptera	common		1		
<i>Chrysoteuchia culmella</i>	Crambidae	Lepidoptera	common	1	1	1	1
<i>Crambus lathoniellus</i>	Crambidae	Lepidoptera	common		1		
<i>Orgyia antiqua</i>	Erebidae	Lepidoptera	common		1		
<i>Idaea dimidiata</i>	Geometridae	Lepidoptera	common	1			
<i>Camptogramma bilineata</i>	Geometridae	Lepidoptera	common			1	

Timandra comae	Geometridae	Lepidoptera	common		1		
Glyphipterix simpliciella	Glyphipterigidae	Lepidoptera	common			1	
Ochlodes sylvanus	Hesperiidae	Lepidoptera	common		1		
Incurvaria pectinea	Incurvariidae	Lepidoptera	common		1		
Polyommatus icarus	Lycaenidae	Lepidoptera	common			1	
Stigmella aceris	Nepticulidae	Lepidoptera	common		1		
Stigmella aurella	Nepticulidae	Lepidoptera	common		1	1	1
Stigmella hemargyrella	Nepticulidae	Lepidoptera	common		1		
Eremobia ochroleuca	Noctuidae	Lepidoptera	common	1			
Autographa gamma	Noctuidae	Lepidoptera	common		1		
Aglais io	Nymphalidae	Lepidoptera	common	1	1	1	1
Aglais urticae	Nymphalidae	Lepidoptera	common	1	1	1	1
Maniola jurtina	Nymphalidae	Lepidoptera	common	1	1	1	1
Pararge aegeria	Nymphalidae	Lepidoptera	common		1		
Polygonia c-album	Nymphalidae	Lepidoptera	common			1	
Pyronia tithonus	Nymphalidae	Lepidoptera	common	1	1	1	
Vanessa atalanta	Nymphalidae	Lepidoptera	common	1	1	1	1
Colias croceus	Pieridae	Lepidoptera	common	1			1
Pieris brassicae	Pieridae	Lepidoptera	common	1	1	1	1
Pieris rapae	Pieridae	Lepidoptera	common	1	1	1	1
Prays fraxinella	Prayidae	Lepidoptera	common		1		
Luffia ferchaultella	Psychidae	Lepidoptera	common		1	1	
Zygaena filipendulae	Zygaenidae	Lepidoptera	common	1			
Panorpa germanica	Panorpidae	Mecoptera	common		1		
Sialis lutaria	Sialidae	Megaloptera	common	1	1	1	
Chrysoperla carnea group	Chrysopidae	Neuroptera	common		1	1	
Aeshna cyanea	Aeshnidae	Odonata	common		1	1	
Aeshna mixta	Aeshnidae	Odonata	common	1		1	

Anax imperator	Aeshnidae	Odonata	common		1		
Calopteryx splendens	Calopterygidae	Odonata	common	1	1	1	
Coenagrion puella	Coenagrionidae	Odonata	common		1		
Enallagma cyathigerum	Coenagrionidae	Odonata	common		1		
Ischnura elegans	Coenagrionidae	Odonata	common		1		
Pyrrhosoma nymphula	Coenagrionidae	Odonata	common		1		
Libellula quadrimaculata	Libellulidae	Odonata	common	1			
Sympetrum striolatum	Libellulidae	Odonata	common	1	1	1	
Platycnemis pennipes	Platycnemididae	Odonata	local	1	1		
Mystacides nigra	Leptoceridae	Trichoptera	common		1		
Glyptotaelius pellucidus	Limnephilidae	Trichoptera	common	1	1		
Halesus radiatus	Limnephilidae	Trichoptera	common	1	1		
Drusus annulatus	Limnephilidae	Trichoptera	common		1		
Leiobunum rotundum	Phalangiidae	Opiliones	common		1	1	
Dicranopalpus ramosus agg	Phalangiidae	Opiliones	common	1	1	1	1
Odiellus spinosus	Phalangiidae	Opiliones	common		1		1
Paroligolophus agrestis	Phalangiidae	Opiliones	common	1	1	1	1
Chorthippus brunneus	Acrididae	Orthoptera	common	1	1	1	1
Chorthippus parallelus	Acrididae	Orthoptera	common	1	1	1	1
Conocephalus discolor	Conocephalidae	Orthoptera	common	1	1	1	1
Meconema thalassinum	Conocephalidae	Orthoptera	common			1	
Leptophyes punctatissima	Phaneropteridae	Orthoptera	common		1	1	1
Metrioptera roeselii	Tettigoniidae	Orthoptera	common	1	1	1	
Pholidoptera griseoptera	Tettigoniidae	Orthoptera	common	1	1	1	1
Ectopsocus briggsi sensu stricto	Ectopsocidae	Psocoptera	common		1		1
Graphopsocus cruciatus	Stenopsocidae	Psocoptera	common	1	1	1	
Arion ater agg	Arionidae	Pulmonata	common			1	
Arion subfuscus	Arionidae	Pulmonata	common		1	1	

Arianta arbustorum	Helicidae	Pulmonata	local			1	
Deroceras reticulatum	Agriolimacidae	Pulmonata	common	1	1	1	1
Cepaea hortensis	Helicidae	Pulmonata	common		1	1	
Cornu aspersum	Helicidae	Pulmonata	common			1	
Arianta arbustorum	Helicidae	Pulmonata	common			1	
Monacha cantiana	Hygromiidae	Pulmonata	common	1	1	1	
Trochulus hispidus	Hygromiidae	Pulmonata	common		1		
Aegopinella nitidula	Oxychilidae	Pulmonata	common		1	1	
Potamopyrgus antipodarum	Hydrobiidae	Pulmonata	common	1	1		
Oxyloma elegans	Succineidae	Pulmonata	common	1	1	1	
Succinea putris	Succineidae	Pulmonata	common	1	1	1	
Bithynia tentaculata	Bithyniidae	Littorinimorpha	common	1			
Eriophyes inangulis	Eriophyidae	Trombidiformes	common	1		1	
Eriophyes laevis	Eriophyidae	Trombidiformes	common		1		
Pisidium nitidum	Sphaeriidae	Veneroida	common		1		
Pisidium subtruncatum	Sphaeriidae	Veneroida	common		1		
Sphaerium corneum	Sphaeriidae	Veneroida	common		1		
<b>TOTALS</b>				<b>244</b>	<b>328</b>	<b>261</b>	<b>93</b>

## **Annex 2. Status categories for rare and Notable species**

### **Red Data Book Category 1 (RDB 1) – Endangered**

#### **Definition.**

Taxa in danger of extinction *in Great Britain* and whose survival is unlikely if the causal factors continue operating.

Included are those taxa whose numbers have been reduced to a critical level or whose habitats have been so dramatically reduced that they are deemed to be in immediate danger of extinction. Also included are *some* taxa that are *possibly* extinct.

#### **Criteria.**

Species which are known *or believed to occur* as only a single population within one 10 km square of the National Grid.

Species which only occur in habitats known to be especially vulnerable.

Species which have shown a rapid or continuous decline over the last twenty years and are now *estimated* to exist in five or fewer 10 km squares.

Species which are *possibly* extinct *but have been recorded this century* and if rediscovered would need protection.

### **Red Data Book Category 2 (RDB 2) - Vulnerable**

#### **Definition.**

Taxa *believed* likely to move into the endangered category in the near future if the causal factors continue operating.

Included are taxa of which most or all of the populations are decreasing because of *over-exploitation*, extensive destruction of habitat or other environmental disturbance; taxa with populations that have been seriously depleted and whose ultimate security is not yet assured; and taxa with populations that are still abundant but are under threat from serious adverse factors throughout their range.

#### **Criteria.**

Species declining throughout their range.

Species in vulnerable habitats.

### **Red Data Book Category 3 (RDB 3) – Rare**

#### **Definition.**

Taxa with small populations *in Great Britain* that are not at present endangered or vulnerable, but are at risk.

These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range.

**Criterion.**

Species which are estimated to exist in only fifteen or fewer 10 km squares. *This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat*

**Nationally Scarce Category A - Notable A (Na)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in 30 or fewer 10 km squares of the National Grid or, for less well recorded groups, within seven or fewer vice-counties.

**Nationally Scarce Category B - Notable B (Nb)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 31 and 100 10 km squares of the National Grid or, for less well recorded groups, within eight and twenty vice-counties.

**Nationally Scarce - Notable (N)**

**Definition.**

Taxa which do not fall within **RDB** categories but which are none-the-less uncommon in Great Britain and are thought to occur in between 16 to 100 10 km squares of the National Grid. Species within this category are often too poorly known for their status to be more precisely estimated.

**Summary of the IUCN categories and criteria.**

- **REGIONALLY EXTINCT (RE)**  
A taxon is Extinct when there is no reasonable doubt that the last individual has died. In this review the last date for a record is set at fifty years before publication.
- **CRITICALLY ENDANGERED (CR)**  
A taxon is Critically Endangered when the best available evidence indicates that it meets any of the criteria A to E for Critically Endangered.
- **ENDANGERED (EN)**  
A taxon is Endangered when the best available evidence indicates that it meets any of the criteria A to E for Endangered.
- **VULNERABLE (VU)**  
A taxon is Vulnerable when the best available evidence indicates that it meets any of the criteria A to E for Vulnerable.
- **NEAR THREATENED (NT)**

A taxon is Near Threatened when it has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- **LEAST CONCERN (LC)**

A taxon is Least Concern when it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

- **DATA DEFICIENT (DD)**

A taxon is Data Deficient when there is inadequate information to make a direct, or indirect, assessment of its risk of extinction based on its distribution and/or population status. A taxon in this category may be well studied, and its biology well known, but appropriate data on abundance and/or distribution are lacking. Data Deficient is therefore not a category of threat. Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

- **NOT EVALUATED (NE)**

A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

#### **GB Rarity Status categories and criteria**

- **Nationally Rare (NR)**

Native species which have not been recorded from more than 15 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 15 hectads. This category includes species which are probably extinct.

- **Nationally Scarce (NS)**

Native species which are not regarded as Nationally Rare AND which have not been recorded from more than 100 British hectads since 31st December 1979 and where there is reasonable confidence that exhaustive recording would not find them in more than 100 hectads.

#### **Other species status terminology.**

- **Local.**

Species that are restricted in distribution either geographically or by habitat. Also used for species that are widespread but infrequently encountered, e.g. encountered in no more than 300 10km squares of the national Ordnance Survey grid since 1970. Or those species listed as such, based upon modern geographical data, by ISIS (2010) and/or relevant recording schemes.

- **Widely Scattered.**

Generally distributed but at low densities.

- **Southern.**

Mainly or completely confined to southern England and/or its westerly or easterly regions – as indicated.

- **Common.**



Generally widespread throughout the UK.

- **Unknown.**

Usually indicates a lack of available data for difficult taxa but may also imply recent taxonomic confusion.

**Annex 3. Descriptions of nationally scarce and rare species.**

**HYMENOPTERA**

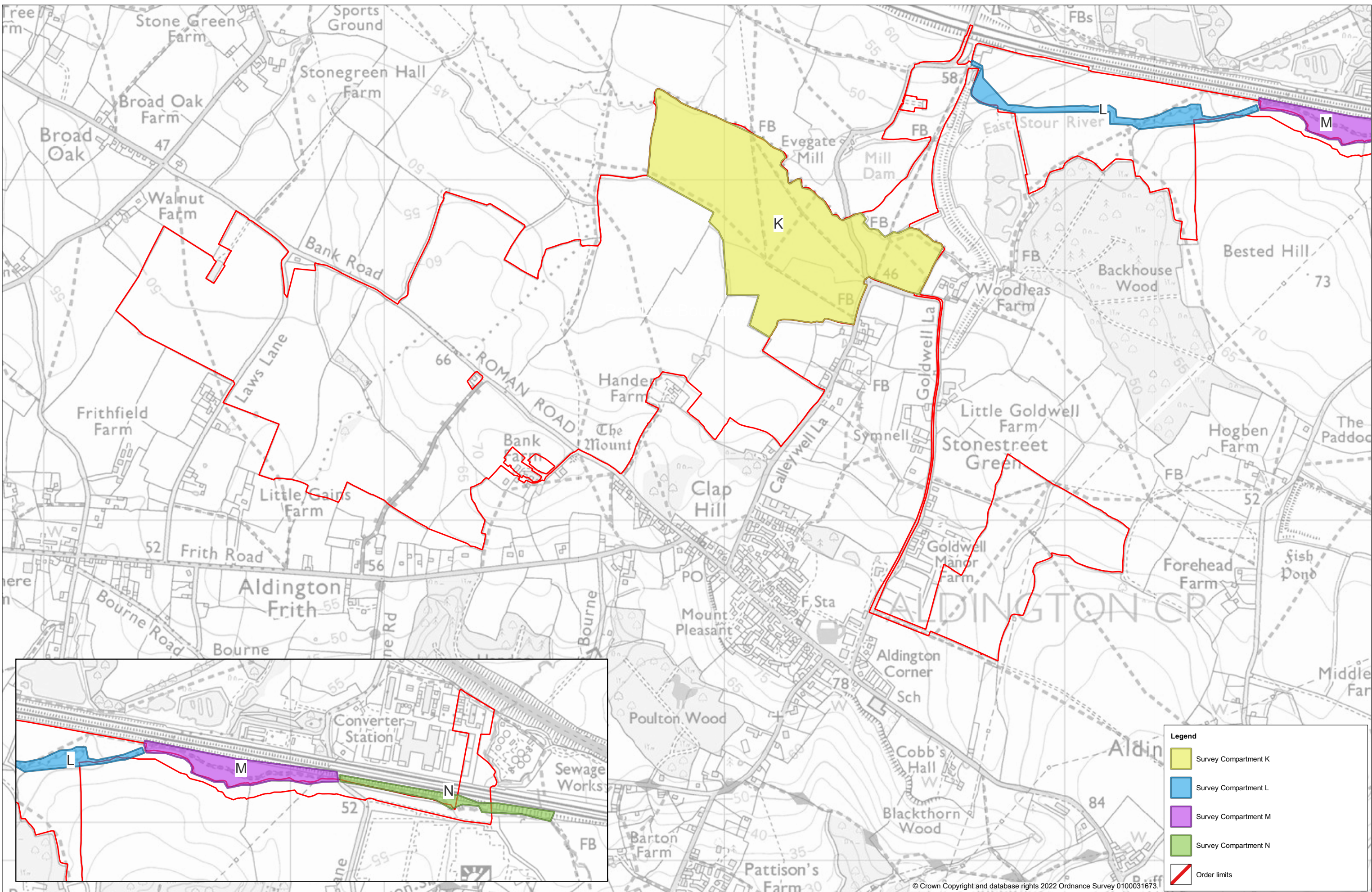
**Cleridae**

***Opilo mollis*** (Nationally Scarce B)

A handsome checkered beetle which predated woodworms, including Xestobium. Adults were found in Bank Farm Wood.

**Annex 4. Survey compartments**

**[SEE OVERLEAF]**



**Legend**

- Survey Compartment K
- Survey Compartment L
- Survey Compartment M
- Survey Compartment N
- Order limits

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0 100 200 m  
1:10000

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rev.	rev. date	auth.	rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

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**lloyd bore** landscape ecology arboriculture  
 33 ST. GEORGE'S PLACE, CANTERBURY, KENT, CT1 1UT 01227 464 340  
 www.lloydbore.co.uk mail@lloydbore.co.uk



# Stonestreet Green Solar

## Appendix 9.5c: Fungi Survey Report

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## 1. EXECUTIVE SUMMARY

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- 1.1 This fungi survey report (focussed on mushrooms and toadstools) has been prepared on behalf of EPL 001 Limited ('The Applicant') in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project').
- 1.2 This report includes a desk study, a habitat suitability survey and field surveys to determine whether the main target species occurred within the Site, their distribution and additionally record the fungi assemblage present.
- 1.3 Of the main target grassland species of fungi (*Clavaria*, *Hygrocybe*, *Entoloma* and *Geoglossum*) only two *Entoloma* species were recorded. Both *Entoloma* species are relatively common and widespread, and are not indicators of semi-natural, mycologically rich nutrient poor grasslands.
- 1.4 The Site is likely to be negligible importance for the target grassland species.
- 1.5 One species listed as 'Near Threatened' on the 'Red Data List of Threatened British Fungi' was recorded in habitat expected to be retained through the Project.
- 1.6 Due to the lack of significant species assemblage when assessed against other assessment criteria the Site has been assessed overall as being of 'local' importance for its fungi assemblage.
- 1.7 The survey data is considered valid for a period of 24 months from the conclusion of the survey period (i.e., until October 2024), after which an update Site walkover would be undertaken by a suitably experienced ecologist to assess whether any changes to on-Site habitats necessitate a re-assessment of the fungi baseline.
- 1.8 This report provides survey findings but does not include any detail of avoidance, mitigation, compensation or enhancement measures relating to fungi. Instead, this detail will be provided in the associated, **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline Landscape and Ecological Management Plan ('LEMP') (Doc Ref. 7.10)** that have been produced to inform the DCO application. As such, this survey report should be read in tandem with these two strategic documents.

## 2. INTRODUCTION

---

- 2.1 This fungi survey report (focussed on mushrooms and toadstools) has been prepared on behalf of EPL 001 Limited ('The Applicant') in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project').
- 2.2 The survey was commissioned in light of recommendations provided following the initial site walkover assessment in 2020 and detailed within **ES Volume 4, Appendix 9.4: Preliminary Ecological Appraisal (Doc Ref. 5.4)** ('PEA') which identified the presence of suitable habitat for rare fungus assemblages.
- 2.3 This fungi survey report is **Appendix 9.5c to ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### THE PROJECT

- 2.4 The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.5 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.
- 2.6 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

### DESCRIPTION OF THE SITE

- 2.7 The Site area is approximately 192 ha, located to the north and west of the village of Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- 2.8 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.
- 2.9 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.10 Fields are described in relation to the Project as follows:



- The South Western Area, Fields 1 to 9.
- The Central Area, Fields 10 to 19 and 23 to 25.
- The South Eastern Area, Fields 20 to 22.
- The Northern Area, Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- 'Cable Route Corridor' (export of electricity from the Project at 132 kilovolt ('kV') via underground cables (the 'Grid Connection Cable') to the Sellindge Substation). 'Cable Route Crossing' (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link ('HS1') railway or through Horizontal Directional Drilling ('HDD') beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

### SURVEY OBJECTIVES

2.11 The objectives of the survey and report are to: -

- Determine suitable habitat that are of particular importance for notable and important fungus assemblages, concentrating on grassland species;
- Identify fungus species on site using fruiting bodies; and
- Assess the importance of on-site habitats for fungi.

### 3. METHODOLOGY

---

- 3.1 A desk study was carried out by Kent and Medway Biological Records Centre ('KMBRC') in August 2023 to inform the **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**. This included a search for protected and priority species records, including fungus species, within 1 km of the Site within the last 10 years.

#### HABITAT ASSESSMENT

- 3.2 Utilising collected habitat data, the on-site habitats were assessed as potentially suitable for notable and important fungus species.
- 3.3 Habitat was assessed for its suitability for the main target grassland species of fungi – *Clavaria*, *Hygrocybe*, *Entoloma* and *Geoglossum* ('CHEG species') that have the potential to occur on Site and be impacted by the Project. These species are indicators of semi-natural, mycologically rich nutrient poor grasslands (English Nature, 2004). Other habitats that could potentially support an assemblage of notable species (e.g., woodland with a deadwood component) were also assessed and targeted for field survey where appropriate.
- 3.4 A Site visit was undertaken by a competent expert on various dates in 2020, to update the habitat baseline. Habitat baseline and condition assessment updates were also conducted during June and July 2023 by a competent expert. A survey of the previously inaccessible Sellindge substation area was carried out on 10<sup>th</sup> January 2024 by a competent expert.

#### FIELD SURVEY

- 3.5 The fungus survey was led by a competent expert and comprised two survey visits, with one visit on 14<sup>th</sup> August 2022 and a second visit split across 9<sup>th</sup> November 2022 and 17<sup>th</sup> November 2022. The survey was undertaken to establish whether the main target species occurred within the Site, their distribution and additionally record the fungi assemblage present.
- 3.6 Due to suitable habitats primarily being limited to linear field margins, a transect route (rather than quadrat sampling appropriate to large habitat areas) was devised through suitable habitat, targeted at the field margins but also dead standing trees, fallen branches and log piles.
- 3.7 Additionally, the transect included the parcel of woodland located between Fields 4 and 5.
- 3.8 The transect route was visually searched by a pair of surveyors for the fruiting bodies of fungi. The term 'fruiting bodies' is used to describe individual fungi and those found 'trooping' or clustered from one emergence point.
- 3.9 The same transect route was covered in the August and November dates. The November visit was split over two days due to the number of fungi found and corresponding extension of survey duration.
- 3.10 The total combined transect length for the fungus survey was 8.9km.

- 3.11 Fungi were identified in the field where possible. However, for situations where in-situ identification was inconclusive, a sample was taken to aid more detailed identification work.
- 3.12 Further identification was undertaken in the form of spore printing. The stipe of the fungal fruiting body was removed, and the cap placed on collection paper. The cap was then wet, and a glass placed over the top for 24 hours to encourage the process of spore printing. The shape and colour of the released spores were then used to identify the sample.

#### ASSESSMENT AND EVALUATION

- 3.13 The assessment of the fungal importance of the Site was made by identifying presence, distribution and abundance of any species afforded legal protection or those included on one or more of the lists of species of conservation interest: -
- Species listed on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended);
  - Priority fungi species in the UK, as listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006; and
  - Species listed as priority species or species of conservation interest within Kent.
- 3.14 Additionally, English Nature's criteria for assessing site importance for CHEG species (English Nature 2004) was used to assess the survey findings. The data set is too geographically incomplete to give criteria for regional or locally important sites for *Clavariaceae*, *Hygrocybe*, *Entoloma* and *Geoglossaceae* species.
- 3.15 Using Vesterholt et al (1999) criteria for assessing sites important for *Hygrocybe* species, it is possible to determine conservation importance levels from 'Internationally Important' to 'Of no Importance', and these criteria have been taken in account as part of this assessment.
- 3.16 Assemblages have been assessed against the criteria for Local Wildlife Site designation, as provided within the Kent Local Wildlife Site Selection Criteria (Kent Wildlife Trust, 2022). These criteria are often taken as a proxy means of attributing 'county' level importance.
- 3.17 Red data book (Red Data List of Threatened British Fungi) criteria have also been reviewed.
- 3.18 To inform an assessment of the fungal importance of the Site, the assignment of a geographical level of importance has also been based on the values presented in the Chartered Institute of Ecology and Environmental Management (CIEEM) 'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland' (CIEEM, 2018) as well as professional judgement.
- 3.19 A summary of legislation and guidance applicable to the assessment is provided within Annex 1.

## LIMITATIONS

- 3.20 An ecological survey represents a ‘snapshot’ in time of the ecological condition of a site. The ecological character of a site can change substantially throughout both the course of a year, and from year to year impacting on the extent and quality of habitats potential to support protected species.
- 3.21 Fungus fruiting bodies can appear throughout the year, with grassland species most abundant during August – December inclusive, and their growth is affected by weather conditions. Therefore, this ecological survey only provides a small amount of data on the potential species located within the Site and does not constitute a definitive species list present within the Site.
- 3.22 Some fungi can only be identified through genetic sampling and spore printing. Therefore, identification within the field can have an associated risk of errors in arriving at a species identification. However, this is not considered a significant limitation as the species recorded on Site are relatively distinctive and either unlikely to be misidentified or are identified to genus level only if appropriate (in the case of *Entomola* species). This does not affect the identification of the notable species identified in this report.
- 3.23 It was not possible to identify one fruiting body found on the 14<sup>th</sup> August 2022 (#14). This is due to the age of the specimen collected and the fact that the discernible characteristics of this fungus could indicate any one of a number of species within multiple genera.
- 3.24 Flooding had occurred along some lengths of the transect route prior to the 17<sup>th</sup> of November 2022 visit. Adverse conditions such as flooding will limit the production of fruiting bodies and therefore limit identification of the species utilising the Site. However, the areas that were affected by flooding were limited to arable fields with thin field margins which would generally be unsuitable habitat for the target grassland species.

## LIFESPAN OF SURVEY DATA

- 3.25 The lifespan of this report and the ecological survey information contained herein has been determined based on CIEEM's *Advice Note: On the Lifespan of Ecological Reports and Surveys* (CIEEM, 2019), and an assessment of how the presence, distribution and abundance of fungi may change over time.
- 3.26 If the commencement of site works is delayed beyond two years from the latest survey (November 2022) an update site walkover should be undertaken by a suitably experienced ecologist.
- 3.27 Following the update walkover, the ecologist will need to determine whether there have been any material changes to the ecological baseline, the potential impacts of the Project and/or the ecology-related legal risks associated with the Project

## 4. RESULTS

---

### DESK STUDY

- 4.1 The 2023 biological records search did not return any records of notable fungi within the Site, across the period 2008 to 2022.
- 4.2 This may be due to the general under recording of fungi as a species group.

### HABITAT ASSESSMENT

- 4.3 Habitat that is suitable for the target grassland species is considered well drained, undisturbed for long periods of time, poor in nutrients and with a short sward. This habitat is limited within the Site, which features large areas of ploughed arable fields and livestock grazing fields which are nutrient rich.
- 4.4 Arable fields with a wide grassland field margin were included within the survey area. However, it is possible that fertilizers and artificial nutrients used on the arable fields have leached into these margins, reducing their suitability for fungi.
- 4.5 Boundary trees, standing dead wood, fallen branches and tree stumps were also assessed during the surveys due to their potential use by saproxylic (dead wood associated) fungi.

### FIELD SURVEY

- 4.6 A total of 34 fungi species were recorded during the survey.
- 4.7 None of the species found during the survey visits are listed in Schedule 8 of the Wildlife and Countryside Act 1981 (as amended). Note: It is an offence to intentionally pick, uproot or destroy Schedule 8 Species.
- 4.8 None of the species found during the survey visits are listed on Schedule 41 of the NERC Act 2006. Schedule 41 species are of principle importance for the conservation of biodiversity in England.
- 4.9 One species, *Butyriboletus fechtneri* (previously *Boletus fechtneri*) found during the survey visits is listed on the 'Red Data List of Threatened British Fungi' (Evans, Henrici and Ing 2006). This publication is a preliminary assessment of the conservation status of British fungi species.

### 14<sup>TH</sup> AUGUST 2022

- 4.10 14 instances of fruiting bodies from 11 different species of fungi were found within the transect routes.
- 4.11 13 of these fruiting bodies were identified. The 14<sup>th</sup> has been could not be identified due to age and associated deterioration of the sample.
- 4.12 *Butyriboletus fechtneri* (pale bolete), found at approximately TR 04936 37687 (boundary of Field 4) is listed as Near Threatened on the Red Data List of Threatened British Fungi (Evans, Henrici and Ing 2006). This species is ectomycorrhizal (has a symbiotic relationship with the roots of a vascular plant) and forms a symbiotic relationship with various broad-leaved tree species. In this

instance, its relationship is likely with a large English oak (*Quercus robur*) located within the hedgerow east of the fruiting body.

Table 1: Survey findings: 14<sup>th</sup> August 2022

No.	Scientific Name	Common Name	Location
1	<i>Marasmiellus candidus</i>	Fairy Parachute	Within the hedgerow ride between Field 6 and Field 9 on bramble deadwood.
2	<i>Crinipellis scabella</i>	Hairy Parachute	Southern boundary of Field 6 within the grassland margin.
3	<i>Auricularia auricula-judae</i>	Jelly Ear	On deadwood within the southwest woodland boundary on Field 5.
4	<i>Auricularia auricula-judae</i>	Jelly Ear	On a living tree within the southwest woodland boundary on Field 5.
5	<i>Auricularia auricula-judae</i>	Jelly Ear	On deadwood within the southwest woodland boundary on Field 5.
6	<i>Butyriboletus fechtneri</i>	Pale Bolete	North eastern corner of Field 4 within the grassland margin, adjacent to a common oak.
7	<i>Trametes versicolor</i>	Turkey Tail	North western corner of Field 4 on a dead wood pile.
8	<i>Panaeolus foenisecii</i>	Mowers Mushroom	Within the northwest grass corner of Field 5.
9	<i>Coprinopsis radiata</i>	N/A	Along the northern boundary of Field 5 on top a straw and livestock dung pile.
10	<i>Coprinopsis radiata</i>	N/A	Southwestern corner of Field 9 growing from livestock dung.
11	<i>Dacrymyces stillatus</i>	Common Jelly Spot	On a deadwood sycamore ( <i>Acer pseudoplatanus</i> ) branch along the eastern boundary of Field 27.
12	<i>Facrymyces capitatus</i>	N/A	On a deadwood sycamore branch along the eastern boundary of Field 27.
13	<i>Exidia nucleata</i>	Crystal Brain	On a deadwood sycamore branch along the eastern boundary of Field 27.

14	<i>Unidentified</i>	Unidentified	Within the northeast grassland corner of Field 26.
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9<sup>TH</sup> NOVEMBER 2022

- 4.13 37 instances of fruiting bodies from 24 different species of fungi were found within the transect routes.
- 4.14 One species of *Entoloma* which can be a grassland indicator species, *Entoloma roseum* (rosy pinkgill) was identified during the field survey within the margin of Field 6 adjacent to the double line of boundary trees, with its approximate grid reference location of TR 05196 37309. This species is not confined to unimproved grassland and is widespread, but seldom recorded (Buczacki, Shields and Ovenden 2012).

Table 2: Survey findings: 09<sup>th</sup> November 2022

No.	Scientific Name	Common Name	Location
1	<i>Conocybe tenera</i>	Common Conecap	Southern boundary of Field 9 within the grassland margin.
2	<i>Panaeolus olivaceus</i>	N/A	Western boundary of Field 9 within the grassland margin.
3	<i>Chalciporus piperatus</i>	Peppery Bolete	Western boundary of Field 9 directly in front of the hedgerow.
4	<i>Schizophyllum commune</i>	Common Porecrust	On deadwood between Field 9 and Field 4.
5	<i>Entoloma roseum</i>	Rosy Pinkgill	Along the eastern boundary of Field 4 adjacent to the hedgerow in the field margin.
6	<i>Parisola leiocephala</i>	Bald Inkcap	Within grassland within the southern corner of Field 4.
7	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	Within grassland within the southern corner of Field 4.
8	<i>Bolbitius titubans</i>	Yellow Fieldcap	Within grassland within the southern corner of Field 4.
9	<i>Bolbitius titubans</i>	Yellow Fieldcap	Western boundary of Field 4 within the grassland margin.
10	<i>Galerinas subclavata</i>	N/A	Western boundary of Field 4 within the grassland margin.
11	<i>Volvariella gloiocephala</i>	Stubble Rosegill	Western boundary of Field 4 within the grassland margin.
12	<i>Bolbitius titubans</i>	Yellow Fieldcap	Western boundary of Field 4 within the grassland margin.
13	<i>Maraesmius oreades</i>	Fairy Ring Champignon	Western boundary of Field 4 within the grassland margin adjacent to the woodland.
14	<i>Volvopletius gluicephalus</i>	Stubble Rosegill	Western boundary of Field 4 within the grassland margin adjacent to the woodland.
15	<i>Auricularia auricula-judae</i>	Jelly Ear	On deadwood within the woodland boundary adjacent to Field 4.
16	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	Within the woodland boundary adjacent to Field 4.



17	<i>Trametes versicolor</i>	Turkey Tail	On a tree stump within the woodland between Field 4 and Field 5.
18	<i>Tremella mesenterica</i>	Yellow Brain	On deadwood within the woodland between Field 4 and Field 5.
19	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	Within the woodland between Field 4 and Field 5.
20	<i>Exidia nucleate</i>	Crystal Brain	On deadwood within the woodland between Field 4 and Field 5.
21	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	Within the woodland between Field 4 and Field 5.
22	<i>Laccaria amethystina</i>	Amethyst Deceiver	In woodland adjacent to the north of Field 5.
23	<i>Lactarius quietus</i>	Oakbug Milkcap	In woodland adjacent to the north of Field 5.
24	<i>Lactarius quietus</i>	Oakbug Milkcap	In woodland adjacent to the north of Field 5.
25	<i>Hypholoma fascicularex</i>	Sulphur Tuft	On a tree stump within the woodland in the west of Field 4.
26	<i>Daldinia concentrica</i>	King Alfred's Cakes	On deadwood within the woodland boundary in the west of Field 4.
27	<i>Bolbitius titubans</i>	Yellow Fieldcap	Western boundary within grassland adjacent to the ditch line in Field 3.
28	<i>Panaeolus olivaceus</i>	N/A	Western boundary within grassland adjacent to the ditch line in Field 4.
29	<i>Bolbitius titubans</i>	Yellow Fieldcap	In the northwestern corner within the field margin in Field 4.
30	<i>Maraesmius oreades</i>	Fairy Ring Champignon	Within the hedgerow understory along the northern boundary of Field 4.
31	<i>Peziza cerea</i>	N/A	Along the northern boundary of Field 5 on top a straw and livestock dung pile.

32	<i>Coprinopsis radiata</i>	N/A	Along the northern boundary of Field 5 on top a straw and livestock dung pile.
33	<i>Agaricus arvensis</i>	Horse Mushroom	Eastern boundary of Field 9 within the grassland margin.
34	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	Along the southern boundary of Field 27 adjacent to woodland.
35	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus	In the south eastern corner of Field 27 within grassland.
36	<i>Crepidotus applanatus</i>	Flat Oysterling	On a sycamore along the eastern boundary of Field 27.
37	<i>Exidia nucleata</i>	Crystal Brain	On a deadwood sycamore branch along the eastern boundary of Field 27.

17<sup>TH</sup> NOVEMBER 2022

4.15 38 instances of fruiting bodies of fungi were found within the transect routes.

4.16 One species of *Entoloma* which can be a grassland indicator species, *Entoloma sericeum* (silky pinkgill) was identified during the field survey within the margin of Field 106, with its approximate grid reference location of TR 06215 37779. This species is not confined to unimproved grassland and is widespread, but more common in the North and Scotland (Buczacki, Shields and Ovenden 2012).

Table 3: Survey findings: 17<sup>th</sup> November 2022

No.	Scientific Name	Common Name	Location
1	<i>Coprinellus micaeus</i>	Glistening Inkcap	Adjacent the stream running through the eastern area of the survey area on a dead tree stump.
2	<i>Phellinus Sp.</i>	N/A	On a deadwood log in the south eastern entrance to Field 19.
3	<i>Bolbitius titubans</i>	Yellow Fieldcap	In grassland margin in the south eastern corner to Field 19.
4	<i>Bolbitius titubans</i>	Yellow Fieldcap	In grassland margin in the south eastern corner to Field 19.
5	<i>Bolbitius titubans</i>	Yellow Fieldcap	Within the field margin along the southern boundary of Field 19.
6	<i>Entoloma sericeum</i>	Silky Pinkgill	Within field margin along the southern boundary of Field 19.

7	<i>Bolbitius titubans</i>	Yellow Fieldcap	Within the thicker grassland along the southern boundary of Field 19.
8	<i>Volvopluteus gloiocephalus</i>	Big Sheath Mushroom	Within the thicker grassland along the southern boundary of Field 19.
9	<i>Bolbitius titubans</i>	Yellow Fieldcap	In the north western corner of Field 106 directly adjacent to the stream.
10	<i>Maraesius oreades</i>	Fairy Ring Champignon	Along the north boundary of Field 19 directly adjacent to the stream.
11	<i>Bolbitius titubans</i>	Yellow Fieldcap	Along the north boundary of Field 106 within the grassland margin.
12	<i>Xylaria hypoxylon</i>	Candlesnuff fungus	Along the southern boundary within the grass margin of Field 23.
13	<i>Xylaria hypoxylon</i>	Candlesnuff fungus	Along the southern boundary within the grass margin of Field 23.

## 5. EVALUATION AND RECOMMENDATIONS

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### EVALUATION

- 5.1 Only two *Entoloma* species were found during the field survey, and therefore the Site is not classified as nationally important for CHEG species.
- 5.2 Adapting Versterholt et al (1999) criteria, it is likely the Site is of negligible importance for CHEG species.
- 5.3 One species, *Butyriboletus fechtneri*, found during the survey visits is listed on the 'Red Data List of Threatened British Fungi' (Evans, Henrici and Ing 2006) as 'Near Threatened'. The mycelium of this fruiting body likely has a symbiotic relationship with the English Oak in the hedgerow directly East of its location. If possible, this oak tree and its direct surroundings should not be disturbed – to avoid mycelium decay or destruction. It is expected to be retained within the Project under current proposals.
- 5.4 Overall, given the lack of Species of Principal Importance or a significant species assemblage when assessed against other assessment criteria (Kent LWS designation criteria or Red Data Book criteria), the Site has been assessed overall as being of 'local' importance for its fungi assemblage.

### RECOMMENDATIONS

- 5.5 It is recommended that where possible areas containing notable fungi species are protected and retained as part of the Project.
- 5.6 Detailed avoidance, mitigation and enhancement measures relating to fungi are included within the associated **ES Volume 2, Chapter 9: Biodiversity** and as part of the **Outline LEMP (Doc Ref. 7.10)**.
- 5.7 See Annex 2 for a full list of Schedule 8 fungi.

## 6. REFERENCES

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## 7. ANNEX 1 SUMMARY OF LEGISLATION AND GUIDANCE

### LEGISLATION

- 7.1 The level of protection afforded to protected species varies dependent on the associated legislation. A full list of protected species and their specific legal protection is provided within the Schedules and/or Sections of the associated legislation. Case law may further clarify the nature of the legal protection afforded to species.
- 7.2 The legal protection afforded to protected species overrides all planning decisions.  
 Wildlife and Countryside Act 1981 (as amended)
- 7.3 Part 1 of the Wildlife and Countryside Act 1981 (as amended) affords specific protection to flora listed on Schedule 8 (flora, fungi and lichens). Section 13 of this Act protects plants and fungi from picking and sale of plants or parts of 'plants' (including fungi) listed on Schedule 8, and prohibits:
- intentional picking, uprooting or destruction (Section 13 1a);
  - selling, offering for sale, possessing or transporting for the purpose of sale (live or dead, part or derivative) (Section 13 2a); and
  - advertising (any of these) for buying or selling (Section 13 2b).
- 7.4 In certain circumstances, licences can be granted to permit some actions prohibited under the Act.
- 7.5 A summary of fungi species listed as Schedule 8 of the wildlife and Countryside Act 1981 is provided below.

Name	Habitat Preference	Likely-hood of presence
<i>Battarrea phalloides</i> (sandy stilt puffball)	Dry, sandy soil with a range of broad-leaves trees and conifers. It is potentially associated with rotting wood.  Summer fruiting.	Unlikely to be present on-site due to the lack of sandy soil.
<i>Boletus regius</i> (royal bolete)	On soil in open woodland with sweet chestnut and oak.  Late summer - autumn fruiting.	Unlikely to be present on-site, records are limited to Hampshire but this is likely due to the under recording of fungi species.
<i>Hericium erinaceum</i> (bearded tooth)	On living or dead wood of broad-leaved trees, especially old standing trunk of beech.	On-site habitats may be suitable.

	Late summer - autumn fruiting.	
<i>Piptoporus quercinus</i> (oak polypore)	On old trunks, stumps or fallen branches of oak typically in old woodland.	On-site habitats may be suitable.

The Natural Environment and Rural Communities Act 2006 (as amended)

- 7.6 Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers, including local and regional authorities, in implementing their duty under Section 40 of the act to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 7.7 Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 has been used to identify habitats and species considered to be a conservation priority at a national scale. These are also called Habitats or Species of Principal Importance. The importance of these habitats and species are recognised in the National Planning Policy Framework (NPPF) 2021.

## GUIDANCE

Kent Local Wildlife Site Selection Criteria

- 7.8 In Kent an individual LWS can be selected for fungi if it meets the criteria within Kent Local Wildlife Site Selection Criteria (Kent Wildlife Trust, 2022). These guidelines state that the criterion for selection of Local Wildlife Sites applies to fungi as follows:

*‘Lower plants and fungi*

*Natural England’s criteria for the selection of Sites of Special Scientific Interest (SSSIs) treat lower plants together, and a similar approach is taken here. The criteria set out below are for use when identifying Wildlife Sites on the basis of communities of fungi, lichens, charophyte algae or bryophytes.*

*The criteria for the selection of SSSIs use a scoring system based upon the known frequency of species in the UK . It is appropriate to use a similar system here, but to adapt it to reflect local rather than national importance. The scoring system is set out in the table below; note that the most recent and authoritative records should be used in establishing the score for a site*

Status	Score
Nationally rare (i.e. UK Red Data Book)	100
Nationally scarce	50
Rare in Kent (i.e. Kent Red Data Book 1, 2, 3 or K status)	40

Scarce in Kent (Not KRDB, but known to occur in <50 DINTY tetrads)	25
--	----

*LP1 A site with one nationally rare species should be selected as a Local Wildlife Site if*

- *It supports the largest population of that species in a particular National Character Area; AND/OR*
- *It is the only occurrence of that species in the county.*

*LP2 Any site scoring at least 100 using the system set out above should be selected as a Local Wildlife Site.*

*LP3 A site should be selected as a Wildlife Site where it is considered by an appropriately expert organisation or individual as being of importance for the maintenance of the conservation status of one or more species of fungus, lichen or lower plant within the county or within a particular National Character Area, and where this decision is ratified through the decision making process for the identification and delineation of Local Wildlife Sites.*

*LP4 A churchyard or graveyard site should be selected as a Local Wildlife Site where it*

- *Supports at least 80 species of lichen; OR*
- *Supports at least 65 species of lichen including a rarity that is only present in 5 or fewer places in Kent (use NBN BLS records); OR*
- *Supports at least 25 species of bryophyte; OR*
- *Supports a well-developed community associated with lime-based render on north facing walls.*
- *Supports 15 species of fungi such as waxcaps and fairy clubs.'*

#### STATUS CATEGORIES FOR RARE AND NOTABLE SPECIES

##### IUCN Red List

**7.9** The International Union for Conservation of Nature (IUCN) Red List Categories and Criteria are an international system for classifying species at high risk of global extinction.

**7.10** The categories are as follows: Extinct (EX) Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD); and Not Evaluated (NE).

##### Red Data Book Species

**7.11** Evans et al (2006) detailed the status of over 800 taxa of fungi using the provisional 1992 Red Data List and IUCN guidelines according to the degree of threat. The following categories are used in the context of the British Isles in descending order of importance: Extinct, Critically Endangered, Endangered, Vulnerable or Near Threatened.



## 8. ANNEX 2 RECORDED SPECIES LIST AND TOTAL RECORDED FRUITING BODIES

Full species list for fungi identified across the August and November survey dates, with a total recording of for fruiting bodies found.

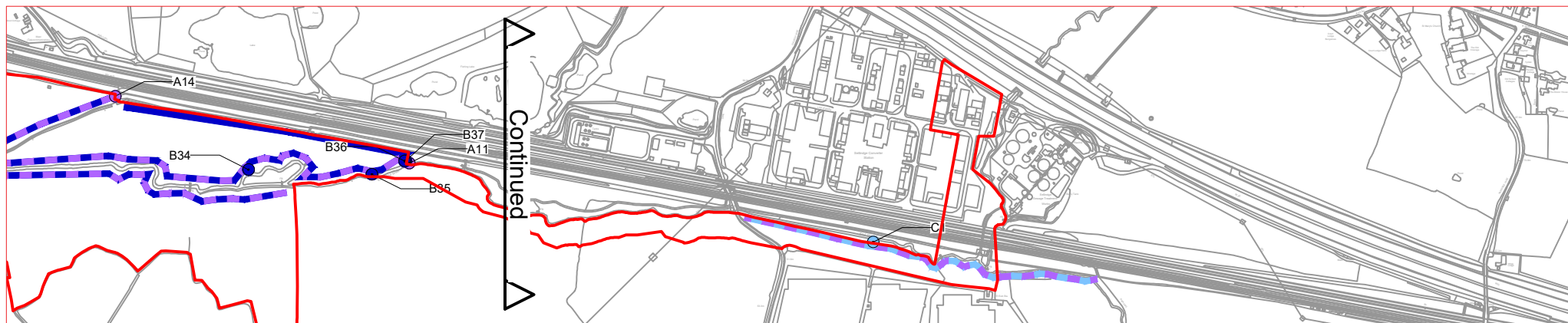
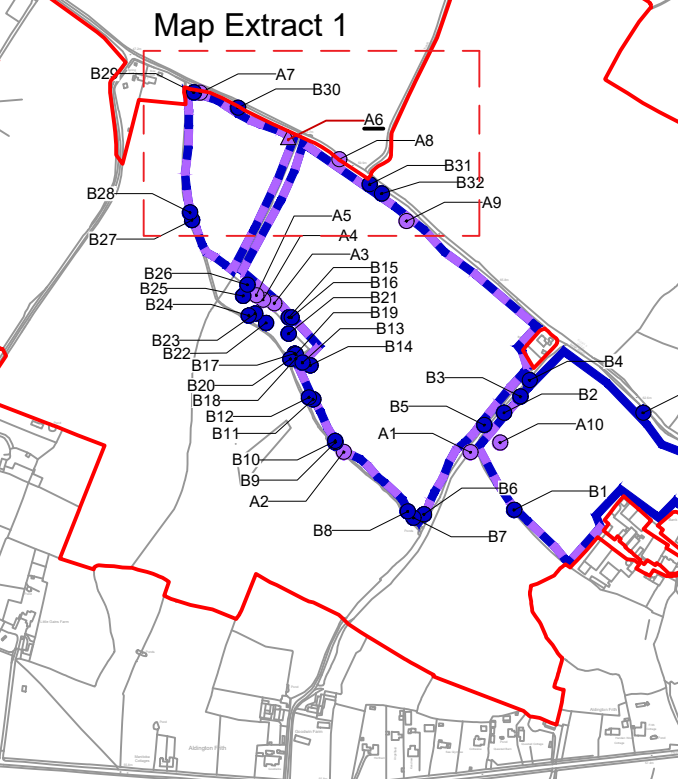
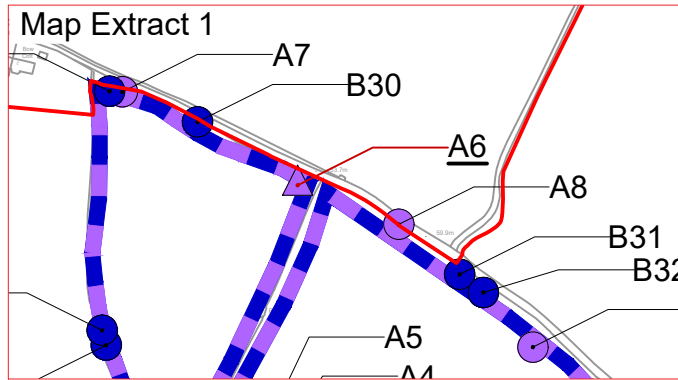
Species	Total Recorded Fruiting Bodies
<i>Marasmiellus candidus</i> (Fairy Parachute)	1
<i>Crinipellis scabella</i> (Hairy Parachute)	1
<i>Auricularia auricula-judae</i> (Jelly Ear)	4
<i>Butyriboletus fechtneri</i> (Pale Bolete)	1
<i>Trametes versicolor</i> (Turkey Tail)	1
<i>Panaeolus foenisecii</i> (Mowers Mushroom)	1
<i>Coprinopsis radiata</i>	2
<i>Dacrymyces stillatus</i> (Common Jelly Spot)	1
<i>Facrymyces capitatus</i>	1
<i>Exidia nucleate</i> (Crystal Brain)	3
<i>Conocybe tenera</i> (Common Conecap)	1
<i>Panaeolus olivaceus</i>	2
<i>Chalciporus piperatus</i> (Peppery Bolete)	1
<i>Schizophyllum commune</i> (Common Porecrust)	1
<i>Entoloma roseum</i> (Rosey Pinkgill)	1
<i>Parisola leiocephala</i> (Bald Inkcap)	1
<i>Xylaria hypoxylon</i> (Candlesnuff Fungus)	8
<i>Bolbitius titubans</i> (Yellow Fieldcap)	10
<i>Galerinas subclavata</i>	1
<i>Volvariella gloiocephala</i> (Stubble Rosegill)	1
<i>Maraesmius oreades</i> (Fairy Ring Champignon)	2
<i>Tremella mesenterica</i> (Yellow Brain)	1
<i>Laccaria amethystine</i> (Amethyst Deceiver)	1

<i>Lactarius quietus</i> (Oakbug Milkcap)	2
<i>Hypholoma fascicularex</i> (Sulphur Tuft)	1
<i>Daldinia concentrica</i> (King Alfred's Cakes)	1
<i>Peziza cerea</i>	1
<i>Agaricus arvensis</i> (Horse Mushroom)	1
<i>Crepidotus applanatus</i> (Flat Oysterling)	1
<i>Coprinellus micaeus</i> (Glistening Inkcap)	1
<i>Phellinus Sp.</i>	1
<i>Entoloma sericeum</i> (Silky Pinkgill)	1
<i>Volvopluteus gloiocephalus</i> (Big Sheath Mushroom)	1

## 9. ANNEX 3 FUNGI SURVEY RESULTS PLAN

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***[SEE OVERLEAF]***



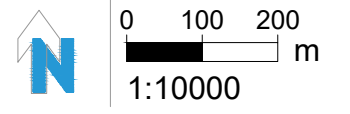
Fungus Survey Schedule A: 14 / 08 / 2022		
Ref.	Scientific Name	Common Name
A1	<i>Marasmiellus candidus</i>	Fairy Parachute
A2	<i>Crinipellis scabella</i>	Hairy Parachute
A3	<i>Auricularia auricula-judae</i>	Jelly Ear
A4	<i>Auricularia auricula-judae</i>	Jelly Ear
A5	<i>Auricularia auricula-judae</i>	Jelly Ear
A6	<i>Butyriboletus fechtneri</i>	Pale Bolete
A7	<i>Trametes versicolor</i>	Turkey Tail
A8	<i>Panaeolus foeniculii</i>	Mowers Mushroom
A9	<i>Coprinopsis radiata</i>	N/A
A10	<i>Coprinopsis radiata</i>	N/A
A11	<i>Dacrymyces stillatus</i>	Common Jelly Spot
A12	<i>Facrymyces capitatus</i>	N/A
A13	<i>Exidia nucleata</i>	Crystal Brain
A14	Unidentified	Unidentified

Fungus Survey Schedule B: 09 / 11 / 2022		
Ref.	Scientific Name	Common Name
B1	<i>Conocybe tenera</i>	Common Conecap
B2	<i>Panaeolus olivaceus</i>	N/A
B3	<i>Chalciporus piperatus</i>	Peppery Bolete
B4	<i>Schizophyllum commune</i>	Common Porecrust
B5	<i>Entoloma roseum</i>	Rosy Pinkgill
B6	<i>Parisola leiocephala</i>	Bald Inkcap
B7	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B8	<i>Bolbitius titubans</i>	Yellow Fieldcap
B9	<i>Bolbitius titubans</i>	Yellow Fieldcap
B10	<i>Galerinas subclavata</i>	N/A
B11	<i>Volvariella gloiocephala</i>	Stubble Rosegill
B12	<i>Bolbitius titubans</i>	Yellow Fieldcap
B13	<i>Maraesmius oreades</i>	Fairy Ring Champignon
B14	<i>Volvoletius gluiocephalus</i>	Stubble Rosegill
B15	<i>Auricularia auricula-judae</i>	Jelly Ear
B16	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B17	<i>Trametes versicolor</i>	Turkey Tail
B18	<i>Tremella mesenterica</i>	Yellow Brain
B19	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B20	<i>Exidia nucleata</i>	Crystal Brain
B21	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B22	<i>Laccaria amethystina</i>	Amethyst Deceiver
B23	<i>Lactarius quietus</i>	Oakbug Milkcap
B24	<i>Lactarius quietus</i>	Oakbug Milkcap
B25	<i>Hypholoma fasciculare</i>	Sulphur Tuft
B26	<i>Daldinia concentrica</i>	King Alfred's Cakes
B27	<i>Bolbitius titubans</i>	Yellow Fieldcap
B28	<i>Panaeolus olivaceus</i>	N/A
B29	<i>Bolbitius titubans</i>	Yellow Fieldcap
B30	<i>Maraesmius oreades</i>	Fairy Ring Champignon
B31	<i>Peziza cerea</i>	N/A
B32	<i>Coprinopsis radiata</i>	N/A
B33	<i>Agaricus arvensis</i>	Horse Mushroom
B34	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B35	<i>Xylaria hypoxylon</i>	Candlesnuff Fungus
B36	<i>Crepidotus applanatus</i>	Flat Oysterling
B37	<i>Exidia nucleata</i>	Crystal Brain

Fungus Survey Schedule C: 17 / 11 / 2022		
No.	Scientific Name	Common Name
C1	<i>Coprinellus micaeus</i>	Glistening Inkcap
C2	<i>Phellinus Sp.</i>	N/A
C3	<i>Bolbitius titubans</i>	Yellow Fieldcap
C4	<i>Bolbitius titubans</i>	Yellow Fieldcap
C5	<i>Bolbitius titubans</i>	Yellow Fieldcap
C6	<i>Entoloma sericeum</i>	Silky Pinkgill
C7	<i>Bolbitius titubans</i>	Yellow Fieldcap
C8	<i>Volvoletius gloiocephalus</i>	Big Sheath Mushroom
C9	<i>Bolbitius titubans</i>	Yellow Fieldcap
C10	<i>Maraesmius oreades</i>	Fairy Ring Champignon
C11	<i>Bolbitius titubans</i>	Yellow Fieldcap
C12	<i>Xylaria hypoxylon</i>	Candlesnuff fungus
C13	<i>Xylaria hypoxylon</i>	Candlesnuff fungus

**LEGEND:**

- ▲ Location of fungus species listed as Near Threatened in the Red Data List of Threatened British Fungi 2006
- Location of fungus
- Survey A: 14/08/2022
- Survey B: 09/11/2022
- Survey C: 17/11/2022
- ▭ Order limits



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rev. rev. date auth. rev. note  
C01 14/05/24 MW Client approved for submission.

rev. rev. date auth. rev. note

client **EPL 001 Limited**  
project **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
**Kent**

drawing no. **5535-LLB-XX-XX-DR-Ec-0051**  
drawing title **Fungi Survey Results Plan**

rev. **C01**  
suff. **A4**  
APPF **5(2)(f)(ii)**  
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sheet. **A3**  
drawn. **NA**  
checked. **MW**

**lloyd bore** landscape ecology arboriculture  
33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
www.lloydbore.co.uk mail@lloydbore.co.uk



# Stonestreet Green Solar

## Appendix 9.5d: Amphibian Survey Report

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## 1. EXECUTIVE SUMMARY

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- S.1 Lloydbore Ltd was commissioned by EPL 001 Limited (the 'Applicant') to conduct a great crested newt (*Triturus cristatus*) survey to inform the proposed Stonestreet Green Solar scheme ('Project'). This included desk study and additional assessment for the presence and status of common toad.
- S.2 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as ES Volume 3, **Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.
- S.3 The Site area is approximately 192 ha located Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- S.4 Surveys were conducted in 2020 and updated in 2022 and 2023.
- S.5 The objective of the surveys was to determine the presence or likely absence and population class size of great crested newt, and determine whether a European Protected Species Mitigation (EPSM) licence is likely to be required to facilitate development. Additionally, data was used to support the assessment and valuation of great crested newt and common toad populations to determine any further requirements for mitigation or enhancement.
- S.6 During 2020, habitat suitability assessments were conducted on 15 waterbodies of a total of 25 (WB1-WB25) within the Zone of Influence ('ZoI') of the Project. Of the 15 waterbodies, six waterbodies were assessed as suitable for great crested newt. A great crested newt presence / likely absence survey was carried out on these six waterbodies.
- S.7 Evidence of great crested newt presence was recorded in waterbody WB21 using eDNA methods in 2020, however no actual great crested newts or great crested new eggs were recorded within any of the six waterbodies during nocturnal survey visits.
- S.8 Surveys during 2022 were conducted to provide an updated baseline and to additionally determine any applicable population class sizes. Initial habitat suitability assessments were conducted on all accessible waterbodies and formal Habitat Suitability Index assessments were then conducted on seven waterbodies. Of these, six waterbodies were assessed as suitable for great crested newt.
- S.9 A great crested newt presence / likely absence survey was carried out on these six waterbodies in 2022. WB24 and WB25 were not identified at the time of surveying.
- S.10 Great crested newts were recorded within three waterbodies (WB14, WB15 and WB21) in 2022. A likely absence of great crested newts was recorded in three (WB1-3) out of six waterbodies. Whilst no great crested newts were recorded in



WB15 during the surveys, presence and breeding of great crested newts was confirmed through presence of great crested newt eggs.

- S.11 A peak count of eight adult great crested newts was recorded during a single survey visit. Based on population size class criteria set out in applicable guidance produced by English Nature (2001) the recorded great crested newt population is classed as 'small.'
- S.12 The 2023 eDNA surveys confirmed presence of great crested newts within WB14, WB15, WB18, WB21 and WB25.
- S.13 With the combined survey results great crested newts are confirmed present in WB14, WB15, WB18, WB21 and WB25 and assessed as likely present within WB24.
- S.14 A great crested newt European Protected Species Mitigation (EPSM) licence will be required to facilitate the Project. This licence can only be applied for once consent has been granted for the Project.
- S.15 The associated **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and **Outline Landscape and Ecological Management Plan ('LEMP') (Doc. Ref. 7.10)** provides detail of avoidance, mitigation and compensation measures relating to great crested newts and common toad.

## 2. INTRODUCTION

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### INSTRUCTION

- 2.1 This Amphibian Survey Report has been prepared on behalf of EPL 001 Limited (the 'Applicant') to conduct a great crested newt (*Triturus cristatus*) habitat suitability assessment, presence / likely absence survey and population size class assessment to relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('Project'). This report also includes desk study and additional assessment for the presence and status of common toad.
- 2.2 This Amphibian Survey Report is **Appendix 9.5d to ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.
- 2.3 A habitat assessment, desk study and presence / likely absence survey was concurrently conducted for common toad (*Bufo bufo*).
- 2.4 Site surveys were initially commissioned for the 2020 survey season and repeated during 2022 and 2023 to update the ecological baseline.

### THE PROJECT

- 2.5 The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.6 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 MW. The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the National Grid Sellindge Substation via a new 132 kiloVolt ('kV') substation constructed as part of the Project and cable connection under the HS1 railway.
- 2.7 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

### SITE DESCRIPTION

- 2.8 The Site area is approximately 192 ha, located, to the north and west of the village of Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- 2.9 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.

- 2.10 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.11 Fields are described in relation to the Project as follows:
- The South Western Area Field 1 to 9.
  - The Central Area Fields 10 to 19 and 23 to 25.
  - The South Eastern Area Fields 20 to 22.
  - The Northern Area Fields 26 to 29.
  - Project Substation (location of the Project Substation, in the north western section of Field 26).
  - 'Cable Route Corridor' (export of electricity from the Project at 132 kilovolt ('kV') via underground cables (the 'Grid Connection Cable') to the Sellindge Substation). 'Cable Route Crossing' (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link ('HS1') railway or through Horizontal Directional Drilling ('HDD') beneath HS1 for the Cable Route Corridor).
  - Sellindge Substation (location of the existing Sellindge Substation).

#### SITE AND WATER BODY LOCATIONS

- 2.12 **ES Volume 3, Figure 9.6: Habitat Prior to Development Plan (Doc Ref. 5.3)** and **ES Volume 3, Figure 9.7: Water Body Location Plan (Doc Ref. 5.3)** show the Site boundary including all habitats that were subject to habitat suitability assessments, and a detailed plan of water body locations within the assessed Zone of Influence ('Zoi') as described in **Section 3.48 'Survey Area'**.

#### OBJECTIVES

- 2.13 The objectives of the survey and report are to:
- Identify waterbodies located within 250m of the Project;
  - Wherever possible assess the suitability of these waterbodies for great crested newts;
  - Identify whether great crested newts are present within suitable waterbodies;
  - If great crested newts are present, determine the associated population size class; and
  - If great crested newts are present, assess the importance of the population; and
  - Determine whether a European Protected Species Mitigation (EPSM) licence is likely to be required to facilitate the Project.
  - Identify the presence of common toad (a Species of Principal Importance under Section 41 (S41) of the Natural Environment and Rural

Communities (NERC) Act (2006)) as part of the great crested newt surveys above, inclusive of desk study and overall habitat suitability.

### 3. METHODOLOGY

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#### INTRODUCTION

3.1 The methods used to determine the status of great crested newt and common toad are detailed within this section as follows:

- Desk study;
- Habitat suitability assessment (terrestrial and aquatic);
- Presence / likely absence survey and population class assessment; and
- Environmental DNA survey.

#### DESK STUDY

3.2 A desk study was carried out in 2022 and updated during 2023. This included a search for protected species records, including great crested newt and other amphibians, within 1 km of the Site within the last 10 years from the Kent and Medway Biological Records Centre ('KMBRC').

3.3 Biological records data were additionally obtained from the Kent and Reptile Amphibian Group ('KRAG') in 2020. The data obtained through these searches includes records of amphibians.

3.4 A search of Natural England's MAGIC website was also conducted for records of granted great crested newt European Protected Species Mitigation ('EPSM') licences within 1km of the Project as well as records of presence from class licence survey returns and eDNA survey.

3.5 A search of aerial imagery and the Ordnance Survey was also used to identify on- and off-site waterbodies.

#### HABITAT SUITABILITY ASSESSMENT

3.6 An assessment of habitat suitability was undertaken for both terrestrial and aquatic habitat using the methodologies below.

##### *GREAT CRESTED NEWT (TERRESTRIAL HABITAT)*

3.7 There is no published method for objective assessment of the quality of terrestrial habitat for great crested newts. However, certain habitat characteristics are known to influence the suitability of habitats for great crested newts. These comprise: -

- Vegetation structure and type;
- Habitat management;
- Connectivity to nearby good quality terrestrial and aquatic habitat;
- Prey abundance;
- Refuge opportunity;
- Presence or absence of suitable hibernation habitat; and
- Disturbance levels.

3.8 The quality of terrestrial habitat has been defined and categorised according to Site observations, satellite imagery and guidance from publications (English Nature, 2001; Langton et. al., 2011) on GCN terrestrial habitat requirements.

3.9 Terrestrial habitats required by great crested newts include grassland, hedgerows, scrub and woodland. These are important for foraging, shelter, hibernation and dispersal (English Nature, 2001).

#### *GREAT CRESTED NEWT (WATERBODIES / AQUATIC HABITAT)*

3.10 The Habitat Suitability Index (HSI) assessments were based on guidance within Oldham *et al.* (2000) and *ARG UK Advice Note 5* (ARG UK, 2010). These texts provide a method for assessing the quality and suitability of waterbodies for great crested newts.

3.11 The HSI comprises ten indices known to affect the suitability of a given water body for great crested newt, such as the presence of fish and the percentage of the pond surface that is shaded. It is a numerical index of between 0 and 1, where a score of 0 indicates unsuitable habitat and a score of 1 indicates optimal habitat. This provides a quantifiable means of predicting the presence of great crested newt prior to a full presence / likely absence survey.

3.12 The ten indices assessed as part of a HSI are as follows: =

- 1 - Location;
- 2 - Pond area;
- 3 - Pond desiccation;
- 4 - Water quality;
- 5 - Shade;
- 6 - Water fowl presence;
- 7 - Fish presence;
- 8 - Number of other ponds within 1km of survey pond (excluding those beyond major barriers);
- 9 - Terrestrial habitat; and
- 10 - Macrophyte cover.

3.13 Using these ten indices, a water body can be allocated an overall suitability score. Pond suitability scores range from 'poor' to 'excellent', as shown below:

#### *HSI Pond suitability scores*

- < 0.5 = poor;
- 0.5 - 0.59 = below average;
- 0.6 - 0.69 = average;
- 0.7 - 0.79 = good; and
- > 0.8 = excellent.

- 3.14 In general, ponds with high suitability scores are more likely to support breeding great crested newts than those with low scores. The system is not sufficiently precise to allow conclusions about whether ponds will support newts.
- 3.15 Generally, ponds with scores of 0.5 or greater are likely to require further survey work. However, this assessment framework is a measure of habitat suitability. It is not a substitute for newt surveys.
- 3.16 For waterbodies assessed as 'poor', no further surveys were conducted unless animals were seen during the assessment.
- 3.17 This assessment has been devised for great crested newt, but ponds will likely offer similar suitability for common toad, given this species preference for larger, well-established waterbodies (Baker et. al, 2014).
- 3.18 The HSI assessment of waterbodies WB1-WB16 was undertaken by a competent expert. Updated HSI assessments for waterbodies WB1-3, 9, 11, 14 and 21, were carried out on 16th March 2022.
- 3.19 An update HSI survey for great crested newts was conducted on 6th June and 12th July 2023. Waterbodies WB1, WB2, WB3, WB9, WB11, WB12, WB13, WB14 and WB21 were surveyed on 6th June 2023. Waterbodies WB15, WB18, WB23, WB25, WB26, WB27 and WB28 were surveyed on 12th July 2023. Surveys were carried out by a competent expert.

#### COMMON TOAD

- 3.20 There is no published method for objective assessment of the quality of habitats for common toad or the likelihood of common toad presence within habitats. However, published research details factors that are positively associated with common toad presence. These factors include: -
- The distance between waterbodies and terrestrial habitats, and water body density within the landscape (Salazar et al, 2016);
  - The availability of suitable breeding sites (waterbodies). Breeding sites should provide cover and suitable conditions for developing larvae (Gent, T and Gibson, S, 2003);
  - Availability of terrestrial habitats that provide shelter from extremes of temperature and provide suitable foraging resources (Gent, T and Gibson, S, 2003). These habitats may include, but are not limited to, woodland, hedgerows, pastures (Hartel, et al., 2008), brash and deadwood, scrub, sedge beds and tussocky grassland (JNCC, 2003); and
  - Presence of terrestrial habitats with sufficiently high humidity at ground level (Beebee, 2012).
- 3.21 The criteria above have been taken into account when assessing the suitability of habitats (both aquatic and terrestrial) for common toad.

#### GREAT CRESTED NEWT PRESENCE / LIKELY ABSENCE SURVEY

- 3.22 For all waterbodies with an HSI score of 0.5 or above, a presence / likely absence survey was conducted. The survey employed bottle trapping, torch counts and egg

searches, as detailed below. The survey entailed four separate visits to each of these waterbodies.

- 3.23 The presence / likely absence survey followed guidance provided in the *great crested newt mitigation guidelines* (English Nature, 2001) and that contained in Gent and Gibson (2003).
- 3.24 The survey was led by a competent expert.
- 3.25 The survey also recorded the presence of other amphibian species including common toad.

#### *BOTTLE TRAPPING*

- 3.26 Two-litre plastic bottles were used to create 'bottle traps'. Bottle tops were cut and inverted to create a funnel. Traps were set at approximately 2-3m intervals around the perimeter of suitable waterbodies where access was possible. Bottles were held in place using garden canes.
- 3.27 Each trap was sunk so that an air bubble remained at the top of the bottle, to minimise the risk of trapped animals being asphyxiated.
- 3.28 Bottle traps were left over night and checked the following morning. Traps were only set when night-time air temperatures were forecast to remain at / above 5°C.
- 3.29 The total number of great crested newts (and other incidental amphibians) present within traps was tallied for each water body. The life stage and sex of each great crested newt was also recorded wherever possible.

#### *TORCH COUNTS*

- 3.30 Accessible margins of waterbodies were searched after sunset with a 1,000,000 candle-power torch. The number of great crested newts seen was tallied for each water body. The life stage and sex of each great crested newt was also recorded wherever possible.
- 3.31 Other incidental amphibians (inclusive of common toad) were also recorded during the torch count.

#### *EGG SEARCH*

- 3.32 A search for great crested newt eggs was undertaken. Suitable vegetation and other materials, such as fallen leaves and plastic debris were searched.
- 3.33 Great crested newt eggs were identified by their larger size and colour compared to smooth newt (*Lissotriton vulgaris*) and palmate newt (*Lissotriton helveticus*) eggs. Great crested newt eggs are c.2mm in diameter and surrounded by an oval, clear jelly-like capsule c.4.5mm in length. Great crested newt eggs are lemon-yellow and appear brighter and cleaner than those of other species (Gent and Gibson, 2003).
- 3.34 The eggs of smooth and palmate newts are 1.5mm in diameter within a capsule 3mm long, and are usually dirty-yellow or cream coloured (Gent and Gibson, 2003).



- 3.35 Presence of other amphibian eggs (e.g., common toad) was also noted as part of the egg search and other field methods described above.

#### POPULATION SIZE CLASS ASSESSMENT

- 3.36 For waterbodies where the presence / likely absence survey confirmed presence of great crested newts, two further site visits were conducted, using the above methods. These additional survey visits were used to provide a population size class assessment.
- 3.37 Where a likely absence of great crested newts was recorded during the presence / likely absence survey, no further site visits were conducted.
- 3.38 The peak population count for GCN in a single survey (across all waterbodies surveyed) is used to inform the calculation of population class size and a size class assigned using the following criteria:
- Small – where the peak count is up to 10.
  - Medium – where the peak count is 11-100.
  - Large – where peak count exceeds 100.

#### ENVIRONMENTAL DNA SURVEY (EDNA)

- 3.39 Environmental DNA survey provides an alternative means to establish great crested newt presence or likely absence, though it cannot quantify population size.
- 3.40 Water samples were taken and analysed for environmental DNA (eDNA). eDNA analysis is approved by Natural England as a method for assessing presence or absence of GCN in water bodies. Water samples were taken at ponds following methods approved by Natural England (Biggs et al 2014), eDNA analysis was undertaken by a Natural England approved laboratory. Detailed laboratory methods are presented in the appended laboratory result sheets (Appendix 5).
- 3.41 An update environmental DNA (eDNA) survey for great crested newts was conducted on 6th June and 12th July 2023. Waterbodies WB1, WB2, WB3, WB9, WB11, WB12, WB13, WB14 and WB21 were surveyed on 6th June 2023. Waterbodies WB15, WB18, WB23, WB25, WB26, WB27 and WB28 were surveyed on 12th July 2023. Surveys were carried out by a competent expert.

#### SURVEY DATES, PERSONNEL AND WEATHER CONDITIONS

- 3.42 Table 1 provides a summary of the survey dates, waterbodies surveyed and weather conditions for each of the presence / likely absence and population class surveys conducted.
- 3.43 All presence / likely absence and population class survey visits were led by a suitably experienced ecologist as an Accredited Agent under the Natural England great crested newt Class 1 survey licence.
- 3.44 For detailed water and air temperatures recorded during each survey period, see Appendix 3.

**Table 1:** *Date and weather conditions during great crested newt survey visits 2020*

Date	Waterbodies surveyed	Weather
12/05/2020	WB 1, 2, 3 and 11, 14	Dry, no wind and 60% cloud cover.
15/05/2020 - 16/05/2020	WB 2, 3, 11, 14 and 15	Clear, dry, no cloud cover and light north-easterly air.
21/05/2020-22/05/2020	WB 2, 3, 11, 14 and 15	Dry, 100% cloud cover and light breeze.
27/05/2020 - 28/05/2020	WB 2 and 3	Dry, 15 degrees and still.
08/06/2020-09/06/2020	WB14	Dry, light northerly breeze, 80% cloud cover

**Table 2:** *Date and weather conditions during great crested newt survey visits 2022*

Date	Waterbodies surveyed	Weather
05/04/2022	WB 1, 2, 3, 14, 15, 21	Dry, 90% cloud cover, light breeze.
20/04/2022	WB 1, 2, 3, 14, 15, 21	Dry, 25% hazy cloud cover, light breeze.
11/05/2022	WB 1, 2, 3, 14, 15, 21	Mainly dry (some rain showers), wind mixed from moderate to calm and light, easing as survey progressed.
24/05/2022	WB 1, 2, 3, 14, 15, 21	Wet (heavy rain at the start of trap setting), cloud cover 80%, light wind.
30/05/2022	WB 14, 15, 21	Dry, cloud cover 75%, light breeze.
06/06/2022	WB 14, 15, 21	Dry, cloud cover 0%, no wind.

## ASSESSMENT AND EVALUATION

### SURVEY AREA

- 3.45 Research and guidelines suggest that great crested newts typically stay within 100m of a breeding pond (English Nature, 2001; English Nature, 2004 and Natural England 2013).

- 3.46 Research has also suggested that great crested newts are rarely found in terrestrial habitats located beyond 150m from a breeding pond (Jehle and Arntzen, 2000).
- 3.47 Research also indicates that the risk of great crested newt presence in terrestrial habitats located between 100m and 250m from an occupied pond is greater than in terrestrial habitats located beyond 250m (English Nature, 2001 and English Nature, 2004).
- 3.48 Therefore, it is likely that the risk of an offence is low when impacts occur within terrestrial habitats located at distances greater than 250m from waterbodies supporting great crested newts (Natural England, 2013).
- 3.49 Consequently, only ponds within 250m of the original ecological study area for the Project (which supports terrestrial habitats suitable for great crested newt) were surveyed.
- 3.50 Natural England Standing Advice, which is a material consideration at planning, suggests that surveys might be appropriate when suitable terrestrial habitats are likely to be impacted within 500m of great crested newt ponds. However, suitable great crested newt terrestrial habitat is available near most of the ponds located between 250m and 500m from the original ecological study area for the Project. It is therefore likely that any great crested newts using these more distant ponds would also be using the adjacent terrestrial habitats.
- 3.51 The newts in those ponds beyond 250m are therefore unlikely to be utilising the terrestrial habitats present on Site, which are considerably further away.
- 3.52 In addition, landscape features such as closely grazed grass paddocks and intensive arable cropland reduce the connectivity of these more distant ponds to the Site.

#### POPULATION SIZE CLASS ASSESSMENT

- 3.53 The maximum adult count methodology set out in the *great crested newt mitigation guidelines* was used to determine population size class assessments.
- 3.54 Maximum ('peak') counts of adult great crested newts were pooled across surveyed waterbodies that are located within 250m of each other and which have no significant barriers to great crested newt dispersal present between them (English Nature, 2001).
- 3.55 The peak count for the population present within the survey area was determined in line with best practice guidelines for interpretation of survey data (English Nature, 2001), by: -
1. Only using data obtained on nights where all / most waterbodies were surveyed;
  2. Comparing the number of adult great crested newts recorded via the torch count with the number recorded through bottle trapping on an individual water body during a single survey visit;
  3. Selecting the higher of the two values for that water body / visit (torch count **or** trapping total);

4. Adding together the higher values for all the waterbodies surveyed during a single visit, to produce a cumulative total;
5. Comparing the cumulative totals obtained across different survey visits; and
6. Selecting the highest cumulative total for any given site visit, to give a peak count for the population.

#### DETERMINING IMPORTANCE

- 3.56 *Guidelines for Ecological Impact Assessment in the UK and Ireland* (CIEEM, 2018) and the guidelines associated with the selection of Local Wildlife Sites were used to determine the importance of the great crested newt and common toad populations recorded within the Zone of Influence (Zol) of the Project.

#### ZONE OF INFLUENCE

- 3.57 The potential impacts of a Project are not always limited to the boundaries of the site concerned. The Project may also have the potential to impact on ecologically important sites, habitats or species beyond the Site boundaries. The area over which a Project may impact ecologically important features is known as the Zone of Influence (Zol).
- 3.58 In the absence of avoidance, mitigation and/or compensation, the Project could result in a permanent, long-term net loss of great crested newt terrestrial habitat. Other potential sources of impact could include the killing or injury of individual great crested newts during the construction phase.
- 3.59 Sensitive iterative design has been used to avoid impacts by design, and mitigation and compensation measures have been designed to minimise and compensate for residual impacts. Effective implementation of these measures reduces the Zol of the Project by minimising landscape-scale effects upon great crested newt populations. Details of these measures is provided within **ES Volume 2, Chapter 9: Biodiversity (Doc Ref 5.2)**.
- 3.60 The Zol for the Project is likely to be confined to the Site, and suitable great crested newt and common toad habitats located within 250m of the Project. Therefore, the survey extents were set at 250m from the Site boundary.

#### SURVEY LIMITATIONS

- 3.61 An ecological survey represents a 'snapshot' in time of the ecological condition of a site. The ecological character of a site can change substantially throughout both the course of a year, and from year to year impacting on the extent and quality of habitats and their potential to support protected species.
- 3.62 The aim of a desk study is to help characterise the baseline context of the site and provide valuable background information that would not be captured by a single site survey alone. Information obtained during the course of a desk study is dependent upon people and organisations having made and submitted records for the area of interest. As such, a lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular species does not automatically mean that these species still occur within the area of interest.

### *HABITAT SUITABILITY ASSESSMENTS AND EDNA*

#### **2020**

- 3.63 HSI assessments were not conducted on WB17-WB20 and WB22-23 inclusive. Access was denied by the landowner. These waterbodies were therefore excluded from any further assessment.

#### **2022**

- 3.64 HSI assessments were not conducted on WB16-20 and WB23. Access was denied by the landowner. These waterbodies were therefore excluded from any further assessment.
- 3.65 WB4, 5, 8, 10 & 22 are fishing lakes, some of which were inaccessible but all of which were deemed instantly unsuitable; WB6 had dried up and WB7 was not located. These waterbodies were therefore excluded from any further assessment.
- 3.66 The presence of WB24 and WB25 were not identified at the time of surveying, these ponds were assessed during the 2023 surveys.

#### **2023**

- 3.67 The HSI and eDNA survey of WB26 was undertaken outside of the main great crested newt breeding season and outside the optimal accepted window for eDNA surveys, thus a likely absence of great crested newts cannot be confirmed from the eDNA results for WB26. However, great crested newts are currently unlikely to use this waterbody during the breeding season due to the complete absence of aquatic vegetation and low quantity of invertebrate prey.
- 3.68 Note that no access to the Sellindge Substation was available during the 2023 great crested newt survey season. This area was however subject to habitat suitability assessment in January 2024 confirming no suitable great crested newt aquatic habitat (the adjacent watercourse (a tributary of the East Stour River) is understood to be flowing and not suitable for great crested newt) and a limited extent of suitable terrestrial habitat (scrub and woodland). A review of the presence of additional waterbodies present within 250m of this area has been carried out (using magic, OS mapping and aerial photography) and no additional ponds have been identified.

### *PRESENCE / LIKELY ABSENCE AND FURTHER SURVEYS*

#### **2020**

- 3.69 No bottle trapping was carried out in waterbodies WB2 and WB3 due to limited access to the waterbody edges and very shallow depths. Torching, netting and egg searching was conducted where accessible. Three bottle traps were placed in waterbody WB11 as this waterbody is very small and access to waterbody edges was limited; torching and egg searching were also carried out on this water body.
- 3.70 It was only possible to bottle trap and egg search in waterbody WB14 due to 100% vegetation (duckweed) cover.
- 3.71 No bottle trapping was carried out at waterbody WB15 as this is a public pond, however three techniques were deployed; netting, torching and egg searching.

- 3.72 These limitations have been partially countered with the updated 2022 surveys.
- 2022**
- 3.73 No netting was carried out on any waterbodies since this was considered likely to be destructive given the nature of the waterbodies being surveyed. However, three techniques (egg searching, torching and bottle trapping) were still undertaken.
- 3.74 No bottle trapping or netting was carried out in waterbody WB2 as the water was very shallow and inaccessible in places. Torching was however conducted, and bottle trapping and torching was conducted in WB3, directly adjacent to WB2, and may serve as an indication of species present for both waterbodies.
- 3.75 No bottle trapping was carried out in waterbody WB15 since this is a public pond and there was a risk of endangering animals through public tampering with bottle traps. Netting, as an alternative option, was not possible as accessible areas of the waterbody were very shallow and silted, however torching was carried out instead.
- 3.76 There are no material limitations to the survey or assessment and this report is considered suitable to fulfil the requirements of planning.

#### LIFESPAN OF SURVEY DATA

- 3.77 The lifespan of this report and the ecological survey information contained herein has been determined based on CIEEM's *Advice Note: On the Lifespan of Ecological Reports and Surveys* (CIEEM, 2019). Note that an assessment of the presence, distribution and abundance of reptiles may change over time.
- 3.78 The survey data is considered valid for a period of 18 months from the end of the survey period (i.e., until December 2024), after which a suitably experienced ecologist will need to undertake a Site visit, determine whether the extent and quality of amphibian habitat present has changed significantly and determine whether an update reptile survey is required. Note that unless habitats change significantly in future years, the amphibian baseline presented in this report is expected to remain unchanged as amphibians are unlikely to further colonise or vacate the Site between years, compared to more mobile species (i.e. birds and bats).
- 3.79 Dependent on the results of the update assessment, an update amphibian survey may be required to provide up-to-date baseline survey and to ensure that the Project has a robust understanding of project legal risks and mitigation requirements in relation to amphibians.

## 4. RESULTS

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### DESK STUDY

- 4.1 The 2023 biological records search returned 15 records of great crested newt from within 1km of the Site, recorded between 2008 and 2019. The closest records, from 2019, evidenced the presence of great crested newts c.61m east of the Site.
- 4.2 A search of Natural England's MAGIC website returned three records of granted great crested newt EPS mitigation licences located within 1km of the Site. The closest granted great crested newt EPS mitigation licence is located c.16m east of the Site boundary at its closest point and evidenced the damage of a resting place between 2018 and 2019.
- 4.3 The 2023 biological records search returned recent and historic records of common toad located within 1km of the Site. The most recent common toad record is a 2020 record located c.880m east from Site.

### HABITAT SUITABILITY ASSESSMENT

#### *GREAT CRESTED NEWT (TERRESTRIAL HABITAT)*

- 4.4 The majority of the on-site habitats comprise intensive arable cropland with minimal refuge potential for great crested newts at ground level or within the topsoil layers, and are subject to frequent disturbance (including ploughing, seeding, harvesting and pesticide application). These habitats are generally of negligible quality for great crested newt, though the species may commute across small areas of such habitats (noting that the species will generally avoid crossing extensive areas with limited ground cover, such as arable cropland).
- 4.5 The network of field boundary habitats (grassland, ruderal vegetation, scrub, hedgerow and woodland copse) provides suitable terrestrial habitat for great crested newt, with these habitats ranging between low and good quality for this species. See assessment of terrestrial habitat, Annex 7.

*GREAT CRESTED NEWT (AQUATIC HABITAT)*

4.6 Results of the HSI assessments of waterbodies are provided within Table 3 below.

*Table 3: HSI habitat assessment results. (n/a = not applicable as deemed unsuitable for GCN, n/s = not surveyed).*

Water body	2020	2022	2023
WB1	Average	Good	Good
WB2	Good	Good	Good
WB3	Excellent	Excellent	Good
WB4	Poor	n/a	n/a
WB5	Below Average	n/a	n/a
WB6	Good	Dry	n/s
WB7	Excellent	n/s	n/s
WB8	Below Average	n/a	n/a
WB9	Average	Poor	Good
WB10	Poor	n/a	n/a
WB11	Average	Poor	Poor
WB12	Below Average	Dry ditch	Below average
WB13	Good	Dry ditch	Poor
WB14	Good	Excellent	Excellent
WB15	Excellent	GCN egg found	Good
WB16	Poor	n/s	n/s
WB18	n/s	n/s	Good
WB21	Average	Good	Average
WB23	n/s	n/s	Poor
WB25	n/s	n/s	Below Average
WB26	n/s	n/s	Good
WB27	n/s	n/s	Below Average
WB28	n/s	n/s	Good

\*See Appendix 6 for location of waterbodies.



**EDNA SURVEY***2020*

- 4.7 Results indicated GCN presence in waterbody WB21.
- 4.8 No great crested newt DNA was detected in waterbodies WB3 and WB11. All controls performed as expected and therefore the results were conclusive.
- 4.9 Multiple rounds of DNA dilution for WB14 returned inconclusive results.
- 4.10 Refer to Annex 5 for copies of the laboratory result certificates.
- 4.11 Table 1 provides the results from the great crested newt HSAs and eDNA survey.

*2023*

- 4.12 Great crested newt presence was confirmed within four of the nine waterbodies where eDNA surveys were undertaken.

*Table 4: eDNA results from great crested newt surveys undertaken in 2023.*

Waterbody	eDNA Result
WB1	Negative
WB2	Negative
WB3	Negative
WB9	Negative
WB11	Dry
WB12	Dry
WB13	Dry
WB14	Positive
WB15	Positive, presence confirmed 2022
WB18	Presence confirmed 2022
WB21	Positive
WB23	Dry
WB25	Positive
WB26	Negative
WB27	No Access
WB28	No Access

- 4.13 The eDNA survey of WB26 was undertaken outside of the main great crested newt breeding season and outside the optimal accepted window for eDNA surveys, thus a likely absence of great crested newts cannot be confirmed from the eDNA results for WB26. However, great crested newts are currently unlikely to use this waterbody during the breeding season due to the complete absence of aquatic vegetation and low quantity of invertebrate prey.

#### PRESENCE / LIKELY ABSENCE SURVEY RESULTS

##### 2020

- 4.14 No great crested newts (adults, juveniles, larvae or eggs) were recorded during the 2020 presence / likely absence surveys of WB 1, 2, 3, 11, 14 and 15.

##### 2022

- 4.15 Table 5 provides a summary of the results from the presence / likely absence and population size class assessment surveys. Annex 2 and 3 provide detailed results from each survey visit and Annex 8 shows the location of GCN recorded.
- 4.16 Great crested newt presence was confirmed within two of the six waterbodies surveyed in 2022.
- 4.17 A likely absence of great crested newt was recorded for waterbodies WB1-3 and WB11.

*Table 5: Summary of great crested newt survey conducted during Apr-Jun 2022, with peak counts for individual waterbodies. These peak counts = maximum number of adult great crested newts recorded within a given water body during a single survey visit (using torching OR bottle trapping)*

Water body	Eggs present	Peak no. of adults (torching)	Peak no. of adults (trapping)	Overall waterbody peak count
WB1	n/s	0	0	0
WB2	n/a	0	0	0
WB3	n/s	0	0	0
WB14	n/s	0	5	5
WB15	Yes (at HSI)	0	0	0 (present)
WB21	n/s	3	2	3

- 4.18 The cumulative maximum number of adult great crested newts recorded across the six waterbodies was **eight**. This is comprised of a peak count of five within WB14 and a peak of three within WB21.
- 4.19 This peak count was determined using the methodology set out within the Method section of this report.

- 4.20 An incidental recording of a great crested newt within terrestrial habitat was made in proximity to WB25 whilst carrying out a reptile survey equipment collection visit during November 2020. Great crested newt have been assessed as present within WB25 on a precautionary basis.

#### COMMON TOAD

- 4.21 During the Habitat Suitability Assessments and GCN surveys, incidental common toad presence/absence was recorded.

*Table 6: Summary of incidental common toad results observed during HSA (Mar 2022) and GCN surveys (Apr-Jun 2022), with peak counts for individual waterbodies.*

Water Body Reference	Common toad found (year(s))	Life stage (Eggs, larvae, adult)	Peak count & year(s) (if adults recorded) (Highest peak count recorded during GCN surveys)
WB1	Yes (2022)	Eggs, larvae, adult	2 (2022)
WB4	Yes (2022)	Adult	1 (2022)
WB5	Yes (2022)	Eggs, adult	1 (2022)
WB10	Yes (2022)	Adult	2 (2022)
WB15	Yes (2020 & 2022)	Adult	3 (2022)

#### OTHER AMPHIBIAN SPECIES

- 4.22 Smooth newts were recorded in WB1, WB3, and WB21 and were frequently recorded in WB15.
- 4.23 Palmate newts were recorded in WB3, and WB21 and were frequently recorded in WB15.
- 4.24 Common frog was recorded in WB1, WB3, WB14, WB15 and WB21

## 5. PHOTOGRAPHS

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*Photo 1 Male GCN at WB21*



*Photo 2 Male GCN at WB21*



*Photo 3 WB14 (Example of waterbody containing great crested newt)*

## 6. EVALUATION

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- 6.1 An evaluation of the survey results, including a population class size assessment and an evaluation of the ecological importance of populations recorded within the Zone of Influence ('ZoI') of the Project is provided below.
- 6.2 The associated **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and the **Outline LEMP (Doc Ref. 7.10)** details avoidance, mitigation and compensation measures relating to great crested newts and common toad.

### GREAT CRESTED NEWT

- 6.3 Great crested newts presence was recorded within WB14, WB15 and WB21 during the 2022 surveys. Confirmed breeding was recorded in WB15.
- 6.4 The 2023 eDNA surveys confirmed presence of great crested newts within WB14, WB15, WB18, WB21 and WB25.
- 6.5 Most of the waterbodies surveyed lie within c.250m of each other. Additional ponds (which could not be assessed / surveyed) sit between those that were surveyed. These additional ponds may support great crested newts and / or act as landscape-scale habitat links. Great crested newts across the survey area are therefore likely to form part of the same meta-population.
- 6.6 The cumulative peak (combined pond peak total) count for the population within the survey area was eight (2022). This cumulative peak count falls within the 'small' population size class (English Nature, 2001). Note that the peak count was also small for WB14 and WB21 individually.
- 6.7 As a precautionary assessment based on lack of access to WB25 during surveys and nearby terrestrial habitat, the species is assessed as potentially present within WB25.
- 6.8 With the combined survey results great crested newts are confirmed present in WB14, WB15, WB18, WB21 and WB25 and assessed as likely present within WB24.
- 6.9 Overall, the great crested newt population within 250m of the Project is of '**local**' level importance (CIEEM, 2018), primarily due to the very small numbers recorded within a relatively large geographical survey extent balanced by a precautionary assessment in respect of WB24.
- 6.10 A great crested newt EPSM Licence will be required to facilitate development. This licence can only be applied for once development consent has been granted.

### COMMON TOAD

- 6.11 A peak count of three common toad was recorded within WB15.
- 6.12 Based on applicable guidance produced by Amphibian and Reptile Conservation Trust (2011), this constitutes a 'low' population of common toad.
- 6.13 However, because it was not possible to survey all waterbodies for common toad due to access and health and safety constraints, on a precautionary basis, it is

assumed that a 'good' population of this species could be present within the survey area.

- 6.14 There are numerous potentially suitable waterbodies present within the wider surrounding local landscape, which are likely to support a larger local metapopulation, but the true size of the population within the survey area is not fully understood. The assumed presence of a 'good' population within the survey area is therefore considered reasonable, and this assumed population is assessed as being of local (district) importance.

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## 8. ANNEX 1: LEGISLATION

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- 8.1 The Conservation of Habitats and Species Regulations 2017 (as amended) and the Wildlife and Countryside Act 1981 (as amended) afford legal protection to great crested newts.
- 8.2 The specific legal protection afforded to great crested newts can be found within the Sections and Schedules of the relevant legislation and relevant case law.
- 8.3 In general, any person and / or activity that:
- Damages or destroys a breeding or resting place of great crested newt/s (This is sometimes referred to as the strict liability or absolute offence);
  - Deliberately captures, injures or kills a great crested newt (including their eggs);
  - Deliberately disturbs great crested newts, and in particular disturbance likely to impair the animals' ability to survive, breed or nurture young, their ability to hibernate and migrate and disturbance likely to have a significant effect on local distribution and abundance;
  - Intentionally or recklessly disturbs great crested newt/s while occupying a structure or place used for shelter and / or protection (Wildlife and Countryside Act 1981 (as amended)); and
  - Intentionally or recklessly obstructs access to any structure or place that a great crested newt/s use for shelter or protection (Wildlife and Countryside Act 1981 (as amended)).
- ...may be guilty of an offence.
- 8.4 The above legislation and offences apply to all great crested newt life stages (egg, larval, juvenile and adult life stages).
- 8.5 Actions affecting multiple great crested newts can be construed as separate offences and therefore penalties can be applied per animal impacted.
- 8.6 Under certain circumstances licences can be granted by the Statutory Nature Conservation Organisation (Natural England in England) to permit actions that would otherwise be unlawful.
- 8.7 There are some very specific defences associated with the Conservation of Habitats and Species Regulations 2017 (as amended). However, these are unlikely to apply to construction related projects. The Sections of the Regulations provide further details of these defences.
- 8.8 The Wildlife and Countryside Act (1981) includes defence for those aspects of the legislation that apply to great crested newt.
- 8.9 These defences are unlikely to apply to construction related projects and do not apply to those acts included in the Conservation of Habitats and Species Regulations 2017 (as amended).
- 8.10 The Schedules of the Act provide further details of defences.

*THE NATURAL ENVIRONMENT AND RURAL COMMUNITIES ACT 2006 (AS AMENDED)*

- 8.11 Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers, including local and regional authorities, in implementing their duty under Section 40 of the act to have regard to the conservation of biodiversity in England when carrying out their normal functions.
- 8.12 Local authorities have obligations under Sections 40 and 41 (England only) of the Natural Environment and Rural Communities Act (NERC) 2006 to have regard to the purpose of conserving biodiversity in carrying out their duties.
- 8.13 S41 lists 56 habitats and 943 species of Principal Importance.
- 8.14 Great crested newt and common toad are listed as a Species of Principal Importance.

**9. ANNEX 2: DETAILED SURVEY RESULTS**

*Table 7: Great crested newt survey results - 2020. Number of adult newts observed using torching and those caught using trapping (n/s = not surveyed n/a = not applicable).*

Survey date	Method	Water body number and GCN recorded					
		WB1	WB2	WB3	WB11	WB14	WB15
12/05/2020	Torching	0	0	0	0	0	0
	Bottle trapping	n/s	n/s	n/s	0	n/s	n/s
15/05/2020 - 16/05/2020	Torching	n/s	0	0	0	n/s	0
	Bottle trapping	n/s	n/s	n/s	0	0	n/s
21/05/2020 - 22/05/2020	Torching	n/s	0	n/s	0	0	0
	Bottle trapping	n/s	n/s	n/s	0	0	n/s
27/05/2020	Torching	n/s	0	0	n/s	n/s	n/s
	Bottle trapping	n/s	n/s	n/s	n/s	n/s	n/s
08/06/2020 - 09/06/2020	Torching	n/s	n/s	n/s	n/s	n/a	n/s
	Bottle trapping	n/s	n/s	n/s	n/s	0	n/s

*Table 8: Great crested newt survey results - 2022. Number of adult newts observed using torching and those caught using trapping (n/s = not surveyed n/a = not applicable).*

Survey date	Method	Water body number and GCN recorded						
		WB1	WB2	WB3	WB9	WB14	WB15	WB21
05/04/2022	Torching	0	0	0	0	0	0	3
	Bottle trapping	0	n/a	0	0	5	n/a	1
20/04/2022	Torching	0	0	0	n/s	0	0	0
	Bottle trapping	0	n/a	0	n/s	0	0	1
11/05/2022	Torching	0	0	0	n/s	0	0	0
	Bottle trapping	0	n/a	0	n/s	3	0	2
24/05/2022	Torching	0	n/s	0	n/s	0	0	0
	Bottle trapping	0	n/a	0	n/s	2	0	0
30/05/2022	Torching	n/a	n/a	n/a	n/s	0	0	0
	Bottle trapping	n/a	n/a	n/a	n/s	0	0	0
06/06/2022	Torching	n/a	n/a	n/a	n/s	0	0	0
	Bottle trapping	n/a	n/a	n/a	n/s	1	0	0

**10. ANNEX 3: DETAILED WEATHER CONDITIONS**

*Table 9: Great crested newt survey 2020 - weather conditions. (n/s = not surveyed n/a = not applicable).*

Survey date	Temp range °C	Water body number					
		WB1	WB2	WB3	WB11	WB14	WB15
12/5/2020	Torch Air/Water	6.6°C / 4.0°C	7°C / 10°C	7°C / 10°C	6.5°C / 8.8°C	5.1°C / 6.1°C	n/s
	Trap Air/Water	n/s	n/s	n/s	n/s	n/s	n/s
15/05/2020 - 16/05/2020	Torch Air/Water	n/s	5.2°C / 11.2°C	4°C / 9.4°C	8°C / 9°C	n/s	10°C / 11°C
	Trap Air/Water	n/s	n/s	n/s	8°C / 9°C	12°C / 8°C	n/s
21/05/2020 - 22/05/2020	Torch Air/Water	n/s	18°C / 17°C	n/s	17°C / 16°C	15°C / 13.3°C	14.7°C / 19.6°C
	Trap Air/Water	n/s	n/s	n/s	16°C / 13.6°C	14.5°C / 13.4°C	n/s
27/05/2020	Torch Air/Water	n/s	15°C / 13°C	n/s	n/s	n/s	n/s
	Trap Air/Water	n/s	n/s	n/s	n/s	n/s	n/s
08/06/2020 - 09/06/2020	Torch Air/Water	n/s	n/s	n/s	n/s	n/s	n/s
	Trap Air/Water	n/s	n/s	n/s	n/s	10-13°C / 8.5-11.7°C	n/s

Table 10: Great crested newt survey 2022 - weather conditions. (n/s = not surveyed n/a = not applicable).

Survey date	Temp range °C	Water body number					
		WB1	WB2	WB3	WB14	WB15	WB21
05/04/2022	Torch Air/Water	14.2°C / 13.1°C	15.1°C / 14.8°C	15.1°C / 14.8°C	13.1°C / 14.7°C	12.1°C / 13.0°C	12.7°C / 13.2°C
	Trap Air/Water	10.6°C / 10.2°C	n/a	11°C / 10.6°C	10.2°C / 10.6°C	n/a	10.3°C / 11.1°C
20/04/2022	Torch Air/Water	9°C / 8.7°C	10.6°C / 10.6°C	10.6°C / 10.6°C	10.4°C / 12.2°C	11.2°C / 16.5°C	12.1°C / 15.1°C
	Trap Air/Water	11.1°C / 9.9 °C	n/a	10.7°C / 11.5°C	10.9°C / 12°C	n/a	14.1°C / 11.7°C
11/05/2022	Torch Air/Water	13.3°C / 14.4°C	15.6°C /	15.6°C / 14.3°C	14.6°C / 16.6°C	13.3°C / 15.4 °C	13.3°C / 14.1°C
	Trap Air/Water	9.5°C / 9.4°C	n/a	9.5°C / 10.4°C	8.5°C / 12.4°C	n/a	11.9°C / 12.1°C
24/05/2022	Torch Air/Water	15.3°C / 11.2°C	n/s	11.8°C / 14.0°C	12.8°C / 16°C	11°C / *	11°C / *
	Trap Air/Water	*	n/a	*	*	n/a	*
30/05/2022	Torch Air/Water	n/a	n/a	n/a	11.1°C / 13.7°C	11.3°C / 14.6°C	9.9°C / 12.1°C
	Trap Air/Water	n/a	n/a	n/a	9.8°C / 11.7°C	n/a	11.1°C / 8.5°C
06/06/2022	Torch Air/Water	n/a	n/a	n/a	21°C / 14°C	21°C / 14°C	21°C / 13.5°C
	Trap Air/Water	n/a	n/a	n/a	**	n/a	**

\*Thermometer stopped functioning after heavy rainfall / \*\* not recorded

**11. ANNEX 4: DETAILED HSI RESULTS**

*Table 11: GCN habitat suitability assessment results from 2020.*

Waterbody	HSI Assessment Index										HSI Score	Pond Suitability
	1. Geographic Location	2. Pond Area	3. Pond Permanence	4. Water Quality	5. Shade	6. Waterfowl	7. Fish	8. Ponds within 1km	9. Terrestrial Habitat	10. Macrophytes		
WB1	1	0.1	0.5	1	1	1	1	1	1	0.3	0.66	<b>Average</b>
WB2	1	0.2	0.9	0.67	1	0.67	0.67	1	1	0.9	0.74	<b>Good</b>
WB3	1	0.6	0.5	1	1	1	1	1	1	1	0.89	<b>Excellent</b>
WB4	1	0.01	0.9	0.67	1	0.67	0.01	1	1	0.3	0.32	<b>Poor</b>
WB5	1	0.8	0.9	0.67	1	0.67	0.01	1	1	0.3	0.50	<b>Below average</b>
WB6	1	0.2	0.5	1	0.5	1	1	1	1	0.8	0.72	<b>Good</b>
WB7	1	0.8	1	1	0.2	1	1	1	1	0.8	0.81	<b>Excellent</b>
WB8	1	0.01	0.9	1	1	0.67	0.67	1	1	0.8	0.56	<b>Below average</b>
WB9	1	0.1	0.9	0.33	0.4	1	0.01	1	1	0.9	0.40	<b>Poor</b>
WB10	1	0.01	0.9	0.67	1	0.01	0.67	1	1	0.3	0.32	<b>Poor</b>
WB11	1	0.1	0.9	1	0.2	1	1	1	1	0.8	0.65	<b>Average</b>
WB12	1	0.01	0.5	1	0.6	1	1	1	1	0.4	0.51	<b>Below average</b>
WB13	1	0.8	0.5	1	0.4	1	1	1	1	0.3	0.74	<b>Good</b>
WB14	1	0.4	0.9	1	1	0.67	0.67	1	1	0.6	0.79	<b>Good</b>
WB15	1	1	0.9	1	1	0.67	0.67	1	1	0.9	0.90	<b>Excellent</b>
WB16	1	0.1	0.1	0.67	0.3	1	1	1	0.67	0.3	0.46	<b>Poor</b>
WB21	1	0.2	0.9	1	1	0.67	0.67	0.8	0.67	0.5	0.68	<b>Average</b>

Table 12: GCN Habitat suitability assessment results from 2022.

Waterbody	HSI Assessment Index										HSI Score	Pond Suitability
	1. Geographic Location	2. Pond Area	3. Pond Permanence	4. Water Quality	5. Shade	6. Waterfowl	7. Fish within 1km	8. Ponds Habitat	9. Terrestrial Macrophytes	10.		
WB1	1	0.05	0.9	1	1	1	1	1	1	0.8	0.72	<b>Good</b>
WB2	1	0.2	0.9	0.67	0.8	0.67	1	1	1	0.6	0.72	<b>Good</b>
WB3	1	0.8	1	1	0.4	0.67	1	1	1	0.9	0.85	<b>Excellent</b>
WB4	Not completed due to being a major fishing lake and therefore deemed unsuitable for GCN.											
WB5	Not completed due to being a major fishing lake and therefore deemed unsuitable for GCN.											
WB6	Not completed as waterbody was dry.											
WB7	Not completed as not located.											
WB8	Not completed due to being a major fishing lake and therefore deemed unsuitable for GCN.											
WB9	1	0.1	0.5	0.67	0.4	1	0.01	1	0.67	0.3	0.35	<b>Poor</b>
WB10	Not completed due to being a major fishing lake and therefore deemed unsuitable for GCN.											
WB11	1	0.05	0.1	0.67	0.2	1	1	1	1	0.4	0.44	<b>Poor</b>
WB12	Not completed as ditch dry.											
WB13	Not completed as ditch dry.											
WB14	1	0.4	1	0.67	1	0.67	1	1	1	1	0.84	<b>Excellent</b>
WB15	Not completed due to GCN presence confirmation with egg discovery.											
WB16	No access permitted.											
WB17	No access permitted.											
WB18	No access permitted.											
WB19	No access permitted.											
WB20	No access permitted.											
WB21	1	0.4	1	1	0.8	0.67	0.67	1	1	0.7	0.79	<b>Good</b>



Waterbody	HSI Assessment Index										HSI Score	Pond Suitability
	1. Geographic Location	2. Pond Area	3. Pond Permanence	4. Water Quality	5. Shade	6. Waterfowl	7. Fish	8. Ponds within 1km	9. Terrestrial Habitat	10. Macrophytes		
WB22	Not completed due to being a major fishing lake and therefore deemed unsuitable for GCN.											
WB23	No access permitted.											
WB24	Not identified at time of survey / to be completed.											
WB25	Not identified at time of survey / to be completed.											

Table 13: GCN Habitat suitability assessment results from 2023.

Waterbody	HSI Assessment Index										HSI Score	Pond Suitability
	1. Geographic Location	2. Pond Area	3. Pond Permanence	4. Water Quality	5. Shade	6. Waterfowl	7. Fish	8. Ponds within 1km	9. Terrestrial Habitat	10. Macrophytes		
WB1	1	0.3	0.5	0.67	1	1	1	1	0.33	0.8	0.70	<b>Good</b>
WB2	1	0.35	1	0.67	1	0.65	1	1	0.33	0.65	0.71	<b>Good</b>
WB3	1	0.35	0.5	1	0.67	1	1	1	0.33	1	0.72	<b>Good</b>
WB9	1	0.2	0.5	1	0.7	1	1	1	0.67	0.7	0.71	<b>Good</b>
WB11	1	0.05	0.1	0.33	1	1	1	1	0.33	0.65	0.45	<b>Poor</b>
WB12	1	0.9	0.1	0.33	0.8	1	1	1	0.33	0.3	0.55	<b>Below average</b>
WB13	1	0.5	0.1	0.33	0.3	1	1	1	0.33	0.3	0.47	<b>Poor</b>
WB14	1	0.35	0.5	1	1	1	1	1	0.67	1	0.81	<b>Excellent</b>
WB15	1	0.9	0.9	0.33	1	1	0.33	1	0.33	1	0.70	<b>Good</b>
WB18	1	0.3	1	0.67	1	1	1	1	0.33	0.8	0.75	<b>Good</b>
WB21	1	0.1	1	1	0.55	1	1	1	1	0.75	0.73	<b>Average</b>
WB23	1	0.05	0.1	0.1	0.3	1	1	1	0.67	0.3	0.35	<b>Poor</b>
WB25	1	0.05	0.5	0.33	1	1	1	1	0.33	0.7	0.53	<b>Below average</b>
WB26	1	0.65	0.9	0.33	1	1	1	1	1	0.33	0.76	<b>Good</b>
WB27	1	0.05	0.9	0.33	1	1	1	1	1	0.5	0.61	<b>Average</b>
WB28	1	1	0.9	0.33	1	1	1	1	1	0.33	0.79	<b>Good</b>

## 12. ANNEX 5: EDNA SURVEY RESULTS

---

***[SEE OVERLEAF]***

Report: 101456-1

Order number: 101456

# Great Crested Newt eDNA Results

Company: Lloyd Bore Ltd  
 Project code | Task code: Bank farm  
 Date of Report: 15 July 2020  
 Number of samples: 4

Thank you for sending your sample(s) for analysis by NatureMetrics. Your sample(s) have been processed in accordance with the protocol set out in Appendix 5 of Biggs et al. (2014).

DNA was precipitated via centrifugation at 14,000 x g and then extracted using Qiagen Blood and Tissue extraction kits.

qPCR amplification was carried out in 12 replicates per sample, using the primers and probe described by Biggs et al. (2014), in the presence of both positive and negative controls.

**Results indicate GCN presence in 'WB21'. No GCN were detected in '11' and 'WB3'. All controls performed as expected and so the results are conclusive. Inhibition was detected in 'WB14', which was not resolved with multiple rounds of DNA dilution as prescribed by Biggs et al. (2014), we therefore return this result as inconclusive.**

Results are based on the samples as supplied by the client to the laboratory. Incorrect sampling methodology may affect the results. Note that a negative result does not preclude the presence of Great Crested Newts at a level below the limits of detection.

Sample	Pond ID	Arrived	Inhibition	Degradation	Score	GCN status
1677	'11'	01-Jul	No	No	0	Negative
1676	'WB14'	01-Jul	Yes	No	0	Inconclusive
<b>1680</b>	<b>'WB21'</b>	<b>01-Jul</b>	<b>NA</b>	<b>No</b>	<b>1</b>	<b>Positive</b>
1678	'WB3'	01-Jul	No	No	0	Negative



End of report

---

Report issued by: [REDACTED]

Contact: [REDACTED]



## Understanding your results

**Positive** GCN DNA has been detected in this sample, meaning that at least one of the 12 replicates has been amplified. Remember that this is not a quantitative test, so you should not interpret a high eDNA score (e.g. 12/12) as necessarily indicating a larger population of GCN than a low eDNA score (e.g. 1/12).

**Negative** No GCN DNA has been detected in this sample, and the internal and external controls worked as expected. This tells us that if there had been GCN DNA in the sample, we would have detected it, so we can be confident in its absence from the sample provided.

**Inconclusive** No GCN DNA was detected in the sample, but the internal controls failed to amplify as expected. This means that any GCN DNA in the sample might also have failed to amplify properly, so we cannot have confidence in this negative result. Inconclusive results can be caused by the degradation of the DNA (when the DNA marker contained in the ethanol in the kits fails to amplify) or by inhibition of the reaction (when the marker added in the lab fails to amplify) caused by certain chemicals or organic compounds that may be present in the water sample.

**inhibitors** Naturally-occurring chemicals/compounds that cause DNA amplification to fail, potentially resulting in false-negative results. Common inhibitors include tannins, humic acids and other organic compounds. Inhibitors can be overcome by either diluting the DNA (and the inhibitors), but dilution carries the risk of reducing the DNA concentration below the limits of detection.

**negative control** Used to determine if PCR reactions are contaminated.

**positive control** Used to determine whether the assay is working correctly.

**primers** Short sections of synthesised DNA that bind to either end of the DNA segment to be amplified by PCR.

**probe** A short section of synthesised DNA that binds to a specific section of the target species' DNA within the section flanked by the primers. The probe is designed to be totally specific to that species. The probe is labelled such that it fluoresces during amplification, which is used to infer the presence of the target species' DNA in the sample.

**qPCR** Stands for 'quantitative PCR', sometimes also known as 'real-time PCR'. A PCR reaction incorporating a coloured dye that fluoresces during amplification, allowing a machine to track the progress of the reaction. Often used with species-specific Primers where detection of amplification is used to infer the presence of the target species' DNA in the sample. If the species is not present in the sample, no fluorescence will be detected.



Client: [REDACTED]  
Lloydbore



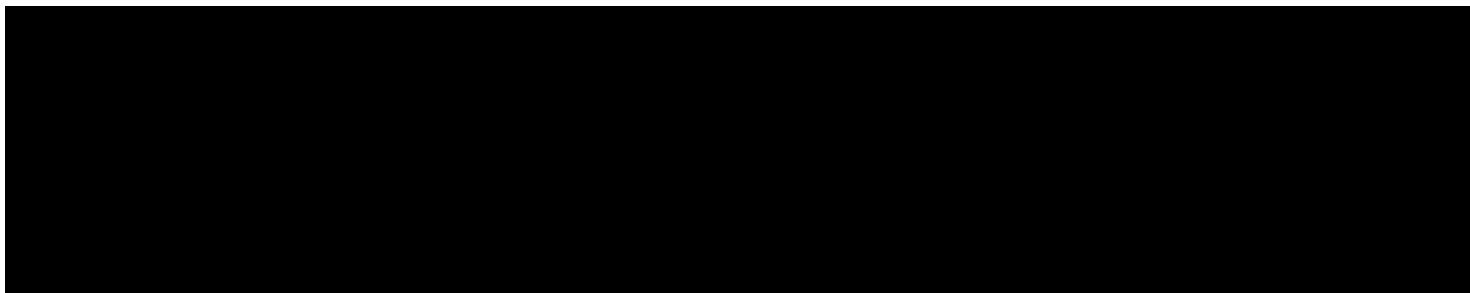
ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

Tel: 01159 229249  
[REDACTED]

www.adas.uk

Sample ID: ADAS-2131                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB21, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	3 of 12 (GCN positive)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN



Date of preparation:                      13/06/2023                      Date of issue:                      13/06/2023

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*

Client: [REDACTED]  
Lloydbore



ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

Tel: 01159 229249  
[REDACTED]

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Sample ID: ADAS-2133                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB1, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN



Date of preparation:                      13/06/2023                      Date of issue:                      13/06/2023

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*



Client: [REDACTED]  
Lloydbore



ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

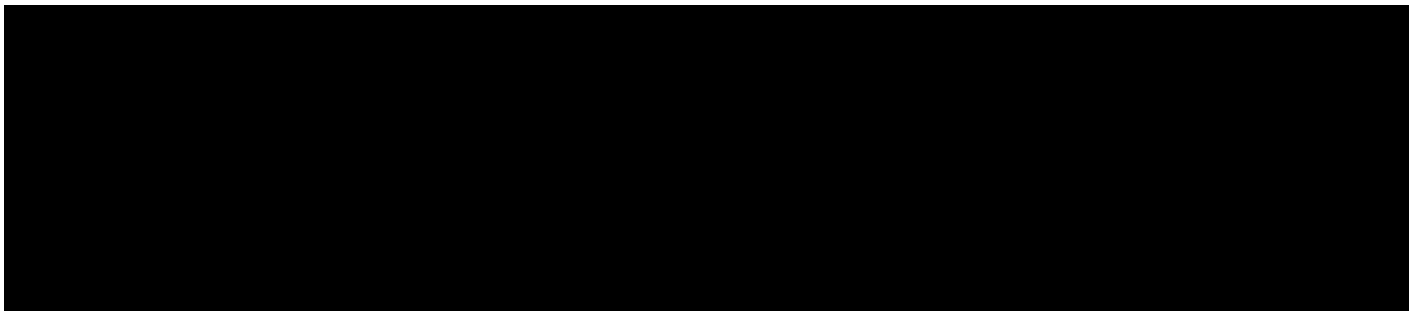
Tel: 01159 229249



www.adas.uk

Sample ID: ADAS-2137                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB3, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN



Date of preparation: 13/06/2023                      Date of issue: 13/06/2023

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*

Client: [REDACTED]  
Lloydbore



ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

Tel: 01159 229249

[REDACTED]  
www.adas.uk

Sample ID: ADAS-2138                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB14, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	1 of 12 (GCN positive)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN

Date of preparation: 13/06/2023                      Date of issue: 13/06/2023

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*

Client: XXXXXXXXXX  
Lloydbore



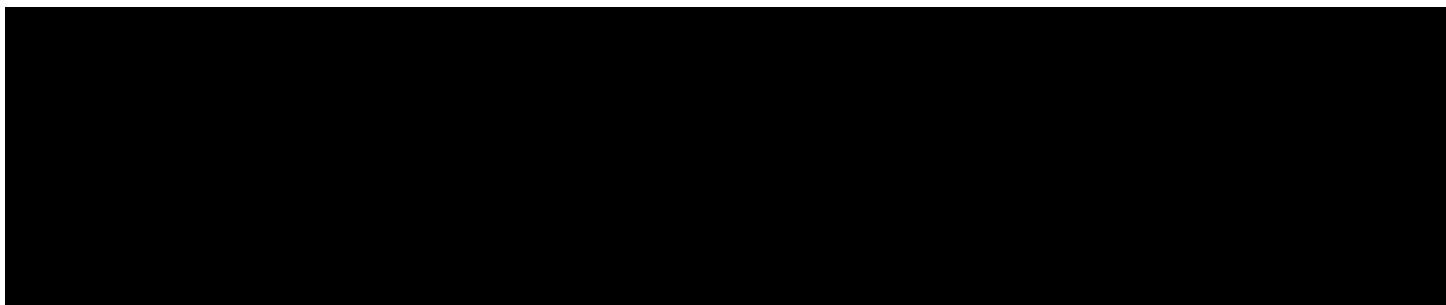
ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

Tel: 01159 229249  
XXXXXXXXXX

www.adas.uk

Sample ID: ADAS-2141                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB2, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN



Date of preparation: 13/06/2023                      Date of issue: 13/06/2023

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*

Client: [REDACTED]  
Lloydbore



ADAS  
Spring Lodge  
172 Chester Road  
Helsby  
WA6 0AR

Tel: 01159 229249  
[REDACTED]

www.adas.uk

Sample ID: ADAS-2144                      Condition on Receipt: Good                      Volume: Passed  
Client Identifier: WB9, 5535                      Description: pond water samples in preservative  
Date of Receipt: 08/06/2023                      Material Tested: eDNA from pond water samples

Determinant	Result	Method	Date of Analysis
Inhibition Control <sup>†</sup>	2 of 2	Real Time PCR	12/06/2023
Degradation Control <sup>§</sup>	Within Limits	Real Time PCR	12/06/2023
Great Crested Newt*	0 of 12 (GCN negative)	Real Time PCR	12/06/2023
Negative PCR Control (Nuclease Free Water)	0 of 4	Real Time PCR	As above for GCN
Positive PCR Control (GCN DNA 10 <sup>-4</sup> ng/μL) <sup>#</sup>	4 of 4	Real Time PCR	As above for GCN

*eDNA analysis was carried out in accordance with the stipulated methodology found in the Technical Advice Note (WC1067 Appendix 5 Technical Advice Note) published by DEFRA and adopted by Natural England.*

*\* If all PCR controls and extraction blanks give the expected results a sample is considered: negative for great crested newt if all of the replicates are negative; positive for great crested newt if one or more of the replicates are positive.*

*<sup>†</sup> Recorded as the number of positive replicate reactions at expected C<sub>t</sub> value. If the expected C<sub>t</sub> value is not achieved, the sample is considered inhibited and is diluted as per the technical advice note prior to amplification with great crested newt primer and probes.*

*<sup>§</sup> No degradation is expected within time frame of kit preparation, sample collection and analysis.*

*<sup>#</sup> Additional positive controls (10<sup>-1</sup>, 10<sup>-2</sup>, 10<sup>-3</sup> ng/μL) are also routinely run, results not shown here.*

## Appendix 1: Interpretation of results

### Sample Condition

Upon sample receipt we score your samples according to quality: good, low sediment, medium sediment, high sediment, white precipitate, and presence of algae.

There are three reasons as to why sediment should be avoided:

1. It is possible for DNA to persist within the sediment for longer than it would if it was floating in the water which could lead to a false positive result i.e. in this case GCN not recently present but present a long time ago
2. In some cases sediment can cause inhibition of the PCR analysis used to detect GCN eDNA within samples which could lead to an indeterminate result.
3. In some cases sediment can interfere with the DNA extraction procedure resulting in poor recovery of the eDNA which in turn can lead to an indeterminate result.

Algae can make the DNA extraction more difficult to perform so if it can be avoided then this is helpful.

Sometimes samples contain a white precipitate which we have found makes the recovery of eDNA very difficult. This precipitate can be present in such high amounts that it interferes with the eDNA extraction process meaning that we cannot recover the degradation control (nor most likely the eDNA itself) at sufficient levels for the control to be within the acceptable limits for the assay, therefore we have to classify these type of samples as indeterminate.

### What do my results mean?

A positive result means that great crested newts are present in the water or have been present in the water in the recent past (eDNA degrades over around 7-21 days).

A negative result means that DNA from the great crested newt has not been detected in your sample.

On occasion an inconclusive result will be issued. This occurs where the DNA from the great crested newt has not been detected but the controls have indicated that either: the sample has been degraded and/or the eDNA was not fully extracted (poor recovery); or the PCR inhibited in some way. This may be due to the water chemistry or may be due to the presence of high levels of sediment in samples which can interfere with the DNA extraction process. A re-test could be performed but a fresh sample would need to be obtained. We have successfully performed re-tests on samples which have had high sediment content on the first collection and low sediment content (through improved sample collection) on the re-test. If water chemistry was the cause of the indeterminate then a re-test would most likely also return an inconclusive result.

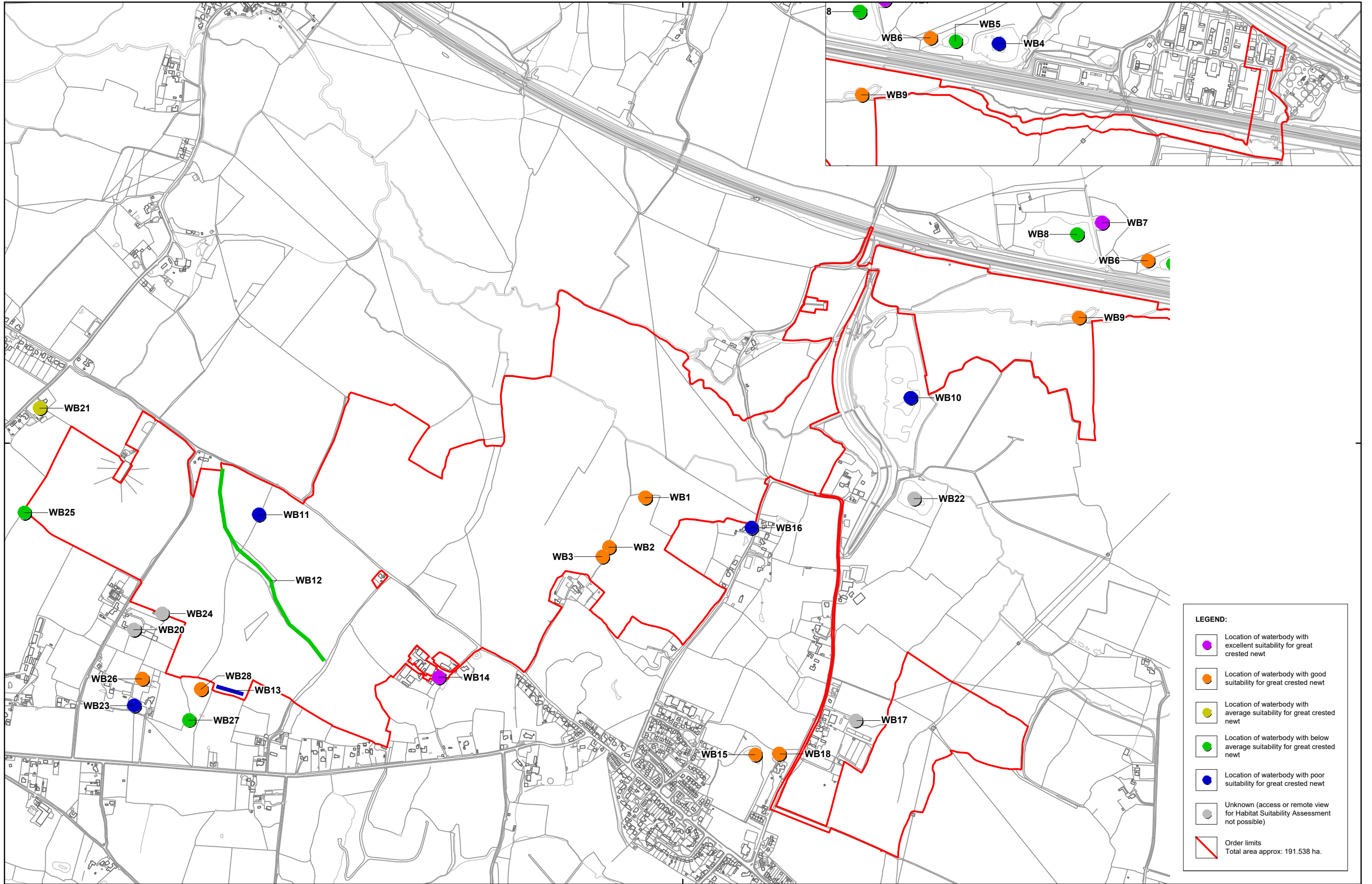
The results will be recorded as indeterminate if the GCN result is negative and the degradation result is recorded as:

1. evidence of decay - meaning that the degradation control was outside of accepted limits
2. evidence of degradation or residual inhibition - meaning that the degradation control was outside of accepted limits but that this could have been due to inhibitors not being removed sufficiently by the dilution of inhibited samples (according to the technical advice note)

### 13. ANNEX 6: HABITAT SUITABILITY ASSESSMENT

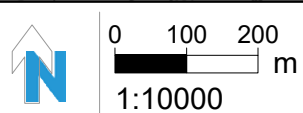
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***[SEE OVERLEAF]***



**LEGEND:**

- Location of waterbody with excellent suitability for great crested newt
- Location of waterbody with good suitability for great crested newt
- Location of waterbody with average suitability for great crested newt
- Location of waterbody with below average suitability for great crested newt
- Location of waterbody with poor suitability for great crested newt
- Unknown (access or remote view for Habitat Suitability Assessment not possible)
- Order limits  
Total area approx: 191,538 ha.



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rev. rev. date auth. rev. note  
P01 19.03.24 MW Initial Issue

rev. rev. date auth. rev. note

client: **EPL 001 Limited**  
project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
Kent

drawing no. **5535-LLB-XX-DR-Ec-0021** rev. **P01**  
drawing title: **Habitat Suitability Assessment** suit. **S4**  
APFP **5(2)(f)(ii)**

rev date: **19/03/24**  
scale: **1:10000**  
sheet: **A3**  
drawn: **DM**  
checked: **MW**

**lloyd bore** landscape ecology arboriculture  
33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
www.lloydbore.co.uk mail@lloydbore.co.uk

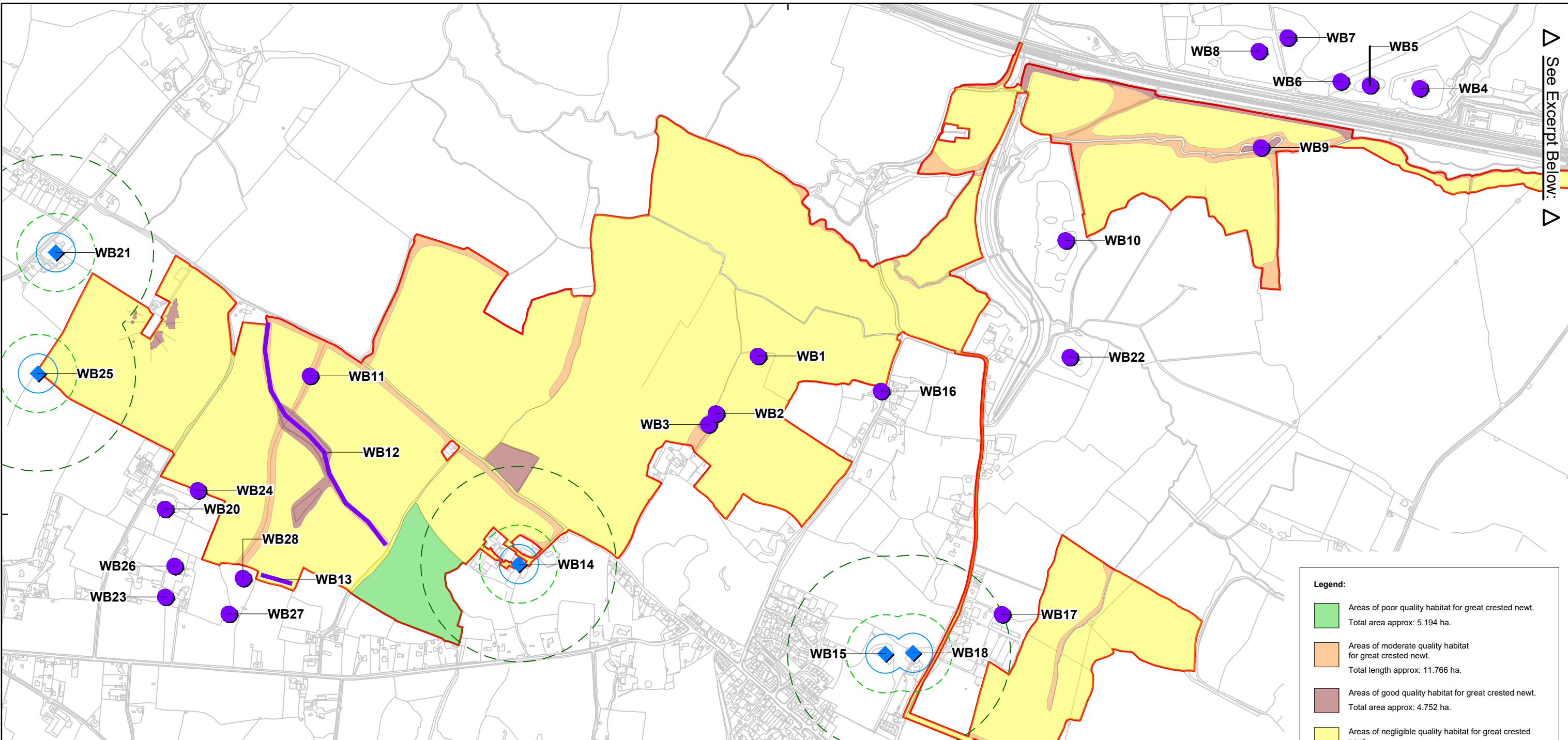
## 14. ANNEX 7: TERRESTRIAL HABITAT PLAN

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***[SEE OVERLEAF]***

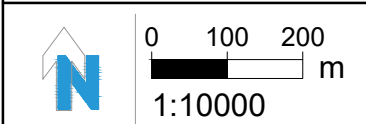
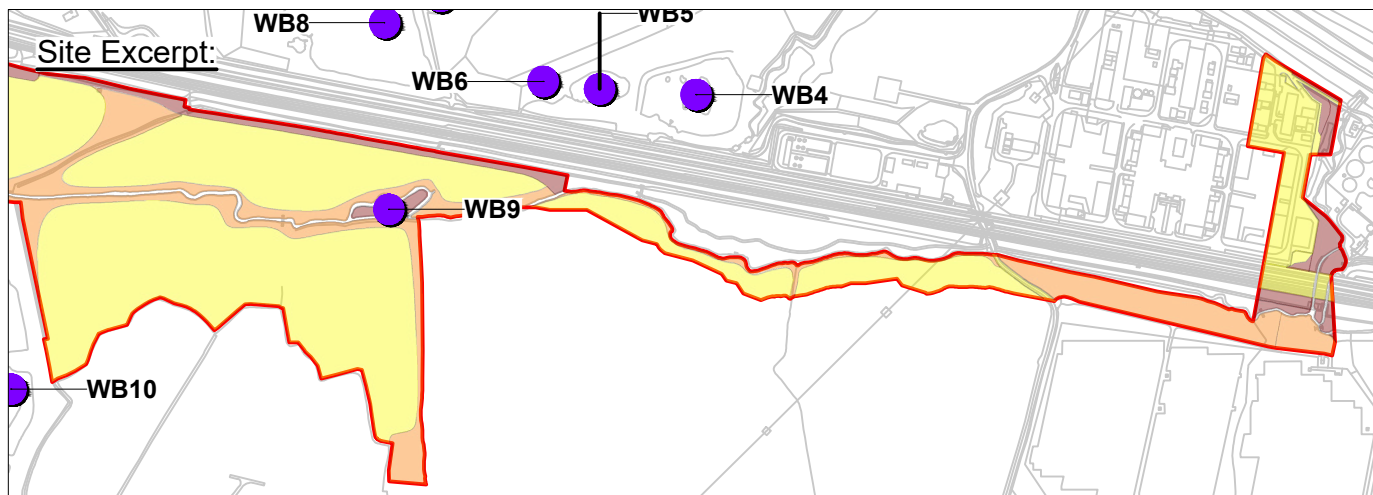


See Excerpt Below:



**Legend:**

- Areas of poor quality habitat for great crested newt.  
Total area approx: 5.194 ha.
- Areas of moderate quality habitat for great crested newt.  
Total length approx: 11.766 ha.
- Areas of good quality habitat for great crested newt.  
Total area approx: 4.752 ha.
- Areas of negligible quality habitat for great crested newt.  
Total area approx: 168.210 ha.
- Waterbody Location
- Location of waterbody with recorded great crested newt presence
- 50m Waterbody Buffer
- 100m Waterbody Buffer
- 250m Waterbody Buffer
- Order limits



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rev.	rev. date	auth.	rev. note
C01	15/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0034** rev. **C01**  
 drawing title: **Terrestrial habitat plan** sult. **A4** APPF **5(2)(f)(ii)**

rev. date	scale
15/05/24	1:10000
	A3
	NA
checked: <b>MW</b>	

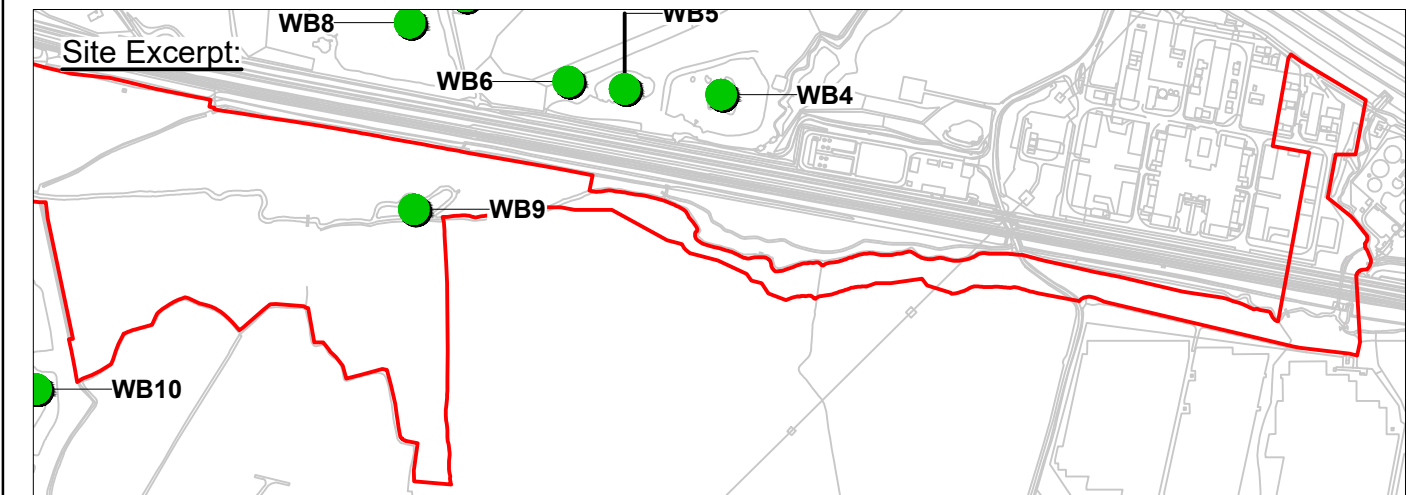
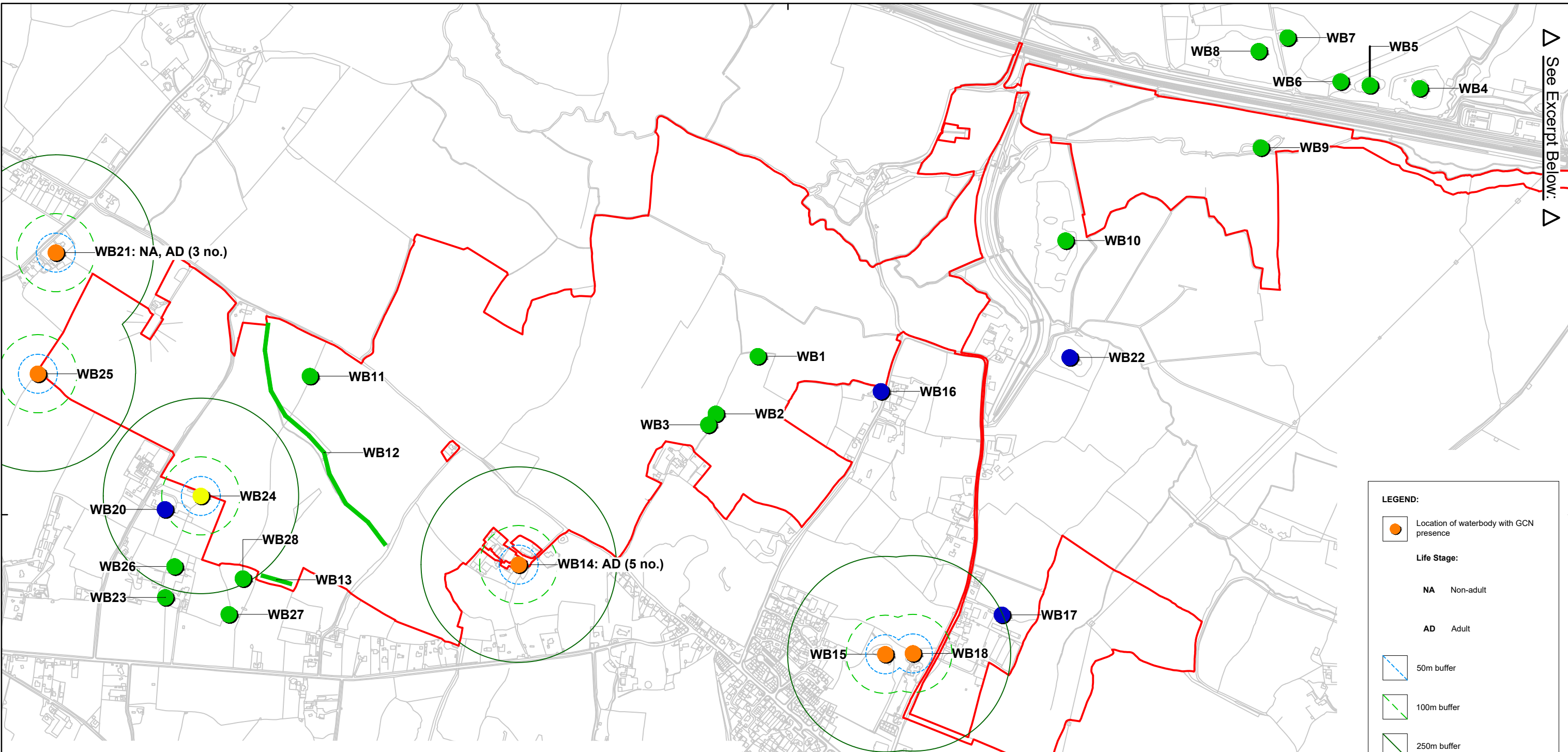
**lloyd bore** landscape ecology arboriculture  
 33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
 www.lloydbore.co.uk mail@lloydbore.co.uk

## 15. ANNEX 8: GCN RESULTS PLAN

---

***[SEE OVERLEAF]***

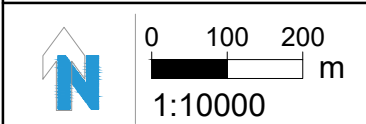
See Excerpt Below:



**LEGEND:**

- Location of waterbody with GCN presence
- Life Stage:**
- NA** Non-adult
- AD** Adult
- 50m buffer
- 100m buffer
- 250m buffer
- Location of waterbody with precautionary assessed GCN presence
- Location of waterbody with GCN absence / unsuitable
- Location of linear waterbody with GCN absence / unsuitable
- Location of waterbody not surveyed
- Order limits

Note: Where presence is recorded, a number is provided indicating the peak count of adult animals found during survey.



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rev. rev. date auth. rev. note  
C01 15/05/24 MW Client approved for submission.

rev. rev. date auth. rev. note

client: **EPL 001 Limited**  
project: **Stonestreet Green Solar**  
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33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
www.lloydbore.co.uk mail@lloydbore.co.uk



# Stonestreet Green Solar

## Appendix 9.5e: Reptile Survey Report

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## 1. EXECUTIVE SUMMARY

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- S.1 Lloydbore Ltd was commissioned by EPL 001 Limited (the 'Applicant') to determine the presence of reptiles on Site, species and population and potential habitats in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project'). This included a desk study, a habitat suitability survey, reptile population survey in 2020 and 2022 and an evaluation of the species assemblage and importance of the site for reptiles.
- S.2 The Site is dominated by intensively managed arable crop fields, with some pasture, and supports hedgerows, dry and wet ditches, tall grasses and ruderal vegetation at field margins and woodland boundaries. The habitat assessment found the field margins to comprise the majority of the suitable on-site reptile habitat and survey effort was therefore concentrated in these habitat areas.
- S.3 Due to the size of the Site the survey was divided into sub-parcels A1, A2, B, C, D, E and F (see Annex 7 for locations) containing suitable reptile habitat targeted for survey.
- S.4 Parcels A1 to D were surveyed during July to October 2020. Slow worm and grass snake were detected in parcel A1 and parcel B; parcel A2 and parcel D had low numbers of common lizard only (peak count of one adult respectively); and all three reptile species (common lizard, slow worm and grass snake) were present in parcel C, with peak counts of five, nine and one adult(s), respectively.
- S.5 Parcel E was surveyed in 2022 from April to September, due to change to Site boundary.
- S.6 All three reptile species (common lizard, slow worm and grass snake) were present in parcel E, with peak adult numbers of ten, eight and three, respectively.
- S.7 The survey results indicate the presence of estimated 'low' populations of slow worm, common lizard and grass snake across the survey parcels. These species are distributed throughout the majority of the Site, except in parcel D, and generally in association with boundary habitats.
- S.8 Based on the survey results, the Site is of 'local' importance for reptiles.
- S.9 This report provides survey findings but does not include any detail of avoidance, mitigation, compensation or enhancement measures relating to reptiles. This detail is provided in **ES Volume 2, Chapter 9: Biodiversity (Doc Ref 5.2)** and the **Outline Landscape and Ecology Management Plan ('LEMP') (Doc Ref 7.10)** that have been produced to inform the DCO application. As such, this survey report should be read in tandem with these two strategic documents.

## 2. INTRODUCTION

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- 2.1 This Reptile Survey Report has been prepared on behalf of EPL 001 Limited ('The Applicant') to determine the presence of reptiles on Site, species and population and potential habitats in relation to the Development Consent Order (DCO) application for Stonestreet Green Solar ('the Project').
- 2.2 This Reptile Survey Report is **Appendix 9.5e to ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### THE PROJECT

- 2.3 The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.4 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.
- 2.5 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the Order limits (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The Order limits plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the Order limits is known as the 'Site'.

### SITE DESCRIPTION

- 2.6 The Site area is approximately 192 ha, located to the north and west of the village of Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- 2.7 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.
- 2.8 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.9 Fields are described in relation to the Project as follows:
- The South Western Area Field 1 to 9.
  - The Central Area Fields 10 to 19 and 23 to 25.
  - The South Eastern Area Fields 20 to 22.

- The Northern Area Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- ‘Cable Route Corridor’ (export of electricity from the Project at 132 kilovolt (‘kV’) via underground cables (the ‘Grid Connection Cable’) to the Sellindge Substation). ‘Cable Route Crossing’ (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link (‘HS1’) railway or through Horizontal Directional Drilling (‘HDD’) beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

2.10 The Site is dominated by intensively managed arable crop fields which are of negligible suitability for reptiles and so the likely most suitable areas for reptiles comprise the hedgerows, dry and wet ditches, tall grasses and ruderal vegetation at field margins and woodland boundaries.

### **SURVEY OBJECTIVES**

2.11 The objectives of the survey and report are to: -

- Determine whether reptiles are present within the Site;
- If reptiles are present, determine what species are present and provide an indicative estimate of the associated population size class; and
- Assess the importance of on-Site habitats for reptiles.



### 3. METHODOLOGY

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#### INTRODUCTION

3.1 The methods used to determine the status of reptiles are detailed within this section as follows:

- Desk study;
- Habitat assessment; and,
- Population class assessment survey.

#### DESK STUDY

3.2 A desk study was carried out in August 2023 (updating a previous 2022 desk study) to inform the ecological impact assessment for reptiles. This included a biological records request to the Kent and Medway Biological Records Centre ('KMBRC'), for protected species records, including reptiles, located within 1 km of the Site within the last 10 years.

3.3 Biological records data were additionally obtained from the Kent and Reptile Amphibian Group ('KRAG') in 2020. The data obtained through these searches includes records of reptiles.

3.4 Records obtained within the ten-year period prior to the date of the record search are considered 'recent'. Records older than this are considered 'historical'.

#### HABITAT ASSESSMENT

3.5 An initial ecological assessment of the Site conducted during April 2020 included an assessment of the Site's suitability for reptiles.

3.6 There is no published method for objective assessment of the quality of habitat for reptiles, or the likelihood of reptile presence within habitats. However, certain habitat characteristics are known to influence the suitability of habitats for reptiles. These comprise: -

- Location in relation to the known geographic range of a species;
- Vegetation structure and type;
- Habitat management;
- Insolation (sun exposure);
- Aspect;
- Topography;
- Surface geology;
- Connectivity to nearby good quality habitat;
- Prey abundance;
- Refuge opportunity;
- Presence or absence of suitable hibernation habitat;

- Presence or absence of predators such as domestic cats and pheasant (*Phasianus colchicus*);
  - Disturbance levels; and
  - Availability of suitable egg laying sites (egg laying reptile species only).
- 3.7 Lloydbore Ltd have established Reptile Habitat Suitability Criteria based on the above factors - to assess the suitability of sites for reptiles and inform assessments of the likelihood of reptile presence. These Habitat Suitability Criteria were used during the initial PEA Site visit and are provided in Annex 2.
- 3.8 Where relevant, these factors are stated in the *Results* section of this report.
- 3.9 An initial ecological assessment (including reptile habitat assessment) of the Site was conducted by a competent expert on 21st April 2020 and again various dates in 2022, to update the habitat baseline.
- 3.10 Updated baseline habitat survey work, including habitat condition assessment, was also conducted in June to July 2023 by a competent expert. A survey of the previously inaccessible Sellindge substation area was carried out on 10th January 2024.

#### ‘ZONE OF INFLUENCE

- 3.11 The potential impact(s) of a project are not always limited to the boundaries of the Site concerned. A project may also have the potential to result in impacts upon ecologically important sites, habitats or species that are located beyond the Site boundaries.
- 3.12 The area over which a project may impact ecologically important features is known as the Zone of Influence (‘Zol’).
- 3.13 The Zol is determined by the source / type of impact, the potential pathway(s) for that impact and the location and sensitivity of the ecologically important feature(s) beyond the boundary.
- 3.14 The potential Zol of a project in relation to reptiles is used to determine the extents of the reptile survey study area.
- 3.15 A review of the Project proposals confirmed that they will likely result in some loss of suitable on-Site reptile habitat. Works may also result in impacts on individual animals (e.g., killing and/or injury during Site works).
- 3.16 These potential impacts could adversely affect the conservation status of the wider local reptile population, but the most significant potential adverse effects would likely be experienced by any reptiles present on Site.
- 3.17 Therefore, in the absence of appropriate avoidance, mitigation, and compensation measures, the potential Zol of the project, in relation to reptiles, is likely to extend to the Site and those areas located just beyond the Site boundary.
- 3.18 This potential Zol was used to establish the required extents of the reptile survey, which included all suitable on-site habitat.

## POPULATION SURVEY

### METHOD SUMMARY

- 3.19 Artificial Cover Objects ('ACOs') were used to determine the presence / likely absence and peak counts of reptiles on Site. The ACOs (roofing felt, corrugated tin and corrugated onduline sheets) were placed in habitat areas suitable for reptiles. These ACOs are visually checked for basking and sheltering reptiles by suitably experienced surveyors in appropriate weather conditions, combined with direct visual observation of suitable basking and sheltering places in the adjacent habitats.
- 3.20 Each ACO was inspected for reptiles, checked once during each of the survey visits. During each survey visit, the location, species, sex, age class (adult or juvenile) and number of all reptiles encountered was recorded. The survey start and end points were alternated between each survey visit, to ensure that ACOs were not checked at a similar time of day during each visit, as reptiles may bask at different times of day according to season, aspect and weather conditions.
- 3.21 Gent and Gibson (2003) indicate that surveys for common lizard and slow worm (*Anguis fragilis*) can be conducted at air temperatures of between 9°C and 18°C and surveys for grass snake (*Natrix helvetica*) between 12°C and 20°C. Similar guidance is also provided by Froglife, with Advice Sheet 10 recommending that reptile surveys should be conducted between 9°C and 18°C (Froglife, 1999). This is because during higher temperatures, reptiles are typically more alert and have a lower requirement for basking, therefore reducing the likelihood of recording their presence during a survey visit.
- 3.22 During Lloydbore Ltd survey work at other sites, reptiles have been recorded under ACOs in temperatures exceeding 20°C. Additionally, as part of their thermoregulatory behaviours, reptiles may conversely use shaded ACOs to cool down during hot weather.
- 3.23 For the purposes of this assessment, ACOs were checked at varied times and when the air temperature was between 11°C and 21°C. Survey visits were not conducted at temperatures below 11°C or during periods of rain or strong wind.
- 3.24 Given that reptiles were recorded, the survey also aimed, in combination with an assessment of the extent and quality of on-Site reptile habitats, to provide an indicative estimate of the associated population size class for species present.
- 3.25 The above survey methodology follows good practice recommendations for reptile surveys (Froglife, 1999) and has been informed by more recent research (Schmidt et al. 2017) and guidance (Gent and Gibson, 2003).

### SURVEY AREA / SURVEY PARCELS

- 3.26 Due to the size of the Site and extent of suitable reptile habitat, the Site was divided into survey area 'sub-parcels' as the entire Site could not be surveyed in a single day.
- 3.27 The survey sub-parcels are shown in Habitat Suitability Plan in Annex 3, and are briefly described as follows:

- Parcel A1 (Fields 3 to 9 in the South Western Area) - situated south west of the Site, comprising mainly cattle-grazed pasture, modified grassland with occasional arable fields. Suitable reptile habitat is concentrated at field margins, ditches and hedgerows.
- Parcel A2 (Fields 1 and 2 in the South Western Area) - situated at the furthest south west tip of the Site, comprising mainly cattle-grazed pasture and modified grassland. Suitable reptile habitat is concentrated at field margins, ditches and hedgerows.
- Parcel B (Fields 10 to 17 in the Central Area) - covers a large central portion of the Site, sandwiched between parcels A1/A2 and E. It is separated from parcels A1 and A2 by a single lane. Suitable habitat is concentrated at field margins and hedgerows.
- Parcel C (Fields 26 to 29 in the Northern Area) - is situated at the north east section of the Site and borders a railway embankment to the north and woodland to the south, including the cable route. It comprises the East Stour River corridor, running from east to west. Suitable reptile habitat is concentrated at the adjoining railway embankment, woodland edges, field margins and hedgerows.
- Parcel D (Fields 20 to 22, Southeastern Area) - situated at the far east of the Site and detached from the other parcels. The closest parcel is B, located at c.600m from parcel D. However, there is better connecting habitat, and fewer barriers, to parcel C, which is located at c.770m from D (at their closest points). Suitable reptile habitat is found mainly in the field and hedgerow margins.
- Parcel E (Fields 18, 19 and 23 to 25 in the Central Area) - situated at north west of the Site and adjacent to parcel B. The East Stour River runs along the northern most boundary, and each field in this parcel comprises at least one wet ditch. Suitable reptile habitat is found within the hedgerows, occasional tree lines and managed marginal grasses.

#### ACO DISTRIBUTION

- 3.28 Home ranges vary widely among reptile species, with slow worm home ranges estimated as small as 0.38ha and mobile species such as grass snake home ranges between 1.29ha and 3.56 ha (Reading and Jofré, 2009; Schmidt et al., 2017).
- 3.29 Therefore, the total number and density of ACOs used during a reptile presence / likely absence and population class estimate survey should account for the smallest home range of the focal species.
- 3.30 On this basis, the total number and density of ACOs used during the reptile survey combine recommendations from Froglife's *Advice Sheet 10* (Froglife, 1999) (5-10 ACOs per hectare) and research which suggest the most effective inter-ACO spacing is proximately 28m (Froglife, 1999; Schmidt et al. 2017).
- 3.31 The increased density of ACOs is likely to have enhanced the effectiveness of survey, as a greater number of reptile home ranges / catchment areas would have

been sampled, thus increasing the likelihood of detecting reptiles within the survey area.

- 3.32 The Site is approximately 192ha in area, of which c.34.9ha is suitable for reptiles (c.4.3ha high quality and c.14.9ha moderate quality habitat); and c.15ha has low suitability for reptiles. The extent of these habitat types is shown in Annex 3.
- 3.33 A total of 463 ACOs were placed across the Site (in parcels A, B, C, D) within areas of suitable reptile habitat, on 24th and 25th June 2020. On 11th April 2022, a total of 163 ACOs were placed across parcel E and on 21st July 2022. The locations of the ACOs used in the 2020 and 2022 surveys are shown in the figure in Annex 4.
- 3.34 To allow time for any reptiles present to discover ACOs and begin using them as basking locations, ACOs in 2020 were left to 'bed down' for 14 days, and in 2022, ACOs had a bedding down period of 21 days in parcel. These bedding down periods are in line with the minimum recommended duration of 10-14 days.

#### SURVEY DATES AND PERSONNEL

- 3.35 Reptile survey visits were carried out by a competent expert between 9th July and 30th October 2020, inclusive, and 29th September 2022, inclusive.
- 3.36 The ACOs and other suitable basking features and areas were then checked for reptiles on 15 survey visits in parcels A, B, C and D from 9th July to 30th October 2020; and on 17 survey visits covering parcel E from 4th May to 29th September 2022.
- 3.37 Annex 5 contains detailed information regarding survey dates, times, and weather parameters.

#### ASSESSMENT AND EVALUATION

- 3.38 The survey results were used to provide a preliminary, indicative population size class estimate for each species found.
- 3.39 The terminology used within HGBI Advisory Notes for Amphibian and Reptile Groups (ARGs) (HGBI, 1998) has been used to describe the estimated population size classes for slow worm, grass snake and common lizard.
- 3.40 Such estimates for reptiles are informed by the 'peak count' recorded for each species during population class assessment (or a presence / likely absence) survey. The 'peak count' for a species is the maximum number of adult animals recorded during a single survey visit.
- 3.41 The assessment of the importance of on-Site habitats for reptiles has been informed by guidance set out in *Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine* (CIEEM, 2018) and thresholds for 'county' level importance derived from *Local Wildlife Sites in Kent. Criteria for Selection and Delineation* (KWT, 2022).
- 3.42 During the surveys, any factors that may alter the initial reptile habitat suitability assessment (e.g., presence of large populations of predators, waterlogging) were noted. Where relevant, these factors are identified in the *Results and/or Evaluation* sections of this report.

## SURVEY LIMITATIONS

- 3.43** For standard access and project confidentiality reasons and considering the need to ensure that only proportionate survey effort is expended, the survey only sampled on-Site habitats. This means that the reptiles recorded on Site are likely to form part of a wider local population and the survey results therefore only provide a partial sample of this local population. This is a standard limitation for reptile surveys that are completed in association with project and, given the objectives of this survey and report, is not considered to be a significant limitation.
- 3.44** June, July, August, and October are sub-optimal months for conducting reptile surveys. However, reptiles are still active throughout these months (Froglife, 1999) and slow worms, grass snakes and common lizards were recorded underneath ACOs during survey visits across every month in which the surveys were conducted. Therefore, survey visits conducted in sub-optimal months are not considered to be a significant constraint to the survey, though population size class estimates may be constrained by this minor limitation. Additionally, survey visits did target September in both 2022 and 2020 which is within the optimal survey period.
- 2022**
- 3.45** On the first survey visit on 4th May 2022, 30 ACOs had to be retrieved from the wet ditch which runs east to west in parcel E, close to a public footpath to Mersham. It is thought that ACOs were deliberately displaced. Since the ACOs had a bed-in period of 21 days, it is not known when within this timeframe the ACOs were disturbed. However, the ACOs were replaced on 4th May and remained undisturbed until c.11th July 2022 (see paragraph 3.48). Reptiles were frequently found along this section during the survey period; therefore, this incident is likely to only have had a minor effect on population estimates.
- 3.46** On 12th July 2022, c.50% of ACOs in parcel E were found to have been shredded by farm equipment. No reptile mortalities were found. All missing and damaged ACOs were replaced on 21st July 2022 and left to bed down for 12 days before survey visits resumed in this section. Therefore, potential survey limitations resulting from damage to ACOs are considered to have been effectively mitigated within the survey period.
- 3.47** On 25th August, for the final survey, approximately 40% of ACOs were found to have been shredded by farm equipment in the eastly and southerly fields of parcel E. No reptile mortalities were found. Rather than redeploy ACOs for one survey visit, and as animal numbers previously detected in these fields were low (maximum of 10 individuals), survey effort was extended by two additional survey visits in the adjoining and largest northern field, within parcel E, to mitigate the effect of this incident on the survey effort.
- 3.48** Although reptiles were found in sub-optimal surveying months, these two additional survey visits in the northern field of parcel E were also conducted as a way of countering the limitations imposed by the drought and persistent UK heatwave experienced between June and August 2022. Survey visits were only conducted in the early morning as temperatures did not drop below recommended surveying temperatures (20°C) in the afternoons/evenings.

- 3.49 Two survey visits in 2022 (and also 2020) rose to temperatures of 21°C, exceeding the recommended temperature of 20°C, however these temperatures were recorded towards the end of the survey visits. To account for these fluctuations, surveying routes were alternated in clockwise and anti-clockwise directions.
- 3.50 On 14th September Lloydbore Ltd learned that the Internal Drainage Board ('IDB') had returned to complete vegetation removal works adjacent to the watercourse (earlier than discussed previously on Site), therefore compromising survey visits in this same section (Parcel F), west of Church Lane) and affecting c.20 ACOs and associated habitat. No reptile mortalities were found.

### 2020

- 3.51 ACOs located within the eastern field of parcel B were found to have been destroyed by farm equipment on 17th September 2020. ACOs were replaced on the subsequent visit (22nd September 2020) and left to bed down for eight days. This is not considered a significant limitation, as ACOs were placed at the same locations, which limited the time it would take for reptiles to rediscover the ACOs. This meant a total of 13 out of 15 survey visits were carried out for this particular parcel. This meets the recommended number for presence / likely absence and population estimates as per (HGBI, 1998).

### SUMMARY

- 3.52 In summary, across 2020 and 2022, there are no ecologically significant limitations to the effectiveness of the reptile surveys undertaken.
- 3.53 This report provides an evidence-based assessment of the Site's importance for reptiles and fulfils the objectives set out in Section 2 of this report.

### LIFESPAN OF SURVEY DATA

- 3.54 The lifespan of this report and the ecological survey information contained herein has been determined based on CIEEM's *Advice Note: On the Lifespan of Ecological Reports and Surveys* (CIEEM, 2019). Note that an assessment of the presence, distribution and abundance of reptiles may change over time.
- 3.55 The survey data is considered valid for a period of 18 months from the end of the survey period (i.e., until March 2024), after which a suitably experienced ecologist will need to undertake a Site visit, determine whether the extent and quality of reptile habitat present has changed significantly and determine whether an update reptile survey is required. Note that unless habitats change significantly in future years, the reptile baseline presented in this report is expected to remain unchanged as reptiles are unlikely to further colonise or vacate the Site between years, compared to more mobile species (i.e. birds and bats).
- 3.56 Dependent on the results of the update assessment, an update reptile survey may be required to provide up-to-date baseline survey and to ensure that the Project has a robust understanding of project legal risks and mitigation requirements in relation to reptiles.

## 4. RESULTS

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### DESK STUDY

- 4.1 The biological records search returned recent records (2010 - 2020) of slow worm, common lizard, and grass snake within 1 km of the Site.
- 4.2 The biological records search also returned historical records (pre-2010) of adder within 1 km of the Site.
- 4.3 Data obtained from KMBRC indicates that the most recent record of slow worm was recorded in 2018, c.0.72 km north of the Site boundary.
- 4.4 Data obtained from KMBRC indicates that the most recent record of common lizard was recorded in 2014, c.0.98 km west of the Site boundary.
- 4.5 Data obtained from KMBRC indicates that the most recent record of grass snake was recorded in 2020, c.0.57 km southwest of the Site boundary.

### HABITAT ASSESSMENT

- 4.6 The Site is dominated by intensively managed arable crop fields, with some pasture, and supports hedgerows, dry and wet ditches, tall grasses and ruderal vegetation at field margins and woodland boundaries. These field margins comprise suitable on-Site reptile habitat and survey effort was therefore concentrated in these habitat areas.
- 4.7 Broadleaved woodland edges found mainly in the north east of the Site (parcel C) provide significant opportunities for insolation, foraging, shelter, protection and hibernation. All three reptile species were recorded in parcel C; these habitats have been assessed as 'high' quality reptile habitat.
- 4.8 The field boundary at the north of the Site (parcel C), in combination with the adjacent off-Site railway embankment, provides significant opportunities for reptile foraging, connectivity, shelter, protection, and hibernation. This habitat has therefore been assessed as 'high' quality habitat for reptiles.
- 4.9 All of the agricultural fields are surrounded, or connected, by a combination of streams and wet ditches with vegetated banks. These habitat corridors provide suitable habitat for grass snakes, as they provide shelter and foraging opportunities for amphibian prey species favoured by grass snake. These habitats also provide foraging, shelter, insolation, protection and connectivity for common lizard and slow worm. However, as the majority of margins are prone to disturbance, are very narrow and/or periodically removed, and offer limited hibernation opportunity, these habitats have been assessed as 'medium' quality reptile habitat.
- 4.10 The arable crop fields and some pastures have been assessed as 'negligible' suitability habitat for reptiles since their uniform structure and regular disturbance meets very little of the reptile habitat requirements. In non-drought years, this habitat may provide some limited foraging, cover, and shelter.
- 4.11 Some cattle-grazed pasture and modified grassland, mainly in parcels A1 and A2, have been assessed as 'low' suitability habitat for reptiles. This may be because cattle are better at creating and maintaining structurally diverse grassland, and



graze typically to a minimum of height of 5-6cm, as opposed to sheep that can graze to c.3cm, as well as potentially differences in stocking density.

- 4.12 Other habitats comprising arable cropland, bare ground, buildings and scattered trees present within the Site have been assessed as 'negligible' habitat suitability for reptiles.
- 4.13 Please see Annex 2: 'Habitat Suitability Criteria - Reptiles' for full details of the criteria used to assess reptile habitat quality.
- 4.14 Off-Site habitat at the northern boundary (comprising a railway embankment of scrub and trees), woodland edges (south of parcel C) and continuation of the field margins surrounding the Site form part of the same reptile habitat network and are likely to be used by the on-Site reptile populations.
- 4.15 The location and distribution of suitable reptile habitat within the survey area is indicated in Annex 3: Reptile Habitat Suitability Plan .

#### **SURVEY RESULTS**

- 4.16 Slow worm, grass snake and common lizard are present on Site, with grass snake evenly distributed across the Site, common lizard concentrated in parcel E and F, and slow worm concentrated in parcel A1, with representation in parcels C and E. Presence of reptiles in parcel A2 and D was limited to recording of an individual common lizard.
- 4.17 Detailed survey results are provided in Annex 6.
- 4.18 A summary of the peak count for adults of each species is provided in the table below, which is assessed against the parameters for an indicative population class size (HGBI, 1998).
- 4.19 Annex 7 shows the locations of reptiles recorded during the survey.

*Table 1: Peak counts of adult reptiles, and associated indicative population size class estimate for 2020 and 2022 - Parcels A1 - F*

Peak Count	2022			2020		
	Common Lizard	Slow worm	Grass snake	Common Lizard	Slow worm	Grass snake
Parcel A1 (Fields 1 and 2, The Southwestern Land Parcel)	-	-	-	-	16 adults	1 adult
Parcel A2 (Fields 1 and 2, The Southwestern Land Parcel)	-	-	-	1 adult	-	-
Parcel B B (Fields 10 to 17, Central Land Parcel)	-	-	-	-	3 adults	3 adults
Parcel C (Fields 26 to 29, Northern Land Parcel)	-	-	-	5 adults	9 adults	1 adult
Parcel D (Fields 20 to 22, Southeastern Land Parcel)	-	-	-	1 adult	-	-
Parcel E (Fields 18, 19 and 23 to 25, Central Land Parcel)	10 adults	8 adults	3 adults	-	-	-
TOTAL	13 adults	9 adults	3 adults	7 adults	28 adults	5 adults
Indicative population size class estimate	'Low' population	'Low' population	'Low' population	'Low' population	'Low' population	'Low' population

*INCIDENTAL SIGHTINGS (AMPHIBIANS)*

- 4.20 In 2020, two common toads (*Bufo bufo*) were recorded in parcel C and a great crested newt (*Triturus cristatus*) in Parcel A. No amphibians were recorded during the 2022 reptile survey.

## 5. EVALUATION

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- 5.1 An evaluation of the survey results, inclusive of population class size assessment and a valuation of populations recorded within the Zol of the Project is provided below.
- 5.2 Note that while some areas were last surveyed during 2020 (Parcels A to D), the overall habitat condition and suitability has remained similar in these Parcels (confirmed by the habitat suitability conducted in 2022) and it is therefore unlikely that reptile populations will have substantially changed in the intervening time. The 2020 survey results are therefore assessed as still valid and appropriate to the evaluation.
- 5.3 **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and **Outline LEMP (Doc Ref. 7.10)** detail avoidance, mitigation, compensation and enhancement measures relating to reptiles.

### PRESENCE / LIKELY ABSENCE AND DISTRIBUTION

- 5.4 Three reptile species (common lizard, slow worm and grass snake) were recorded within the Site during both survey years, 2020 and 2022.
- 5.5 Additionally, the presence of non-adult animals of all the three species confirms breeding on Site and/or within the surrounding off-Site habitats.

#### COMMON LIZARD

- 5.6 Adults and non-adults are concentrated in parcels C and E, with peak adult counts of five and ten respectively. Common lizard appears to be absent from parcels A1 and B and only one adult was detected in parcels A2 and D. However, non-adults were found in every parcel suggesting that adults are present and breeding across the entire Site. See Annex 7 for the location and distribution of this species.

#### SLOW WORM

- 5.7 This species appears most concentrated in parcels A1, C and E, with adult peak counts of 16, nine and eight respectively. Adult slow worm are likely absent from parcels A2 and D. Non-adults were also recorded in parcels A1, B, C and E, confirming that this species is breeding across the majority of the Site. See Appendix 7 for the location and distribution of this species.

#### GRASS SNAKE

- 5.8 Adults and non-adults of this species are widely distributed across the Site, except in parcel D where there is a likely absence. Detection of non-adult grass snake in parcels A, B, C and E confirms that this species is also breeding across the Site. Non-adult grass snakes were most frequently detected in parcel E. The adult peak count was three in parcel B and three in parcel E. See Appendix 7 for the location and distribution of this species.

### POPULATION SIZE CLASS ASSESSMENTS

5.9 The populations of the recorded reptile species within the Site have been assessed from peak counts with reference to appropriate guidance (HGBI, 1998), as follows:

-

- A 'low' population of slow worm is present.
- A 'low' population of common lizard is present on Site and/or within the surrounding off-Site habitats.
- A 'low' population of grass snake is present on Site.

5.10 While accounting for some limitations within individual parcel surveys (i.e., displacement and redistribution of ACOs, variations in survey dates and variations in weather conditions) the peak count results and corresponding population classes are overall assessed as robust.

5.11 The collection of two years of survey data (across different areas of the Site), with many survey visits during optimal months and weather conditions, provides greater certainty through an extensive baseline, accounting for seasonal variation. Even when assessing peak counts on a precautionary basis, it is unlikely that additional survey effort would record materially different peak counts that would result in revised population size class assessments.

## 6. REFERENCES

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## 7. ANNEX 1: LEGISLATION

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- 7.1 The specific legal protection afforded to reptiles can be found within the Sections and Schedules of the relevant legislation and relevant case law.
- 7.2 Slow worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*), grass snake (*Natrix helvetica*) and adder (*Vipera berus*) are the four most common reptile species in the UK. These species are protected from intentional and reckless killing and injury under the Wildlife and Countryside Act 1981 (as amended).
- 7.3 The habitat of slow worm, common lizard, grass snake and adder is not legally protected. However, if great crested newts (*Triturus cristatus*) are present, the habitat supporting reptiles might be protected because of the legal protection afforded to great crested newts.
- 7.4 Actions affecting multiple animals can be construed as separate offences and therefore penalties can be applied per animal impacted.
- 7.5 The sand lizard (*Lacerta agilis*) and smooth snake (*Coronella austriaca*), including their habitat, are fully protected by the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). However, these species are restricted to narrow geographies and specific habitat types not found on or near the application Site. Therefore, they are not considered further in this assessment.
- 7.6 All reptiles and amphibians are afforded legal protection by the Animal Welfare Act 2006. This Act makes it an offence to cause any 'animal' (defined in the Act as all vertebrates other than human beings) to suffer unnecessarily, or to allow any such action to occur. The Act also makes it an offence to fail to take any reasonable action that would prevent unnecessary suffering. This Act is of relevance during reptile and amphibian translocation exercises.
- 7.7 Adder is listed by the Dangerous Wild Animals Act 1976 (as amended). This may be of relevance during reptile translocation works.
- 7.8 Licences to capture and move the four most common UK reptile species are not required.
- 7.9 The Wildlife and Countryside Act (1981) as amended, includes certain defences that may apply in some specific circumstances.
- 7.10 All native UK reptile species are listed as Species of Principal Importance.

## 8. ANNEX 2: HABITAT SUITABILITY CRITERIA - REPTILES

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- 8.1 For the purpose of this report, habitat suitability criteria developed by Lloydbore have been used to assess and categorise on Site habitats for reptiles. Suitable reptile habitats include the following habitat types: -
- Heathland;
  - Moorland;
  - Grasslands;
  - Scrub;
  - Woodland;
  - Wetlands;
  - Sand dune;
  - Hard and soft cliffs;
  - Vegetated shingle;
  - Open mosaic habitats; and
  - Coastal lagoon.
- 8.2 These habitats can be found within a broad range of land use types, including: -
- Farmland;
  - Brownfield sites;
  - Gardens and allotments;
  - Parks and grounds;
  - Churchyards;
  - Mineral sites;
  - Road and rail embankments; and
  - River and sea walls.
- 8.3 Other habitat and land use types may be utilised by reptiles, if their basic ecological requirements (foraging, shelter/protection, basking, breeding and/or hibernation) are met by the habitat. It is therefore imperative that all sites / habitats are assessed based on their ecological functionality for reptiles, rather than making hard and fast judgements based on broad habitat and/or land use type.
- 8.4 The below suitability criteria have been devised to provide a structured way of assessing ecological functionality for reptiles, which can be applied by suitably experienced ecologists.
- 8.5 Reptiles require large areas, or closely spaced patches, of suitable habitat to support viable population in the long term. Therefore, habitat connectivity is important on a landscape level but also within a site.



8.6 The below has been adapted from the *Reptile Habitat Management Handbook* and details the habitat requirements of reptiles (Edgar, Foster and Baker, 2010). The factors cited in the first table (below) have been used to develop the suitability criteria that are set out in the second table (also below).

Table 2: Reptile habitat requirements (Edgar, Foster and Baker, 2010)

Requirement	Description
Insolation (exposure to sun)	<ul style="list-style-type: none"> <li>• Reptiles bask openly in direct sunlight or seek warm sites under cover (in vegetation or under object) or partially exposed amidst dense vegetation (mosaic basking).</li> <li>• Varied topography (south-facing slopes are particularly favoured by reptiles) and a mosaic of open, sunny areas and dense cover provide the best range of basking opportunities.</li> </ul>
Shelter from the elements (heat, dry weather and wind), predators	<ul style="list-style-type: none"> <li>• Reptiles need vegetation cover and open areas in close proximity to each other.</li> <li>• The best habitats are structurally diverse habitats, or mosaics of vegetation of differing heights, ages, or types.</li> <li>• Thorny or prickly plants such as gorse and bramble can provide particularly good refuge from predators and may be used as sheltered basking sites.</li> </ul>
Hibernation opportunities (shelter during the winter)	<ul style="list-style-type: none"> <li>• Hibernation sites must be climatically stable, frost-free, humid (but not wet) and safe from flooding and predators.</li> <li>• Typical hibernation sites include mammal burrows, rotted tree stumps and root holes, fissures in soil / substrate, large grass tussocks, anthills, old walls and building foundations, piles of rubble and other debris and under large logs and fallen trees.</li> <li>• Sand lizard, grass snake, smooth snake and adder usually make seasonal movements to hibernation sites.</li> <li>• Slow worm and common lizard may also make shorter distance migrations to hibernation features, but the location of hibernation features normally corresponds with the areas used during the active season.</li> </ul>

Requirement	Description
Food	<ul style="list-style-type: none"> <li>• Legged lizard (common lizard and sand lizard): Main prey items are insects and other invertebrates such as spiders.</li> <li>• Legless lizard (slow worm): Main prey items are soft-bodied invertebrates such as slugs and worms.</li> <li>• Smooth snake: Main prey items are reptiles and small mammals.</li> <li>• Grass snake: Main prey items are amphibians and fish.</li> <li>• Adder: Main prey items are small mammals and occasionally lizards.</li> </ul>
Breeding habitat	<ul style="list-style-type: none"> <li>• Breeding sites are more likely to be found where structurally diverse habitats encourage high population densities.</li> <li>• Reptiles require secluded areas close to, or under, secure cover for courting and mating.</li> <li>• Grass snakes need access to decomposing material to lay their eggs. Typical egg-laying sites include manure heaps, compost heaps, piles of grass clippings, sawdust, cut reed and, in coastal areas, seaweed heaps.</li> <li>• Sand lizards require areas of exposed sand (or similar loose substrate) with good sun exposure in which to lay their eggs.</li> </ul>

8.7 The below habitat suitability criteria have been adapted based on the ecology and specific ecological requirements of reptiles (as described above).

*Table 3: Reptile Habitat Suitability Criteria*

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
High	Provides significant opportunities for: - <ul style="list-style-type: none"> <li>• foraging;</li> <li>• shelter / protection;</li> <li>• basking;</li> <li>• breeding; and</li> <li>• hibernation.</li> </ul>	<ul style="list-style-type: none"> <li>• Heterogenous habitat (e.g., grassland, scrub, woodland edges).</li> <li>• Structurally diverse habitats, mosaics of vegetation of differing heights, ages, or types (e.g., tussocky grassland, dense scrub/islands).</li> <li>• Extensive landscape connectivity to suitable off-site reptile habitat.</li> </ul>
Medium	Provides significant opportunities for two or three of the above key ecological functions.	<ul style="list-style-type: none"> <li>• Homogenous / slightly heterogenous habitat (one to two dominant habitats e.g., grassland and scrub).</li> <li>• Habitat structure is diverse, but habitat type is uniform (e.g., tussocky grassland only).</li> <li>• Sub-optimal landscape connectivity to suitable off-site reptile habitat.</li> </ul>

Habitat Suitability Category	Ecological Functionality for Reptiles (one or more species)	Typical Characteristics of habitats within this Category*
Low	Provides significant opportunities for one of the above key ecological functions or some limited (minimal) opportunities for two or more of these functions.	<ul style="list-style-type: none"> <li>• Uniform habitat composition (e.g., grassland).</li> <li>• Limited vegetative structure (e.g., closely mown or grazed grassland).</li> <li>• Possess limited landscape connectivity to suitable off-site habitat.</li> </ul>
Negligible	Does not provide any opportunities for reptiles.	<ul style="list-style-type: none"> <li>• Unvegetated areas, such as bare ground and buildings.</li> </ul>
<p><i>*Note that the characteristics given in Column 3 of this Table are typical characteristics of high, medium, low, and negligible suitability habitats, and are provided for illustrative purposes to aid the assignment of a habitat suitability category. They are not absolute criteria or universal rules that will always dictate the suitability category that the habitat within a given survey site must fall within.</i></p>		

**Note:**

- 8.8 It is important to note that a holistic view of site / habitat suitability for reptiles should be taken when attributing suitability categories to areas of habitat. Consideration of habitat continuity and connectivity within a site is key to determining habitat suitability.
- 8.9 For instance, a block of on-site woodland may provide significant hibernation opportunities, whilst an immediately adjacent on-site belt of structurally diverse grassland with debris piles may provide significant basking, foraging, shelter, and breeding opportunities.
- 8.10 Taken as a whole (i.e., as a functional habitat unit), these habitats are likely to be correctly assigned a habitat suitability level that is higher than if they were assessed individually.

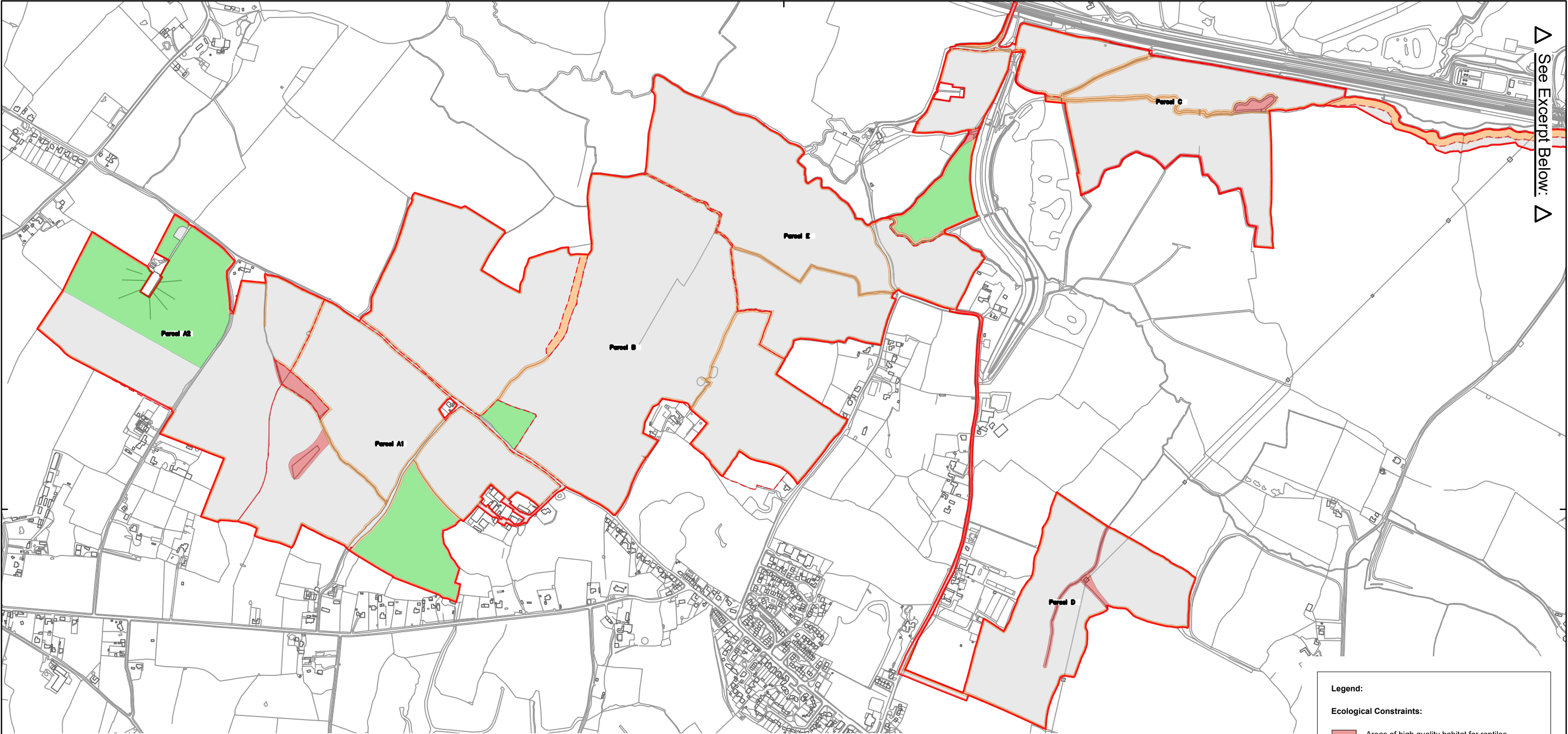
- 8.11 If, however, these habitats (the woodland and grassland in this example) were separated by a substantial area of bare ground that would prevent or severely limit reptile dispersal between the two, then these habitat areas should correctly be assessed as separate habitat units and categorised based on their individual ecological functionality for reptiles.
- 8.12 The categorisation of habitats must therefore consider what constitutes a 'functional habitat unit' for reptiles on a given site.
- 8.13 Professional judgement and knowledge of species ecology can and should be used during habitat assessment, but the above criteria and guidance are used as tools to ensure that a structured and evidence-based assessment is conducted and that the criteria used are as objective as possible.

## 9. ANNEX 3: REPTILE HABITAT SUITABILITY PLAN

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***[SEE OVERLEAF]***

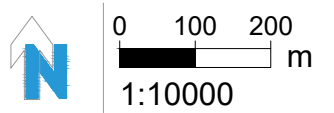
See Excerpt Below:



**Legend:**

**Ecological Constraints:**

- Areas of high quality habitat for reptiles.  
Total area approx: 4.382 ha.
- Areas of medium quality habitat for reptiles.  
Total area approx: 14.008 ha.
- Areas of low quality habitat for reptiles.  
Total area approx: 16.692 ha.
- Areas of negligible quality habitat for reptiles.  
Total area approx: 153.690 ha.
- Area not accessible due to National Rail and National Grid safety restrictions.
- Survey parcel boundary
- Order limits



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rev.	rev. date	auth.	rev. note
C01	15/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0035**  
 drawing title: **Reptile Habitat Suitability Plan**

rev.	<b>C01</b>	rev date	<b>15/05/24</b>
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APPF	<b>5(2)(f)(ii)</b>	sheet	<b>A3</b>
drawn.	<b>NA</b>	drawn.	<b>NA</b>
checked.	<b>MW</b>	checked.	<b>MW</b>

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 www.lloydbore.co.uk mail@lloydbore.co.uk

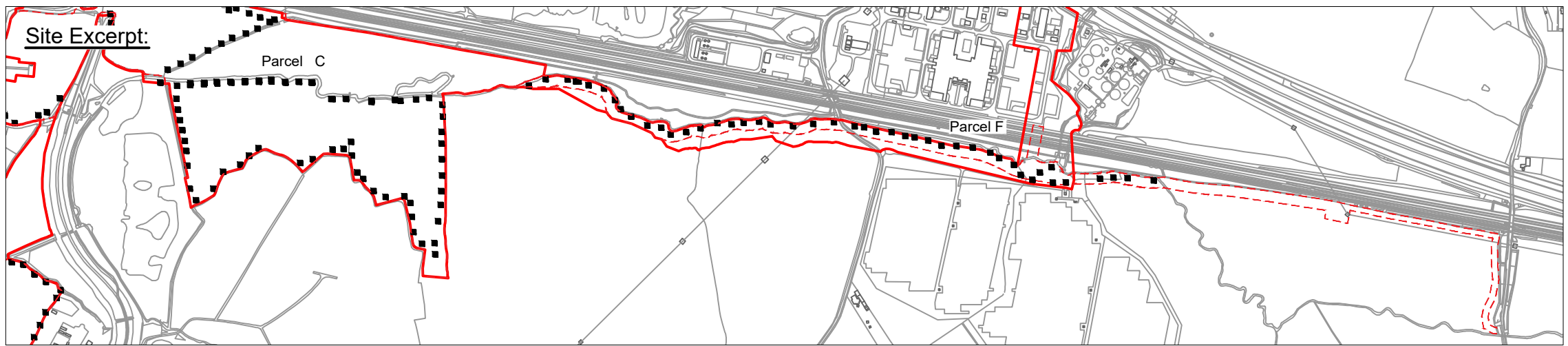
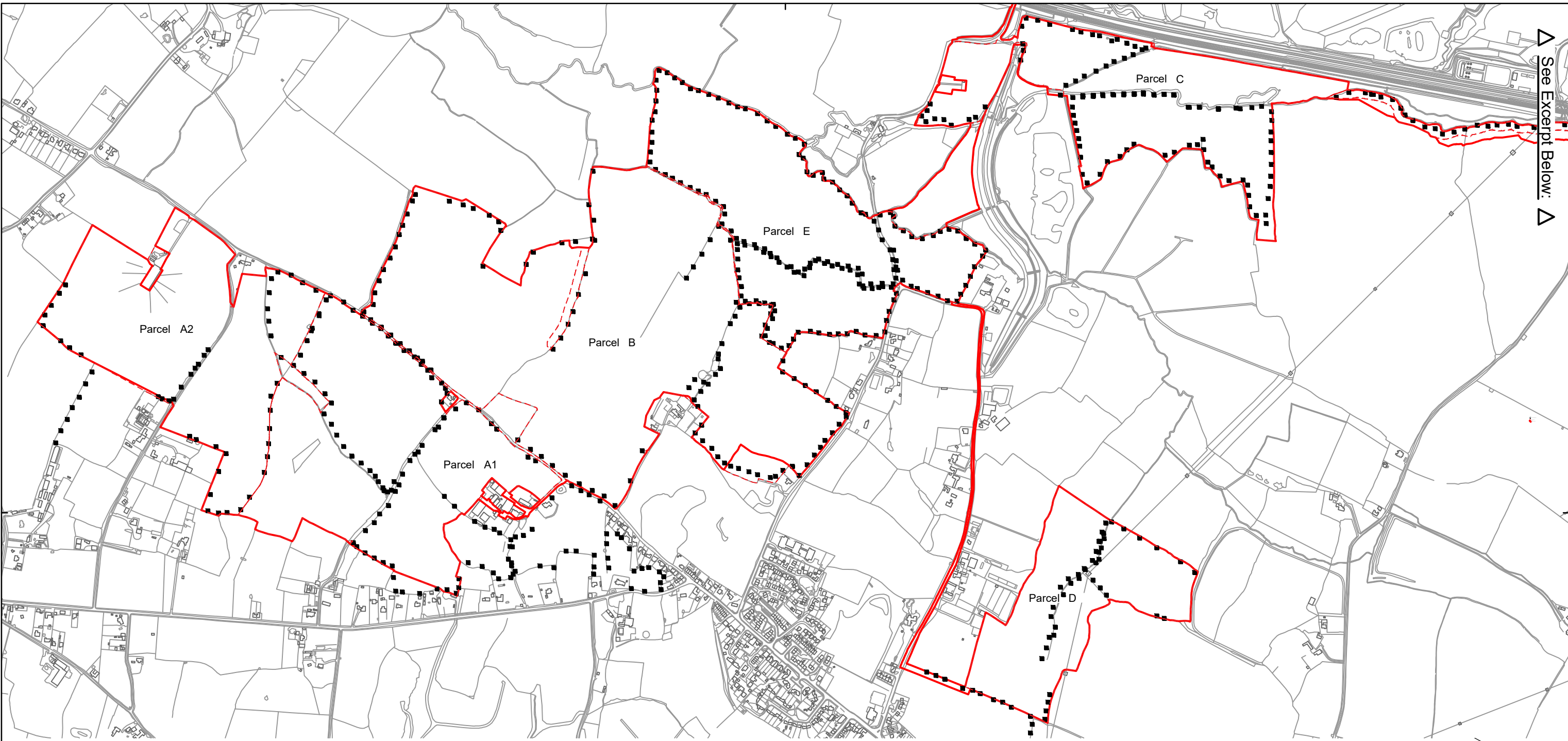
**10. ANNEX 4: LOCATION OF ARTIFICIAL COVER OBJECTS (ACOS)**

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***[SEE OVERLEAF]***

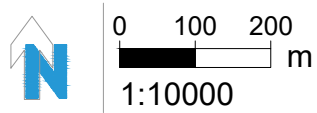


See Excerpt Below:



**LEGEND:**

- Artificial cover object (ACO) location
- Survey parcel boundary
- Order limits  
Total area approx: 191.538 ha.



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rev.	rev. date	auth.	rev. note
C01	15/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note

client: **EPL 001 Limited**  
 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0036**  
 drawing title: **Locations of Artificial Cover Objects (ACOs)**

rev.	<b>C01</b>	rev date	<b>15/05/24</b>
suit.	<b>A4</b>	scale	<b>1:10000</b>
APPF	<b>5(2)(f)(ii)</b>	sheet.	<b>A3</b>
drawn.	<b>NA</b>	checked.	<b>MW</b>

**lloyd bore** landscape ecology arboriculture  
 33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
 www.lloydbore.co.uk mail@lloydbore.co.uk

**11. ANNEX 5: REPTILE SURVEY VISIT DATA***Table 4: Dates, times, and associated weather conditions of reptile survey visits - Parcel A-1*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	09/07/2020	08:46	10:40	17 / 17	100%	Damp	Post rain
2	14/07/2020	08:32	10:03	17 / 18	100%	Dry	Some drizzle
3	16/07/2020	08:10	09:48	16 / 16	0%	Dry	Full sun, breezy
4	21/07/2020	08:09	09:48	17 / 18	0%	Dry	Full sun
5	23/07/2020	08:08	10:55	16 / 18	60%,	Dry	Warm
6	29/07/2020	09:18	10:52	16 / 19	0%	Dry	Full sun, no wind
7	04/08/2020	08:16	09:44	16 / 18	10%	Dry	Sunny, 10% cloud cover
8	22/09/2020	09:09	10:59	17 / 17	0%	Dry	Hazy sun
9	28/09/2020	14:55	16:25	15 / 15	0%	Dry	Full sun, light wind
10	03/10/2020	15:15	17:05	15 / 14	100%	Dry	No wind
11	07/10/2020	15:48	16:56	16 / 15	50%	Dry	75% cloud cover at end of survey
12	14/10/2020	11:28	12:28	13 / 13	40%	Dry	Windy, some sun.

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
13	17/10/2020	11:21	12:15	11 / 12	100%	Damp	Windy at end of survey
14	22/10/2020	12:19	13:30	14 / 15	50%,	Dry	Windy, intermittent sun.
15	30/10/2020	10:05	10:30	15 / 15	80%	Damp	Damp

*Table 5: Dates, times, and associated weather conditions of reptile survey visits - Parcel A-2*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	09/07/2020	08:55	09:39	16 / 18	100%	Damp	Post rain, warm, humid
2	14/07/2020	10:21	12:46	17 / 23	95%	Dry	100% cloud cover, some drizzle
3	16/07/2020	08:21	10:09	17 / 17	100%	Dry	Full sun, breezy
4	21/07/2020	08:12	10:01	15 / 16	20%	Dry	Breezy
5	23/07/2020	08:14	10:07	15 / 19	60%	Dry	60% cloud cover
6	29/07/2020	09:22	11:10	16 / 18	20%	Dry	Full sun, no wind
7	04/08/2020	08:11	09:50	17 / 19	40%	Dry	Sunny, 10% cloud cover, windy
8	22/09/2020	09:15	11:08	16 / 17	0%	Dry	Hazy, sun, no wind
9	28/09/2020	15:10	16:34	18 / 18	10%	Dry	Light wind

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
10	03/10/2020	15:15	17:05	15 / 14	100%	Dry	Sunny, light breeze
11	07/10/2020	15:48	16:45	16 / 15	30%	Dry	Windy
12	14/10/2020	12:30	13:11	12 / 13	70%	Dry	Some sun
13	17/10/2020	12:16	13:06	12 / 12	100%	Damp	100% cloud cover. Breezy at end.
14	22/10/2020	15:47	16:40	16 / 15	10%	Dry	Full sun and light breeze
15	26/10/2020	14:16	15:10	13 / 13	70%	Damp	Windy

*Table 6: Dates, times, and associated weather conditions of reptile survey visits - Parcel B*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	09/07/2020	08:32	10:55	16 / 16	100%	Damp	Cloudy, humid, post rain
2	14/07/2020	08:30	10:25	16 / 17	100%	Damp	Intermittent drizzle
3	16/07/2020	08:15	10:07	16 / 17	100%	Dry	Full sun, breezy
4	21/07/2020	08:10	10:04	14 / 18	5%	Dry	Light wind
5	23/07/2020	08:10	10:00	17 / 20	30%	Dry	Light wind
6	29/07/2020	09:19	11:09	16 / 19	0%	Dry	Full sun, no wind
7	04/08/2020	08:10	09:58	15 / 19	10%	Dry	Sunny, 10% cloud cover,
8	22/09/2020	09:00	10:45	15 / 16	0%	Dry	Full sun, no wind
9	28/09/2020	15:05	16:45	17 / 16	0%	Dry	Light wind
0	01/10/2020	16:30	17:15	15 / 13	10%	Dry	Windy
11	07/10/2020	11:42	12:45	14 / 15	25%	Dry	Breezy and sunny
12	14/10/2020	13:35	14:48	12 / 12	100%	Dry	Windy
13	19/10/2020	13:43	16:26	13 / 13	85%	Dry	Very windy, full sun.

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
14	22/10/2020	14:10	15:11	16 / 17	30%	Damp	Full sun and light breeze
15	30/10/2020	10:45	11:45	15 / 15	80%	Damp	Drizzle during survey

*Table 7: Dates, times, and associated weather conditions of reptile survey visits - Parcel C*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	09/07/2020	08:38	11:13	16 / 18	100%	Damp	Cloudy, humid, post rain
2	14/07/2020	08:40	10:21	16 / 18	100%,	Damp	Light rain and drizzle throughout survey
3	16/07/2020	08:15	10:00	17 / 18	100%	Dry	Full sun, breezy
4	21/07/2020	08:13	09:53	15 / 17	5%,	Dry	Sunny, north-west light breeze
5	23/07/2020	08:15	09:30	17 / 20	0%	Dry	Recently mown fields
6	29/07/2020	09:25	11	16 / 19	0%	Dry	Full sun, no wind
7	04/08/2020	08:20	09:43	17 / 21	20%	Dry	Sunny, light breeze
8	22/09/2020	09:03	10:42	16 / 19	10%	Dry	Hazy sun
9	28/09/2020	15:14	16:36	17 / 17	20%	Dry	Light wind
10	01/10/2020	15:15	15:52	15 / 15	70%	Dry	Warm
11	10/10/2020	13:09	13:43	16 / 16	50%	Dry	Sunny



Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
12	15/10/2020	13:55	14:34	12 / 12	45%	Damp	Full sun, survey completed one-hour post-rain
13	17/10/2020	14:05	14:51	12 / 12	100%	Damp	100% cloud cover. Breezy at end.
14	22/10/2020	10:09	10:46	14 / 14	80%	Damp	Sunny with no wind
15	30/10/2020	12:10	12:50	15 / 15	80%	Damp	Some light drizzle during survey.

*Table 8: Dates, times, and associated weather conditions of reptile survey visits - Parcel D*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	09/07/2020	08:42	10:40	17 / 17	90%	Dry	100% cloud cover, some drizzle
2	14/07/2020	08:47	10:01	17 / 17	100%	Damp	Light drizzle
3	16/07/2020	08:40	10:20	16 / 17	100%	Dry	Full sun, breezy
4	21/07/2020	08:10	10:06	17 / 17	0%	Dry	Sunny
5	23/07/2020	08:23	10:03	18 / 21	0%	Dry	Dry and sunny
6	29/07/2020	09:18	10:43	17 / 19	30%	Dry	Full sun, no wind
7	04/08/2020	08:30	10:02	18 / 19	40%	Dry	Sunny
8	22/09/2020	09:08	10:06	15 / 16	0%	Wet	Hazy sun
9	28/09/2020	15:01	16:38	18 / 19	50%	Dry	Sunny, light wind
10	01/10/2020	14:02	14:45	15 / 16	70%	Dry	Warm
11	07/10/2020	14:36	15:15	16 / 16	60%	Dry	Sunny and windy

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
12	15/10/2020	15:56	16:28	12 / 11	70%,	Dry	Some wind. 50% cloud cover at the end of the survey
13	19/10/2020	16:36	17:38	13 / 13	80%	Dry	Windy
14	22/10/2020	11:08	11:38	15 / 15	95%	Damp	Sunny with no wind
15	26/10/2020	12:06	12:48	13 / 13	80%	Damp	No wind; sun and light drizzle in last five minutes of survey

*Table 9: Dates, times, and associated weather conditions of reptile survey visits - Parcel E (Fields 18, 19 and 23)*

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
1	04/05/2022	09:00	14:00	16 / 16	100%	Dry ground.	No wind, overcast.
2	09/05/2022	09:00	12:00	14 / 16	0%	Damp ground.	No wind, clear sky.
3	17/05/2022	07:30	09:55	16 / 19	60%	Slightly damp.	No wind.
4	25/05/2022	08:00	10:30	13 / 14	75%	Damp ground. Heavy rain at night before survey.	Very light breeze.
5	30/05/2022	09:45	12:15	13 / 14	80%	Slightly damp.	No wind.
X	07/06/2022*	11:00	12:00	13 / 13	100%	Slightly damp.	Very light breeze, overcast.
6	14/06/2022	09:30	13:30	17 / 21	15%	Slightly damp.	Very light breeze.
7	20/06/2022	08:45	11:45	15 / 18	15%	Slightly damp.	Gentle breeze.
8	23/06/2022	07:30	10:30	17 / 19	80%	Slightly damp.	No wind.
9	29/06/2022	07:00	10:45	15 / 17	90%	Dry ground.	No wind, overcast.
10	06/07/2022	06:30	08:56	12 / 18	25%	Dry ground.	No wind.
X	12/07/2022	ACOs in F106 shredded. Replaced and left to bed down gain.					

Visit	Date	Start time	Stop time	Temp start / stop (°C)	Percentage cloud cover	Precipitation / ground conditions	General weather conditions
11	02/08/2022	06:30	11:00	19 / 19	100%	Dry ground.	Gentle breeze, overcast.
12	05/08/2022	06:30	09:30	17 / 19	30%	Dry ground.	Very light breeze.
13	15/08/2022	06:25	08:00	18 / 20	80%	Dry ground.	No wind. Overcast, minimal direct sun.
14	18/08/2022	07:00	09:30	16 / 19	80%	Dry ground.	No wind.
15	22/08/2022	07:00	08:15	17 / 19	5%	Dry ground.	No wind.
X	25/08/2022	Some ACOs shredded in F21 and F22 (final survey so not re-deployed)					
16	16/09/2022	09:45	11:45	15 / 16	50%	Slightly damp.	Gentle breeze.
17	22/09/2022	09:00	10:45	16 / 16	30%	Slightly damp.	No wind. Thin, hazy cloud.

\*Only field F18 completed due to onset of heavy rain, therefore 17 full surveys completed.

**12. ANNEX 6: DETAILED REPTILE SURVEY RESULTS**

*Table 10: Detailed survey results (number of animals of each species recorded during each visit) - Parcel A-1*

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
1	09/07/2020	0	0	0	16	6	0	0	0	2
2	14/07/2020	0	0	0	10	6	0	0	0	0
3	16/07/2020	0	1	0	10	1	0	0	0	0
4	21/07/2020	0	0	0	14	3	0	1	0	0
5	23/07/2020	0	1	0	16	1	0	1	0	0
6	29/07/2020	0	0	0	12	2	0	0	1	0
7	04/08/2020	0	0	0	7	1	0	0	0	1
8	22/09/2020	0	0	0	4	4	0	0	0	0
9	28/09/2020	0	0	0	0	1	0	0	1	1
10	03/10/2020	0	0	0	0	1	0	0	0	0

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
11	07/10/2020	0	0	0	2	4	1	0	0	0
12	14/10/2020	0	0	0	1	0	0	0	0	0
13	17/10/2020	0	0	0	0	1	0	0	0	0
14	22/10/2020	0	0	0	0	7	0	0	0	0
15	30/10/2020	0	0	0	0	0	0	0	0	0

*Table 11: Detailed survey results (number of animals of each species recorded during each visit) - Parcel A-2*

Visit	Date	Number of reptiles recorded					
		Common lizard			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID
1	09/07/2020	0	0	0	0	3	0
2	14/07/2020	0	0	0	0	1	0
3	16/07/2020	0	1	0	0	0	0
4	21/07/2020	0	0	0	0	2	0
5	23/07/2020	0	0	0	0	1	0
6	29/07/2020	0	0	0	0	0	0
7	04/08/2020	0	0	0	0	0	0
8	22/09/2020	0	0	0	0	0	0
9	28/09/2020	0	0	0	0	0	0
10	03/10/2020	1	0	0	0	0	0
11	07/10/2020	1	0	0	0	0	0
12	14/10/2020	0	0	0	0	0	0
13	17/10/2020	0	0	0	0	0	0
14	22/10/2020	0	0	0	0	0	0
15	26/10/2020	0	0	0	0	0	0



*Table 12: Detailed survey results (number of animals of each species recorded during each visit) - Parcel B*

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	ID	Adult	Non-adult	UID	Adult	Non-adult	UID
1	09/07/2020	0	0	0	3	3	0	3	1	0
2	14/07/2020	0	0	0	3	0	0	0	1	0
3	16/07/2020	0	0	0	1	2	0	0	0	0
4	21/07/2020	0	0	0	1	0	0	0	0	0
5	23/07/2020	0	0	0	2	2	0	1	0	0
6	29/07/2020	0	0	0	0	0	0	0	0	0
7	04/08/2020	0	0	0	1	0	0	0	1	0
8	22/09/2020	0	2	0	0	0	0	0	0	0
9	28/09/2020	0	0	0	1	0	0	0	0	0
10	01/10/2020	0	0	0	0	0	0	0	0	0
11	07/10/2020	0	0	1	1	1	0	0	0	0
12	14/10/2020	0	1	0	1	0	0	0	0	0
13	19/10/2020	0	0	0	0	0	0	0	0	0

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	ID	Adult	Non-adult	UID	Adult	Non-adult	UID
14	22/10/2020	0	0	0	0	0	0	0	0	1
15	30/10/2020	0	0	0	0	0	0	0	0	0

*Table 13: Detailed survey results (number of animals of each species recorded during each visit) - Parcel C*

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
1	09/07/2020	2	0	1	9	9	3	0	0	0
2	14/07/2020	1	1	0	4	5	0	1	0	0
3	16/07/2020	2	2	0	5	2	0	1	0	0
4	21/07/2020	2	1	0	5	1	1	0	2	0
5	23/07/2020	1	3	0	5	6	0	1	0	0
6	29/07/2020	0	0	0	3	0	0	0	0	0
7	04/08/2020	1	1	0	1	1	0	0	1	0
8	22/09/2020	0	0	0	0	0	0	0	1	0
9	28/09/2020	0	0	0	0	0	0	0	1	0
10	01/10/2020	5	2	2	0	0	0	0	0	0
11	10/10/2020	0	0	0	0	0	0	0	0	0
12	15/10/2020	0	0	2	1	0	0	0	0	0
13	17/10/2020	0	1	0	1	0	0	0	0	0

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
14	22/10/2020	0	1	0	3	1	0	0	0	0
15	30/10/2020	0	0	0	0	0	0	0	0	0

*Table 14: Detailed survey results (number of animals of each species recorded during each visit) - Parcel D*

Visit	Date	Number of reptiles recorded		
		Common lizard		
		Adult	Non-adult	UID
1	09/07/2020	0	0	0
2	14/07/2020	0	0	0
3	16/07/2020	0	0	0
4	21/07/2020	0	0	0
5	23/07/2020	1	1	0
6	29/07/2020	0	0	0
7	04/08/2020	0	0	0
8	22/09/2020	0	0	0
9	28/09/2020	0	0	0
10	01/10/2020	0	0	0
11	07/10/2020	0	0	0
12	15/10/2020	0	0	0
13	19/10/2020	0	0	0
14	22/10/2020	0	0	0
15	26/10/2020	0	0	0

Table 15: Detailed survey results (number of animals of each species recorded during each visit) - Parcel E (Fields 18, 19 and 23)

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
1	04/05/2022	0	0	0	0	4	0	0	1	0
2	09/05/2022	0	0	0	0	4	0	0	0	0
3	17/05/2022	0	1	0	2	1	0	3	1	0
4	25/05/2022	7	0	3	1	0	0	2	2	0
5	30/05/2022	10	0	0	4	1	0	1	2	0
-	07/06/2022*	0	0	0	1	1	0	0	1	0
6	14/06/2022	6	0	0	8	2	0	1	1	0
7	20/06/2022	5	0	0	7	2	0	0	2	0
8	23/06/2022	1	0	0	2	1	0	0	1	0
9	29/06/2022	0	0	0	3	1	0	0	0	0
10	06/07/2022	0	0	0	1	1	0	0	0	0

Visit	Date	Number of reptiles recorded								
		Common lizard			Slow worm			Grass snake		
		Adult	Non-adult	UID	Adult	Non-adult	UID	Adult	Non-adult	UID
11	02/08/2022	3	3	2	0	0	0	0	1	0
12	05/08/2022	0	0	0	0	0	0	0	0	0
13	15/08/2022	0	0	1	0	0	0	0	0	0
14	18/08/2022	0	6	0	0	0	0	0	0	0
15	22/08/2022	1	0	1	2	0	0	0	0	0
16	16/09/2022	8	8	0	1	1	0	0	0	0
17	22/09/2022	6	3	0	0	1	0	0	0	0

\*Only field F18 completed due to onset of heavy rain, therefore 17 full surveys completed.

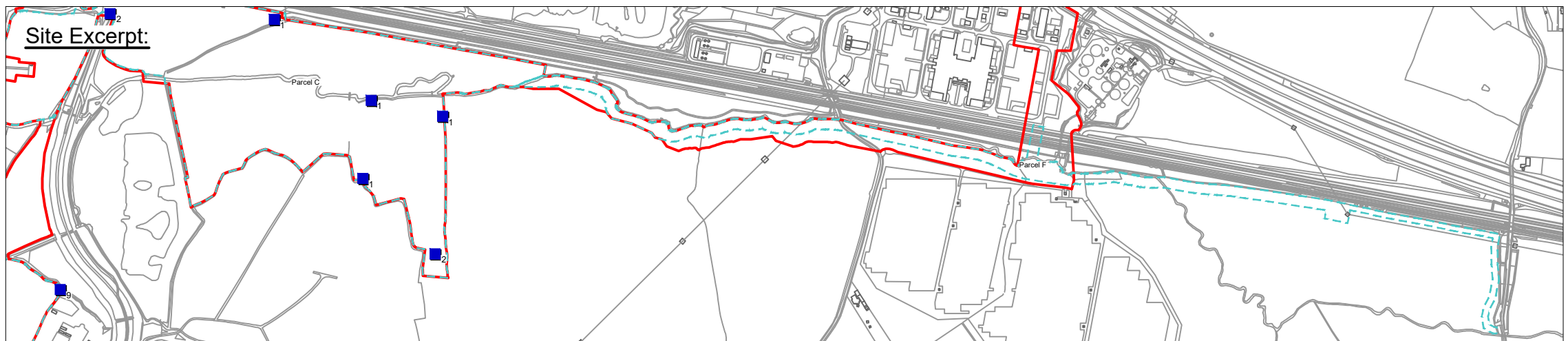
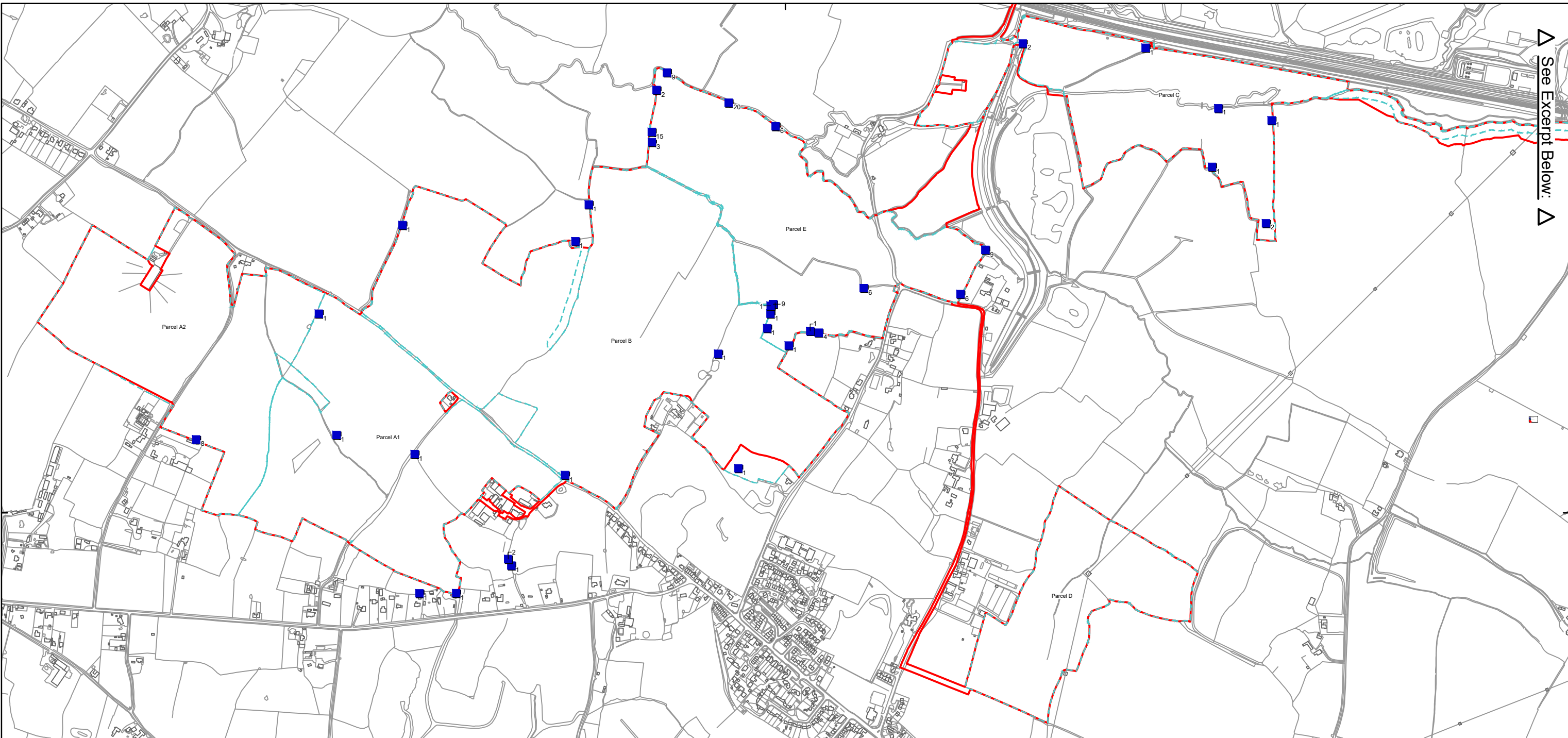
### 13. ANNEX 7: REPTILE DISTRIBUTION PLAN

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***[SEE OVERLEAF]***

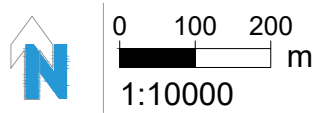


See Excerpt Below:



**LEGEND:**

- Grass snake presence
- Survey parcel boundary
- Order limits



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C01	15/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note

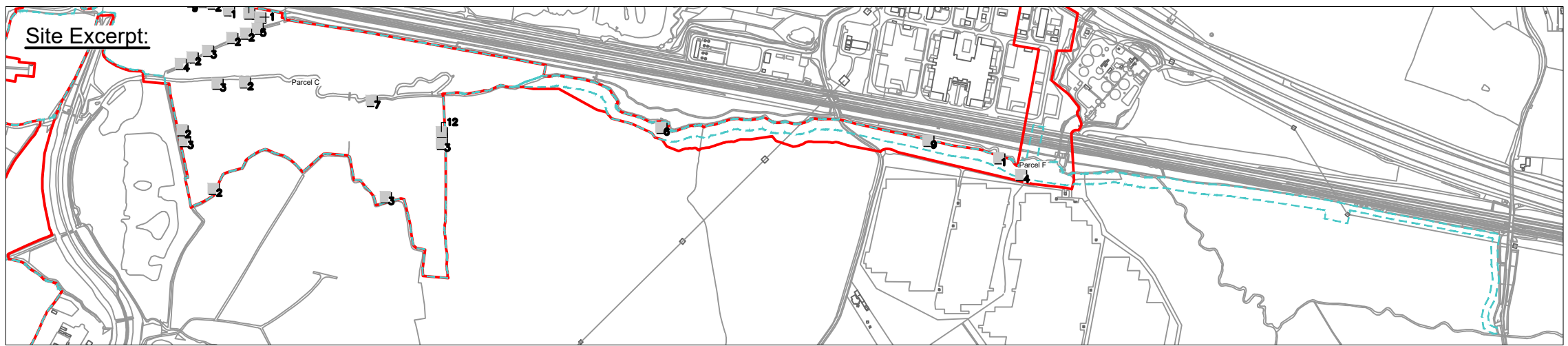
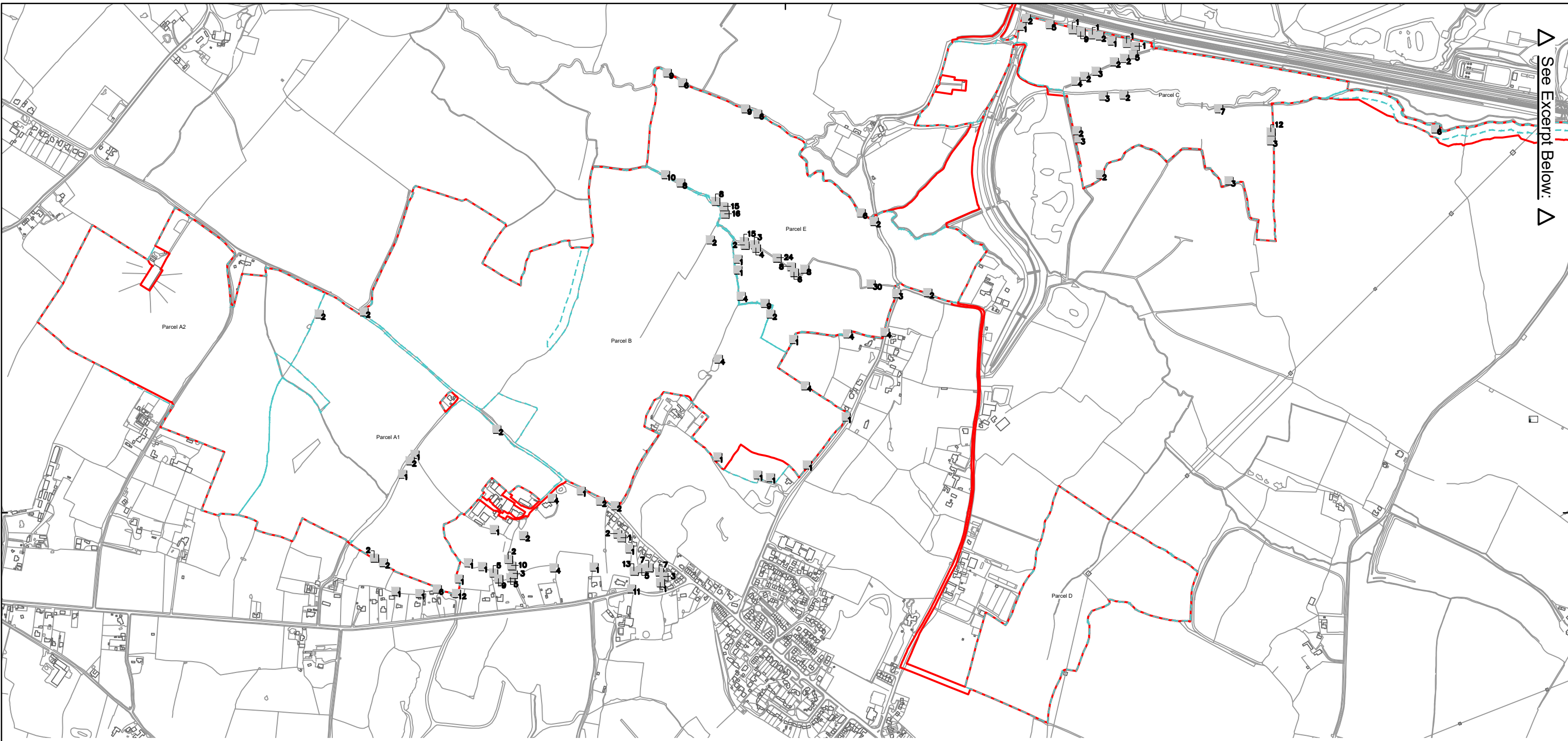
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 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0037**  
 drawing title: **Reptile Distribution Plan**  
**Grass Snake**

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drawn.	<b>NA</b>	checked.	<b>MW</b>

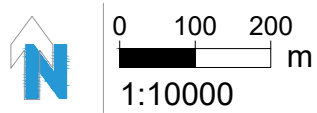
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See Excerpt Below:



**LEGEND:**

	Slow worm presence
	Survey parcel boundary
	Order limits



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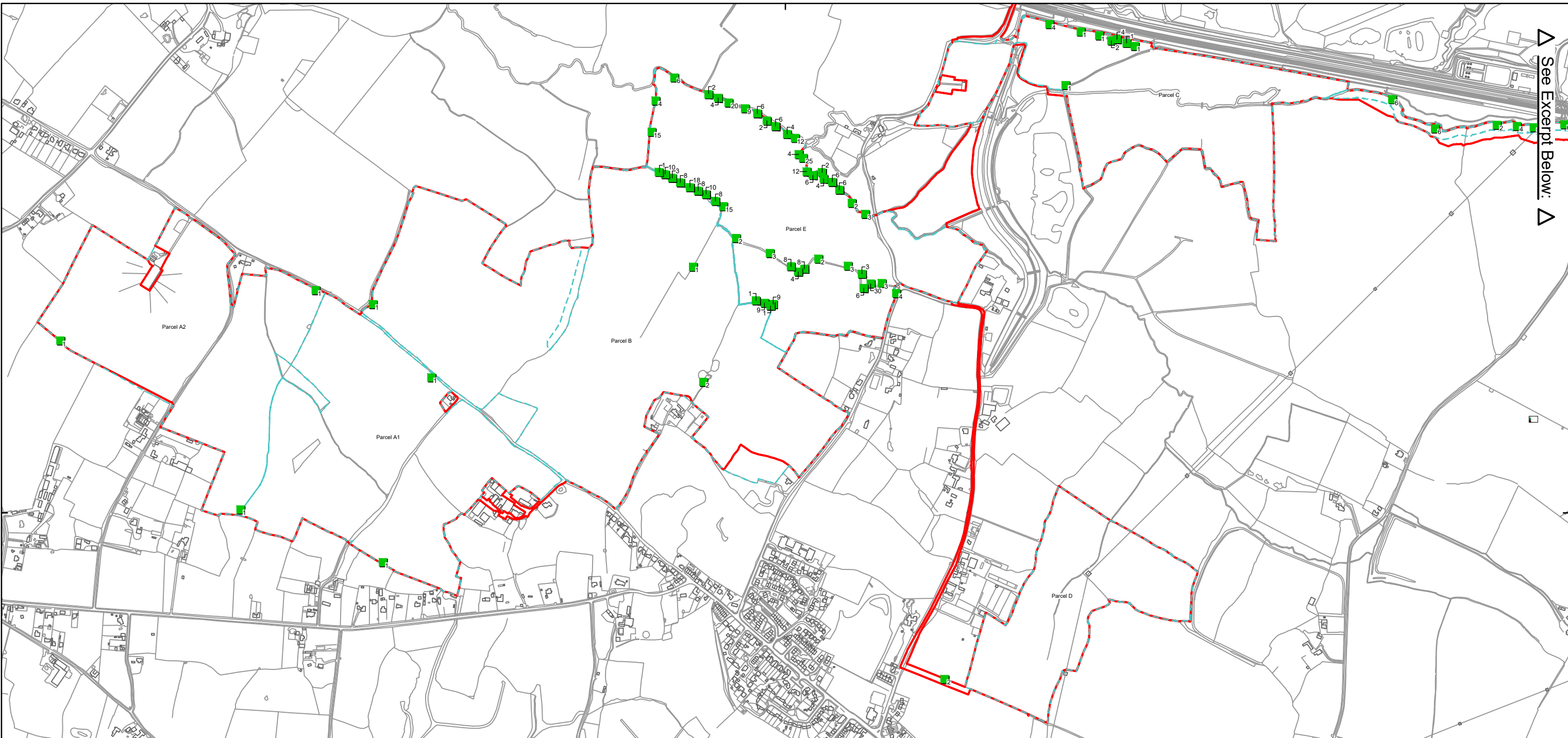
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 project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0038**  
 drawing title: **Reptile Distribution Plan**  
**Land North And West Of Aldington**  
**Slow Worm**

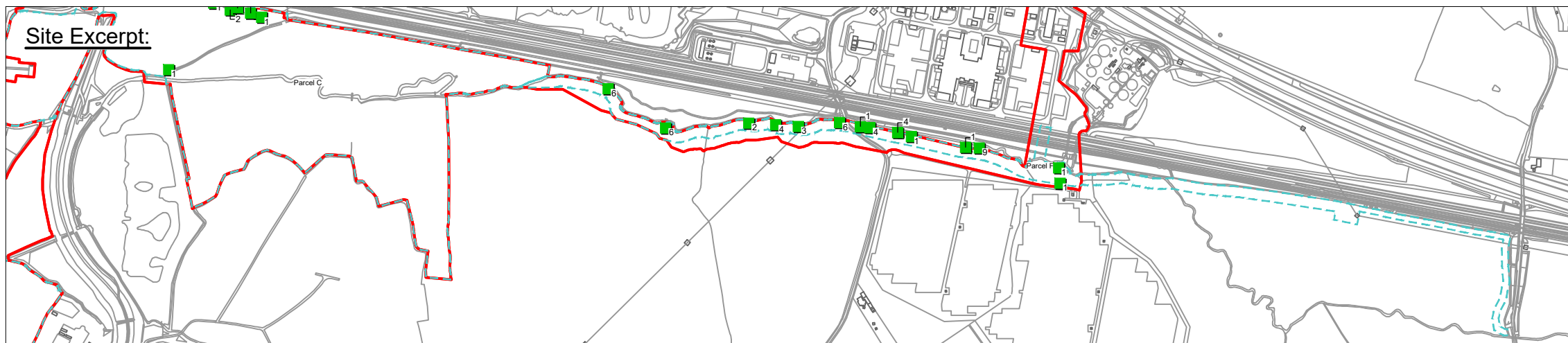
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drawn.	<b>NA</b>	checked.	<b>MW</b>

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See Excerpt Below: ▾

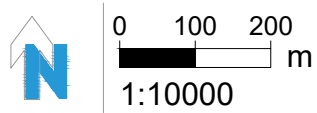


Site Excerpt:



**LEGEND:**

- # Common lizard presence
- Survey parcel boundary
- Order limits



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rev.	rev. date	auth.	rev. note
C01	15/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note

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**Land North And West Of Aldington**  
 Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0040**  
 drawing title: **Reptile Distribution Plan**  
**Common Lizard**

rev.	<b>C01</b>	rev date	<b>15/05/24</b>
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drawn.	<b>NA</b>	checked.	<b>MW</b>

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## **Stonestreet Green Solar**

### Appendix 9.5f: Wintering Bird Survey Report

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## 1. EXECUTIVE SUMMARY

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- S.1 Lloydbore Ltd was commissioned by EPL 001 Limited (the 'Applicant') to conduct a Winter Bird Survey Report. The report details the method and results of the winter bird survey focused on the local wintering bird assemblage in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project'). Winter bird surveys were undertaken within the periods November 2020 to February 2021 and November 2021 to March 2022.
- S.2 The survey consisted of four to five survey visits each survey season (varying by survey 'parcel' and overall totalling 25 visits).
- S.3 The objective of the wintering bird survey (supplemented by desk study) was to record the species, distributions, and numbers of wintering birds within and adjacent to site, with a focus on and notable species, to assess the conservation status of individual species and the wintering assemblage as a whole.
- S.4 The survey visits were conducted by experienced bird surveyors, and the survey method was broadly based on the 'look-see' transect survey methodologies detailed in Gilbert *et al.*, (1998).
- S.5 The main findings of this winter bird survey were: -
- 62 species were recorded within the Site during the survey visits. Of these, one was recorded only flying over the Site and making no direct use of it. Of the remainder using the Site, 37 are notable species as follows:
  - 12 are listed as Species of Principal Importance: lapwing, herring gull, skylark, starling, song thrush, house sparrow, dunnock, bullfinch, linnet, lesser redpoll, yellowhammer and reed bunting;
  - 14 are red status species: lapwing, snipe, woodcock, herring gull, skylark, starling, fieldfare, redwing, mistle thrush, house sparrow, linnet, lesser redpoll, greenfinch and yellowhammer; and
  - 19 are amber status species: greylag goose, mallard, stock dove, woodpigeon, green sandpiper, sparrowhawk, rook, black-headed gull, Mediterranean gull, common gull, lesser black-backed gull, kestrel, wren, song thrush, dunnock, grey wagtail, meadow pipit, bullfinch and reed bunting;
- S.6 The Site is assessed as County level importance for wintering yellowhammer and of Local (district) level importance for wintering skylark and meadow pipit.
- S.7 The Site is of Local (district) importance for its remaining wintering bird assemblage.
- S.8 Impacts on wintering birds and their foraging habitats will be avoided and minimised by design, to ensure that the ecological importance of the local bird population can be maintained and improved.
- S.9 The associated **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)** and **Outline Landscape and Ecological Management Plan ('LEMP') (Doc. Ref. 7.10)** provides detail of avoidance, mitigation and compensation measures relating to birds.

## 2. INTRODUCTION

---

- 2.1 This Winter Bird Survey Report has been prepared on behalf of EPL 001 Limited ('the Applicant') to detail the method and results of the winter bird survey focused on the local wintering bird assemblage in relation to the Development Consent Order ('DCO') application for Stonestreet Green Solar ('the Project').
- 2.2 This Winter Bird Survey Report is **Appendix 9.5f to ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### THE PROJECT

- 2.3 The Project comprises the construction, operation and decommissioning of solar photovoltaic ('PV') arrays and energy storage, together with associated infrastructure and an underground cable connection to the existing National Grid Sellindge Substation.
- 2.4 The Project will include a generating station (incorporating solar arrays) with a total capacity exceeding 50 megawatts ('MW'). The agreed grid connection for the Project will allow the export and import of up to 99.9 MW of electricity to the grid. The Project will connect to the existing National Grid Sellindge Substation via a new 132 kilovolt ('kV') substation constructed as part of the Project and cable connection under the Network Rail and High Speed 1 ('HS1') railway.
- 2.5 The location of the Project is shown on **ES Volume 3, Figure 1.1: Site Location Plan (Doc Ref. 5.3)**. The Project will be located within the 'Order limits' (the land shown on the **Works Plans (Doc Ref. 2.3)** within which the Project can be carried out). The 'Order limits' plan is provided as **ES Volume 3, Figure 1.2: Order Limits (Doc Ref. 5.3)**. Land within the 'Order limits' is known as the 'Site'.

### SITE DESCRIPTION

- 2.6 The Site area is approximately 192 ha, located to the north and west of the village of Aldington to the south-east of Ashford in Kent. The Project lies within the administrative areas of Kent County Council ('KCC') and Ashford Borough Council ('ABC') local authorities. Further information on the Project, including proposed infrastructure and design, is provided in **ES Volume 2, Chapter 3: Project Description (Doc Ref. 5.2)**.
- 2.7 The Site comprises agricultural fields delineated by hedgerows and tree belts. It extends to approximately 192 hectares and is currently predominantly used for arable cropping and grazing.
- 2.8 The Site also supports hedgerow, parcels of woodland, drainage ditches, ponds and arable field margins. The East Stour River flows in an east to west direction within, and adjacent to, the northern part of the Site.
- 2.9 Fields are described in relation to the Project as follows:
- The South Western Area Fields 1 to 9.
  - The Central Area Fields 10 to 19 and 23 to 25.
  - The South Eastern Area Fields 20 to 22.

- The Northern Area Fields 26 to 29.
- Project Substation (location of the Project Substation, in the north western section of Field 26).
- 'Cable Route Corridor' (export of electricity from the Project at 132 kilovolt ('kV') via underground cables (the 'Grid Connection Cable') to the Sellindge Substation). 'Cable Route Crossing' (use of an existing cable duct under the High Speed 1 / Channel Tunnel Rail Link ('HS1') railway or through Horizontal Directional Drilling ('HDD') beneath HS1 for the Cable Route Corridor).
- Sellindge Substation (location of the existing Sellindge Substation).

### SCOPE OF WORKS

- 2.10 This report details the results of winter bird surveys of the Site undertaken within the periods November 2020 to February 2021 and November 2021 to March 2022.
- 2.11 Over this period the Survey Areas changed as fields were included and removed as alterations to the extent of the Site were made.
- 2.12 Details of avoidance, mitigation, compensation and enhancement measures relating to birds are not included in this report. These measures are summarised and assessed within **ES Volume 2, Chapter 9 Biodiversity (Doc Ref. 5.2)**. Details of long-term habitat management prescriptions that will benefit the local bird population are not included in this report; these measures are set out in the **Outline LEMP (Doc Ref. 7.10)**.

### ASSESSMENT OBJECTIVES

- 2.13 The objectives of the survey and report are to: -
- Record the species, distributions and numbers of wintering birds within and adjacent to Project, with emphasis on any protected and notable species (as defined in Section 4);
  - Assess the use of the Site by wintering birds;
  - Report the results of the winter bird survey; and
  - Assess the ecological importance of the Site for wintering birds.



### 3. METHOD

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#### DESK STUDY

- 3.1 A data search of all bird records within 1km of the Site was undertaken by the Kent and Medway Biological Records centre ('KMBRC') on the 7<sup>th</sup> April 2022, with a updated data search undertaken in August 2023.
- 3.2 A review of the returned records from KMBRC focused on declining farmland bird species and other relevant red listed species.
- 3.3 The returned data search from KMBRC includes records of 'Recent Winter (Aug-Mar)' and 'Date of Nearest'. For the purposes of the report the 'Recent Summer (Aug-Mar)' records that have occurred within the last 10 years will be reviewed as these will also capture the 'Date of Nearest' when they are the same.
- 3.4 Published Kent bird reports covering a five year period of 2016 to 2020 (KOS 2015-2019) were reviewed.
- 3.5 A desk top MAGIC.gov.uk search was also conducted for any statutory areas designated for birds within 10km of the site. This was used to review designated site citations for any bird species of particular relevance to the site (i.e. where functional linkage to designated sites could occur). A review of statutory and non-statutory designated sites within 1km of the Site was also undertaken.
- 3.6 A review of the Local Wildlife Site ('LWS') criteria (Kent Wildlife Trust, 2022) was also undertaken to inform evaluation and assessment.

#### SURVEY

##### FIELD SURVEY METHODOLOGY

- 3.7 The field survey methodology used was broadly based on the survey methodologies detailed in Gilbert *et al.*, (1998).
- 3.8 During each survey visit, a suitably experienced ornithologist walked a pre-determined transect route through the survey area. All bird species seen or heard during the survey were recorded and signs of activity and behaviour were noted. The species present and their behaviours were recorded on field maps using standard BTO species codes and behaviour notation.
- 3.9 However, survey effort was primarily focussed on in-scope species and other declining species that have either been listed as notable species in accordance with the assessment criteria in Section 3.24
- 3.10 Visual counts of all bird species encountered were made, with birds that could not be located visually identified through calls or songs.
- 3.11 The Site was surveyed on foot so that the surveyor passed within 50m of most points within the area. In some circumstances i.e., when fields are particularly large, the distance between the surveyor and areas within the Site may have exceeded 50m.

- 3.12 Consequently, birds flying overhead (and not using the Site) and/or some common and widespread species may have been not specifically recorded on survey visits. Records of Feral Pigeon (*Columba livia*) were not made.
- 3.13 Within this report, the term 'peak count' represents the total number of birds recorded for that species across the Site for the entire survey or during a single survey visit.
- 3.14 The 'max. flock count' represents the largest flock count or counts recorded across the Site for a single visit. The total of the flock counts recorded during the survey visit would provide the peak count for that visit and potentially the survey.
- 3.15 For the purposes of the winter bird survey, the winter bird report and the bird summaries, the Site has been split in to the following survey areas comprising of Field numbers.

*Table 1: Winter bird survey areas and Fields (Refer to Fig 1 for the field locations).*

Survey area	Fields
A	1, 2, 3, 4, 5, 6, 7, 8, 9 Majority of the South Western Area
B	10, 11, 12, 13, 14, 15, 16, 17 Southern half of The Central Area
C	24, 25, 26, 27, 28, 29 The Northern Land Area and northern half of The Central Area
D	20, 21, 22 The South Eastern Area
E	18, 19, 23 Northern half of The Central Land Area
F	26, 27, 28, 29 The Northern Land Area

*SURVEY DATES, PERSONNEL AND WEATHER CONDITIONS*

- 3.16 Winter bird survey visits were conducted on 25 dates between 10<sup>th</sup> November 2020 and 4<sup>th</sup> March 2022.
- 3.17 Four winter bird survey visits to areas A, B, C and D were conducted between 10/11/2020 and 20/02/2021.
- 3.18 Five winter bird survey visits to area E were conducted between 30/11/2021 and 04/03/2022.
- 3.19 Four winter bird survey visits to area F were conducted between 30/12/2021 and 04/03/2022.

**3.20** The survey was undertaken by a competent expert.

**3.21** Survey visits were undertaken in suitable weather conditions (see Table 2 below), avoiding heavy rain, fog or heavy snow when bird behaviour may be atypical or surveying may be impractical.

*Table 2: 2022 survey details the associated weather conditions for when each survey visit was conducted.*

Date	Area	Surveyors	Weather
10/11/2020	A	Laragh Smyth, John Young	Sunrise: 07:05 Start: 08:50. Dry, light fog, visibility poor becoming good, 100% cloud cover, light wind. End: 12:00. Dry, 90% cloud cover, good visibility, light wind.
11/11/2020	B	Laragh Smyth, John Young	Sunrise: 07:07 Start: 08:35. Dry, 100% cloud cover, good visibility, light wind. End: 11:18. Dry, 100% cloud cover, good visibility, moderate wind.
13/11/2020	C	Laragh Smyth, John Young	Sunrise: 07:07 Start: 08:15. Rain showers, 100% cloud cover, good visibility, moderate wind. End: 09:45. Dry, 90% cloud cover, good visibility, moderate wind.
13/11/2020	D	Laragh Smyth, John Young	Sunrise: 07:07 Start: 10:23. Dry, 90% cloud cover, good visibility, moderate wind. End: 13:22. Dry, 100% cloud cover, good visibility, moderate wind.
29/12/2020	A	John Young	Sunrise: 08:00 Start: 09:00. Dry, 100% cloud cover, good visibility, light wind. End: 11:40. Dry, 100% cloud cover, good visibility, light wind.
30/12/2020	B	John Young	Sunrise: 08:00 Start: 09:00. Dry, ground frost, 50% cloud cover, good visibility, light wind. End: 11:10. Dry, 60% cloud cover, good visibility, light wind.

Date	Area	Surveyors	Weather
26/12/2020	C	John Young	Sunrise: 07:59 Start: 10:39. Dry, 70% cloud cover, good visibility, light wind. End: 11:47. Dry, 100% cloud cover, good visibility, light wind.
26/12/2020	D	John Young	Sunrise: 07:59 Start: 08:55. Dry, 100% cloud cover, good visibility, moderate wind. End: 10:02. Dry, 100% cloud cover, good visibility, moderate wind.
18/01/2021	A	Laragh Smyth, John Young	Sunrise: 07:49 Start: 08:50. Dry, good visibility, light wind, 100% cloud cover. End: 12:15. Dry, good visibility, light wind, 90% cloud cover.
19/01/2021	C	John Young	Sunrise: 07:48 Start: 10:50. Dry, good visibility, moderate wind, 100% cloud cover. End: 11:50. Dry, good visibility, moderate wind, 100% cloud cover.
19/01/2021	D	John Young	Sunrise: 07:48 Start: 09:05. Occasional light showers, good visibility, moderate wind, 100% cloud cover. End: 10:15. Dry, good visibility, moderate wind, 100% cloud cover.
22/01/2021	B	Laragh Smyth, John Young	Sunrise: 07:45 Start: 08:50. Dry, good visibility, moderate wind. End: 10:55. Dry, good visibility, moderate wind.
14/02/2021	C	John Young	Sunrise: 07:09 Start: 10:25. Dry, 100% cloud cover, good visibility, moderate wind. End: 11:15. Dry, good visibility, 100% cloud cover, moderate wind.

Date	Area	Surveyors	Weather
14/02/2021	D	John Young	Sunrise: 07:09 Start: 08:40. Dry, 100% cloud cover, good visibility, moderate wind. End: 09:49. Dry, good visibility, 100% cloud cover, moderate wind.
17/02/2021	A	Laragh Smyth, John Young	Sunrise: 07:06 Start: 08:35. Dry, good visibility, moderate wind, 100% cloud cover. End: 11:10. Light rain showers, visibility moderate, moderate wind.
20/02/2021	B	John Young	Sunrise: 07:00 Start: 08:15. Dry, good visibility, moderate wind, 90% cloud cover. End: 10:00. Dry, good visibility, moderate wind, 90% cloud cover.
30/11/2021	E (Fields 18,23)	John Young	Sunrise: 07:37 Start: 10:35. Dry, good visibility, light wind. End: 11:05. Dry, good visibility, light wind.
30/12/2021	E (Fields 18, 19, 23)	John Young	Sunrise: 08:00 Start: 08:24. Dry, poor visibility, light drizzle, gusty wind. End: 10:18. Dry, poor visibility, light drizzle, gusty wind. At 09:10 the visibility changed to good.
30/12/2021	F (Fields 26-29 woodland east of 27)	John Young	Sunrise: 08:00 Start: 10:30. Dry, good visibility, light drizzle, gusty wind. End: 11:30. Dry, good visibility, light drizzle, gusty wind.
19/01/2022	E	John Young	Sunrise: 07:48 Start: 08:10. Dry, good visibility, 70% cloud cover, light wind. End: 09:45. Dry, good visibility, 70% cloud cover, light wind.

Date	Area	Surveyors	Weather
19/01/2022	F	John Young	Sunrise: 07:48 Start: 10:00. Dry, good visibility, 60% cloud cover, light wind. End: 11:00. Dry, good visibility, 60% cloud cover, light wind.
11/02/2022	E	John Young	Sunrise: 07:09 Start: 07:40. Dry, good visibility, 0% cloud cover, light wind. End: 08:50. Dry, good visibility, 0% cloud cover, light wind.
11/02/2022	F	John Young	Sunrise: 07:48 Start: 09:10. Dry, good visibility, 0% cloud cover, light wind. End: 10:00. Dry, good visibility, 0% cloud cover, light wind.
04/03/2022	E	John Young	Sunrise: 06:35 Start: 07:00. Dry, good visibility, 100% cloud cover, light wind. End: 08:20. Dry, good visibility, 100% cloud cover, light wind.
04/03/2022	F	John Young	Sunrise: 06:35 Start: 08:40. Dry, good visibility, 100% cloud cover, light wind. End: 09:40. Dry, good visibility, 100% cloud cover, light wind.

## ASSESSMENT AND EVALUATION

### ASSESSMENT CRITERIA

**3.22** The assessment of the ornithological importance of the Site during the wintering season was made by evaluating any species afforded special statutory protection or those included on one, or more, of the lists of species of conservation interest, as detailed in within Annex 1. These include:

- species listed on Annex 1 of the EU Birds Directive or a qualifying feature of potentially functionally linked internationally designated sites;
- species listed on Schedule 1 of the WCA, 1981 (as amended);
- priority bird species in the UK;
- species listed as priority species or additional species of interest within Kent;

- species included in the Birds of Conservation Concern (BoCC) Red and Amber Lists (Stanbury et al. 2021).
- 3.23 Additionally, assemblages have been assessed against the criteria for Local Wildlife Site designation within the Kent Local Wildlife Site Selection Criteria (Kent Wildlife Trust, 2022).
- 3.24 A comparison between population sizes present within the Site with the national and county breeding population estimates for certain species was also taken into account. National estimates for breeding birds are published in a paper: *'Population estimates of birds in Great Britain and the United Kingdom'* (Woodward et al., 2020). The BTO Bird Atlas 2007-2011 (Balmer et. al., 2013) was also reviewed for species information on a national level and to inform the above assessment criteria.
- 3.25 Information on the population status of breeding bird species at a county level was sourced from the latest available issues of the Kent Bird Reports (Kent Ornithological Society, 2015-2019)
- 3.26 Information on populations of nationally rare species was sourced from the most recently published paper by the Rare Breeding Birds Panel (RBBP) (Eaton M. and the Rare Breeding Birds Panel, 2022).

*IMPORTANCE OF BIRD POPULATIONS (VALUATION)*

- 3.27 To inform assessment of the importance of the bird populations associated with the Site, their biodiversity values have been defined with reference to the geographical level based on the values presented in the Chartered Institute of Ecology and Environmental Management (CIEEM) *'Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland'* (CIEEM, 2018) ('EclA Guidelines') as well as professional judgement.
- 3.28 These assessment criteria (set out in the table below) have been used in conjunction an assessment of species status, abundance and diversity to assess the biodiversity importance of the bird populations recorded during the surveys.

*Table 3: Biodiversity Valuation of Ornithological Features*

Biodiversity Valuation	Description and examples of criteria
International or European	Resident or regularly occurring populations of species which may be considered of value at an international or European level <sup>1</sup> where: <ul style="list-style-type: none"> <li>• the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>• the population forms a critical part<sup>2</sup> of a wider population at this scale; or</li> <li>• the species is at a critical phase<sup>3</sup> of its life cycle at this scale.</li> </ul>

Biodiversity Valuation	Description and examples of criteria
UK or National	<p>Areas of habitats with priority species identified in the UK Post-2010 Biodiversity Framework i.e. UK Biodiversity Action Plan (BAP), including those published in accordance with Section 41 of the NERC Act (2006) and those considered to be of principal importance for the conservation of biodiversity.</p> <p>Resident or regularly occurring populations of species which may be considered of value at a UK or a national level<sup>4</sup> where:</p> <ul style="list-style-type: none"> <li>• the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>• the population forms a critical part of a wider population at this scale; or</li> <li>• the species is at a critical phase of its life cycle at this scale.</li> </ul>
Regional	<p>Populations of species of value at a regional level (i.e. South-east England).</p> <p>Resident or regularly occurring populations of species which may be considered of value at a regional level<sup>5</sup> where:</p> <ul style="list-style-type: none"> <li>• the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>• the population forms a critical part of a wider population at this scale; or</li> <li>• the species is at a critical phase of its life cycle at this scale.</li> </ul>
County	<p>Populations of species of value at a County (i.e. Kent) level or District (e.g. Ashford).</p> <p>Resident or regularly occurring populations of species which may be considered of value at a County (or District)<sup>6</sup> level where:</p> <ul style="list-style-type: none"> <li>• the loss of these populations would adversely affect the conservation status or distribution of the species at this geographic scale;</li> <li>• the population forms a critical part of a wider population at this scale; or,</li> <li>• the species is at a critical phase of its life cycle at this scale</li> </ul>
Local	<p>Species populations of value in a local (i.e. within ~ 2 km of the site) context.</p> <p>Populations and, or communities of species considered to appreciably enrich the habitat resource within the local context (such as veteran trees), including features of value for migration, dispersal or genetic exchange.</p>



Biodiversity Valuation	Description and examples of criteria
Negligible (Site)	Habitats and associated species that is of value in the context of the site only. Populations of common and widespread species
<p>1 Such species include those listed within the Directive 2009/147/EC on the Conservation of Wild Birds (i.e. EC Birds Directive) (codified version of Council Directive 79/409/EEC as amended) or animal or plant species listed within Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna (i.e. Habitats Directive).</p> <p>2Such populations include sub-populations that are essential to maintenance of metapopulation dynamics, e.g. critical emigration and, or immigration links between otherwise discrete populations.</p> <p>3Seasonal activity or behaviour upon which survival or reproduction depends.</p> <p>4Species which may be considered at the UK or national level mean: birds, other animals and plants which receive legal protection on the basis of their conservation interest (those listed within the Wildlife and Countryside Act 1981 (as amended) Schedule 1, 5 and 8); species listed for their principal importance for biodiversity (in accordance with the Natural Environment and Communities Act 2006 Section 41 England), priority species listed within the UK Post 2010 Biodiversity Framework (i.e. UK Biodiversity Action Plan ('UKBAP')), or species listed within the Red Data Book.</p> <p>5Such species include those listed in the appropriate Natural Character Area description.</p> <p>6Such species include those at county level (i.e. Kent) including unitary authority area i.e. District level (i.e. South-east England); as listed on the LBAPs; and listed as a county designated site.</p> <p>*As well as assigning importance there is also a need to identify all legally protected species that could be affected by the proposed scheme in order that measures can be taken to ensure that adherence to the relevant legislation is observed. This may include the adoption of mitigation and appropriate licensing which are acceptable to Natural England.</p>	

- 3.29 Only ecological features within the Site and/or Zol valued at a local level or above have been taken forward for future assessment within the Ecological Impact Assessment (EclA). Those valued at below this level of importance, for example at the Zol level, have been scoped out of the assessment process.
- 3.30 A summary of the potential impacts of the Project upon important bird species, have been assessed based on the location of birds within the Site and/or foraging areas combined with those areas most likely to be impacted by the Project works. These impacts are discussed further within **ES Volume 2, Chapter 9: Biodiversity (Doc Ref. 5.2)**.

### ZONE OF INFLUENCE

- 3.31 The Zol of a Project is defined by the EclA Guidelines as “...the area over which ecological features may be affected by biophysical changes as a result of the proposed project and associated activities” (CIEEM, 2018).
- 3.32 The Zol is determined by the source/type of impact, the potential pathway(s) for that impact and the location and sensitivity of the ecologically important feature(s) beyond the Site boundary.
- 3.33 The potential impact(s) of a project are not always limited to the boundaries of the site concerned. A project may also have the potential to result in impacts upon ecologically important sites, habitats or species that are located beyond the site boundaries.
- 3.34 A review of the Project proposals confirmed that they will likely result in loss of suitable on-Site bird wintering and foraging habitat, including loss of some small sections of field margins, hedgerows and other boundary habitats and extensive loss of habitat for ground foraging bird species that require open farmland habitats.
- 3.35 Furthermore, the Zol is likely to be influenced by design effects of the Project proposals including lighting and noise during both the construction and operational phases.
- 3.36 Additionally, the Zol is also likely to be influenced by management of any remaining habitats with the Site and adverse effects on adjacent land parcels.
- 3.37 The potential Zol of the Project is also likely to vary dependent on the bird species, and this is likely to be associated with the relative foraging distances during winter and post-juvenile dispersal.
- 3.38 These potential impacts could adversely affect the ecological importance of the local and wider wintering bird populations, including for species such as skylark (*Alauda arvensis*) and yellowhammer (*Emberiza citrinella*), whose wintering ranges may cover the Site as well as adjacent off-Site areas.
- 3.39 Therefore, in the absence of appropriate avoidance, mitigation and compensation measures, the potential Zol of the Project, in relation to wintering birds, is likely to extend to the Site and those habitats that fall within c.100-200m beyond this (Whittingham *et al.*, 2004).
- 3.40 The potential Zol of the proposed scheme is also likely to vary dependent on the bird species, and this is likely to be associated with the relative foraging distances during winter and post-juvenile dispersal.
- 3.41 The Zol will also extend to those locations where off-Site impacts might occur.

### SURVEY LIMITATIONS

- 3.42 An ecological survey represents a structured sampling of the ecological condition of a site. The ecological character of a site can change substantially throughout both the course of a year, and from year to year impacting on the extent and quality of habitats potential to support protected species.

- 3.43 The aim of a desk study is to help characterise the baseline context of the site and provide valuable background information that would not be captured by a single site survey alone. Information obtained during a desk study was dependent upon people and organisations having made and submitted records for the area of interest. A lack of records for a particular habitat or species does not necessarily mean that the habitats or species do not occur in the study area. Likewise, the presence of records for particular habitats and species does not automatically mean that these still occur within the area of interest or are relevant in the context of the Project.
- 3.44 The content detailed in the criteria for LWS in Kent (KWT, 2022) cannot be readily applied to the evaluation of winter farmland bird assemblages.
- 3.45 No access to the Sellindge Substation Area was available during the surveyed winter seasons, although adjacent and comparable habitats were subject to survey to enable assessment of the Site as a whole.
- 3.46 During the winter months, land use by birds can be influenced by various factors e.g. disturbance, weather patterns and the availability of suitable habitat. Periods of cold weather can cause long distance movements and the arrival of birds from other areas. Birds also move between suitable habitats depending on the availability of seasonal food.
- 3.47 Given the potential for fluctuating populations, changes in land management, seasonal weather changes and food availability, wintering bird populations may vary within an area between years.
- 3.48 During the winter, birds which regularly use an area for feeding and roosting can move elsewhere within the wider area over the period of a survey. Therefore, birds using an area for feeding and roosting can be feeding elsewhere on a survey visit making it possible that they can be missed when undertaking a single monthly survey visit.
- 3.49 Bird survey visits were conducted within the optimum time for detecting overwintering birds and overall it is assessed that there are no significant limitations to the survey results.

## 4. RESULTS

### DESK STUDY

#### BIOLOGICAL RECORDS

- 4.1 Of those relevant potential wintering bird species, the review of the returned records from KMBRC indicates that the following additional species (to those recorded during survey) occurred within the search area over the last 10 years (dates are of the most recent winter record): tree sparrow (*Passer montanus*) on 08/11/2017 and corn bunting (*Emberiza calandra*) on 05/03/2008.
- 4.2 The number of records of these species are: 10 for tree sparrow and nine for corn bunting.
- 4.3 Results returned from KMBRC of statutory and non-statutory designated sites indicate that there are no statutory sites within the data search area and five LWSs providing woodland and pasture habitats. Given the required bird criteria, it is unlikely that these LWS have been designated for their winter bird assemblages.

#### DESIGNATED SITES CONTEXT

- 4.4 A number of international designations of ornithological interest are within 10km of the Site as follows:
- Dungeness Romney Marsh and Rye Bay Ramsar and SPA is located approximately 6.5km to the south-west of the Site, at its closest point.

Dungeness Romney Marsh and Rye Bay Ramsar

- 4.5 The site qualifies under Criterion 5 because it regularly supports:
- *'20,000 or more waterbirds: • In the non-breeding season, the site regularly supports 34,957 individual waterbirds (5 year peak mean 2002/3 – 2006/7).'*
- 4.6 The site qualifies under Criterion 6 because it regularly supports over 1% of the individuals in the populations of the following species or subspecies of waterbird in any season:
- *'Mute swan Cygnus olor 348 individuals – wintering 5 year peak mean 2002/3 – 2006/7 1.1% Britain*
  - *Shoveler Anas clypeata 485 individuals – wintering 5 year peak mean 2002/3 – 2006/7 1.2% NW & C Europe (non-breeding)'*

Dungeness Romney Marsh and Rye Bay SPA

- 4.7 The site qualifies under Article 4.1 of the Directive (2009/147/EC) as it is used regularly by 1% or more of the Great Britain populations of the following species listed in Annex I relevant to winter or passage:

*Qualifying features with counts remaining as at 2016 classification using data in Departmental Brief published in 2010:*

- *Avocet Recurvirostra avosetta 31 pairs – breeding (5 year mean 2004-2008) 3.5% of GB population Annex 1*

- *Bewick's swan Cygnus columbianus bewickii* 155 individuals – wintering (5 year peak mean 2002/3 – 2006/7) 1.9% of GB population Annex 1
- *Bittern Botaurus stellaris* 5 individuals – wintering (5 year peak mean 2002/3 – 2006/7) 5.0% of GB population Annex 1
- *Hen Harrier Circus cyaneus* 11 individuals – wintering (5 year peak mean 2002/3 – 2006/7) 1.5% of GB population Annex 1
- *Golden Plover Pluvialis apricaria* 4,050 individuals – wintering (5 year peak mean 2002/3 – 2006/7) 1.6% of GB population Annex 1
- *Ruff Philomachus pugnax* 51 individuals – wintering (5 year peak mean 2000/01- 2004/5) 7.3% of GB population Annex 1
- *Aquatic warbler Acrocephalus paludicola* 2 individuals – passage (5 year mean 2004-2008) 6.1% of GB population Annex 1
- *Marsh harrier Circus aeruginosus* 4 females – breeding (5 year mean 2004-2008) 2% of GB population Annex 1

4.8 The site also qualifies under Article 4.2 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the biogeographical populations of the following regularly occurring migratory species

- *'Shoveler Anas clypeata* 485 individuals – wintering (5 year peak mean 2002/3 – 2006/7) 1.2% NW & C Europe (non-breeding) Migratory'

4.9 The site also qualifies under article 4.2 of the Directive (2009/147/EC) due to 'as it is used regularly by over 20,000 waterbirds (waterbirds as defined by the Ramsar Convention) in any season: During the period 2002/03 – 2006/07, Dungeness, Romney Marsh and Rye Bay SPA (including proposed extensions) supported an average peak of 34,625 individual waterbirds in the non-breeding season, comprised of almost 16,000 wildfowl and over 19,000 waders'

4.10 Due to the international importance of these sites, the presence of any qualifying species is addressed within the *Evaluation* section.

4.11 A review of other statutory and non-designated sites within 2km found that other designated sites were designated primarily for their habitats without detailed ornithological criteria. As a result, where species assemblages may be relevant to connected designated site habitats these will be reviewed but focus is made upon the internationally designated sites listed above.

## FIELD SURVEY

### OVERALL RESULTS (ALL SURVEY AREAS COMBINED)

4.12 62 species were recorded across all the survey areas of the Site during the survey visits.

4.13 Of these, great white egret (*Ardea alba*) was seen flying over of the Site and making no direct use of it. Therefore, 61 species were recorded directly using the Site.

4.14 Of the 61 species that were recorded directly using the Site:

- 11 are listed as a Species of Principal Importance: lapwing, herring gull, skylark, starling, song thrush, house sparrow, dunnock, bullfinch, lesser redpoll, yellowhammer and reed bunting.
  - 14, are red status species: lapwing (*Vanellus vanellus*), snipe (*Gallinago gallinago*), woodcock (*Scolopax rusticola*), herring gull (*Larus argentatus*), skylark, starling (*Sturnus vulgaris*), fieldfare (*Turdus pilaris*), redwing (*Turdus iliacus*), mistle thrush (*Turdus viscivorus*), house sparrow (*Passer domesticus*), linnet (*Linaria cannabina*), lesser redpoll (*Acanthis cabaret*), greenfinch (*Chloris chloris*) and yellowhammer (*Emberiza citrinella*) and
  - 19 are amber status species: greylag goose (*Anser anser*), mallard (*Anas platyrhynchos*), stock dove (*Columba oenas*), woodpigeon (*Columba palumbus*), green sandpiper (*Tringa ochropus*), sparrowhawk (*Accipiter nisus*), rook (*Corvus frugilegus*), black-headed gull (*Chroicocephalus ridibundus*), Mediterranean gull (*Larus melanocephalus*), common gull (*Larus canus*), lesser black-backed gull (*Larus fuscus*), kestrel (*Falco tinnunculus*), wren (*Troglodytes troglodytes*), song thrush (*Turdus philomelos*), dunnock (*Prunella modularis*), grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*), bullfinch (*Pyrrhula pyrrhula*) and reed bunting (*Emberiza schoeniclus*).
  - Six species using the Application Site, Mediterranean gull, green sandpiper, kingfisher (*Alcedo atthis*), Cetti's warbler (*Cettia cetti*), fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA), however this is relevant to breeding only.
- 4.15 A summary of the species recorded, along with their respective peak for each survey area and a peak count recorded by date is provided in the overleaf table.
- 4.16 Note that an 'indicative peak count' for the Site as a whole is not provided, instead a largest observation per single survey is used. Given the size of the Site, the entire Site took multiple days to cover as per the division between survey areas. This means that movements and dispersal of birds could have resulted in birds being double counted between dates.
- 4.17 Where species are recorded in large numbers in differing survey areas, reference to the combined total is used as an indication of the Site's value for birds but used with caution during evaluation.
- 4.18 The highest recorded peak count per parcel is more robust as this represents birds seen on a single date and therefore unlikely to include double counts. These counts in isolation also provide a comparative illustration of the potential value for each survey area for each species.
- 4.19 The table is followed by sections providing a species breakdown by Survey Area.

Table 4: Results of Winter Bird Results by Survey Area

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Pheasant <i>Phasianus colchicus</i>	PH	No status		NR		NR		13/11/2020 Single in Field 26. 26/12/2020 Single in Field 26. 14/02/2021 Four in Field 26.		13/11/2020 10 in boundary hedge of Field 22.		NR	Four Area C, 14/02/2021
Greylag goose	GJ	Amber: WL, WI		NR	Y	30/12/2020 Flyover only Field 10-11.		14/02/2021 78 in Field 24.		NR		19/01/2022 Five flying over the area.	78 Area C, 14/02/2021
Mandarin duck <i>Aix galericulata</i>	MN	No status		NR		NR		04/03/2022 Pair flew from the East Stour River adjacent to Field 27.		NR		NR	Two Area C, 04/03/2021
Mallard	MA	Amber: WDMp 1/2		NR		NR		26/12/2020 Two flying over the area. 14/02/2021 Two in woodland block, Field 27. 11/02/2022 Pair in East Stour River/woodland block at Field 27.		NR		11/02/2022 Pair in ditch at Field 19	Two Multiple areas and dates and a

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	
Stock dove	SD	Amber: BI		10/11/2020 Four in the woodland block within Field 7. 18/01/2021 Two in the woodland block between Field 7 and Field 5-6.		22/01/2021 143 in field adjacent to Field 10-11. 20/02/2021 37 in field adjacent to Field 10-11.		26/12/2020 Four in Field 28-29.		NR		30/12/2021 Flying over only. 19/01/2022 Two flying over the area. 04/03/2022 14 in Field 19.	143 Area B, 22/01/2021
Woodpigeon	WP	Amber: BI		Recorded on every survey visit both flying over and making use of Survey Area A.		Recorded on every survey visit.		Recorded on every survey visit. 11/02/2021 60 in woodland block at Field 27.		Recorded on every survey visit.		Recorded on every survey visit. 30/12/2021 80 in boundary of Field 18. 19/01/2022 185 in trees at boundary of Field 23. 180 foraging in Field 23.	365 Area E, 19/01/2021
Collared dove <i>Streptopelia decaocto</i>	CD	Green		17/02/2021 Single in Field 1.		NR		NR		NR		NR	1 Area A, 17/02/2021



Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Lapwing	L.	Section 41 species Red: BDp2, ERLOB, BDMp1, WDMP2, WI		NR		NR		14/02/2021 Six over Field 25. Two in Field 26. 31 over Field 26.		NR		30/12/2021 Two in crop of Field 19. 11/02/2022 Single in crop of Field 19.	39 Area C, 14/02/2021
Green sandpiper <i>Tringa ochropus</i>	GE	WCA Sch1. Amber: BDMr1, BR, WR		NR		NR				NR		19/01/2022 Single flew from ditch border of Field 19.	1 Area E, 19/01/2022
Snipe	SN	Red: ERLOB, WDMp1, BDMr2		NR		NR		14/02/2021 Single in Field 24.		NR		NR	1 Area C, 14/02/2021
Woodcock	WK	Red: BDr2, BDMr1		17/02/2021 Single in woodland block within Field 3.		NR		NR		NR		NR	1

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Black-headed gull	BH	Amber: WDMp 1, WI		NR	Y	11/11/2020 Field 12-16 flyover only.		13/11/2020 27 in Field 26. 26.12.2020 38 flying over the area. 19/01/2021 48 in flooded sections of Fields 27/29. 30/12/2021 437 gulls mostly black-headed gull but with common and Mediterranean gulls, foraging and roosting in flooded section of Field 28-29.		13/11/2020 Flying over the area only.	Y	30/12/2021 Flying over only.	c. 400 Area C, 30/12/2021
Mediterranean gull	MU	WCA Sch1, Amber: BL		NR		NR	13/11/2020 Recorded flying over the area. 30/12/2021 16 roosting and foraging in flooded section of Field 28-29		NR		NR	NR	16 Area C, 30/12/2021

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Common gull	CM	Amber: WI		17/02/2021 Two roosting in Field 3.		NR		26/12/2020 Recorded flying over the area. 30/12/2021 57 roosting and foraging in flooded section of Field 28-29		NR		NR	57 Area C, 30/12/2021
Herring gull	HG	Section 41 species Red: BDp2, WDp1, BI, WI		10/11/2020 16 foraging in Field 3. 17/02/2021 37 foraging and roosting in Field 2. 11 foraging in Field 5-6.	Y	11/11/2020 Field 12-16 flyover only.		14/02/2021 Recorded flying over the area only.	Y	Flying over the area only.	NR	30/12/2021 Flying over only.	48 Area A, 30/12/2021
Lesser black-backed gull	LB	Amber: BL, BI		17/02/2021 A single roosting in Field 3.	Y	20/02/2021 Flyover only.		NR		NR		NR	One Area A, 17/02/2021

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Cormorant <i>Phalacrocorax carbo</i>	CA	Green	Y	10/11/2020 Single over Field 3.	Y	22/01/2021 Flyover only.		13/11/2020 Single flying over the area. 26/12/2020 Five roosting in tree at boundary of Fields 27/29. 19/01/2021 Single in tree at boundary of Fields 27/29. 30/12/2021 Six in tree at boundary of Fields 27/29. 19/01/2021 Four roosting in tree at boundary of Fields 27/29. 04/03/2022 Six roosting in tree at boundary of Fields 27/29.		NR		NR	Six Area C, 30/12/2021 Area F, 04/03/2022

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Grey heron <i>Ardea cinerea</i>	H.	Green		NR		NR		13/11/2020 Three in Field 26. 26/12/2020 Single in Field 24. Four in Backhouse Wood just outside the boundary of Field 28-29 19/01/2021 Three in flooded section of Field 28-29. Five nests within Backhouse Wood, just beyond Field 28-29 boundary. 30/12/2021 Four in flooded section of Field 28-29. 19/01/2022 Three flew from East Stour River at Field 27.		NR		30/11/2021 Single at Field 23. 19/01/2022 Single flying over the area.	Five Area C, 26/12/2021
Great white egret <i>Ardea alba</i>	-	Amber: BR, WR		NR		NR	NR		NR		Y	04/03/2022 Single flying over the area.	One Area E, 04/03/2022

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	
Little egret <i>Egretta garzetta</i>	ET	Green		NR		NR		13/11/2020 One in Field 25. Three in Field 26. 04/03/2022 One in Field 27.		NR		19/01/2022 Two in trees bordering Field 19.	Four Area C, 13/11/2021
Sparrowhawk	SH	Amber: BDMp1		NR		22/01/2021 Single hunting over Field 10-11.  20/02/2021 Single hunting over Field 12-16.		NR		NR		NR	One Area B, 22/01/2021 and 20/02/2021
Buzzard <i>Buteo buteo</i>	BZ	Green		17/02/2021 Single foraging over Field 7. Two just beyond the Survey Area A boundary south of Bank Farm.		11/11/2020 Single foraging over Field 12-16.  30/12/2020 Single in Field 12-16.		19/01/2021 Single foraging over Field 26. 14/02/2021 Two over Field 26. 19/01/2022 Single flew out of trees within the woodland block to the east of Field 27. 11/02/2022 Single flew from trees bordering Field 27.		NR		30/11/2021 Single over Field 18.	Three Area A, 17/02/2021

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Kingfisher	KF	WCA Sch1. Green		NR		NR		14/02/2021 Single along the East Stour River. 30/12/2021 Single along the East Stour River. Woodland block east of Field 27. 04/03/2022 Single along the East Stour River. Woodland block east of Field 27 and again adjacent to the woodland block to the east of Field 27.		NR		NR	1 Area C and F, multiple dates
Great spotted woodpecker <i>Dendrocopos major</i>	GS	Green		18/01/2021 A single in fields to the east of Bank Farm.		NR		26/12/2020 Single boundary of Field 26. 14/02/2021 Single at the boundary of Field 28-29 and Backhouse Wood. 19/01/2022 Single in tree boundary of Field 27. 04/03/2022 Single in woodland block within Field 27.		NR		NR	One Area C, multiple dates

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Green woodpecker <i>Picus viridis</i>	G.	Green		10/11/2020 Single in Field 7. 29/12/2020 Single in Field 1-2. 17/02/2021 Single in Field 7.		22/01/2021 Single in Field 17. 20/02/2021 One in Field 17.		19/01/2022 Single in boundary of Field 27. 04/03/2022 Single in woodland block within Field 27.		19/01/2021 Single in Field 20-21.		30/11/2021 Single in Field 23.	One Multiple areas and dates
Kestrel	K.	Amber: BDMp1/2		18/01/2021 Single foraging at the boundary of Field 4.		NR		19/01/2021 Single foraging in Field 26. 11/02/2022 Single foraging over Field 26. 04/03/2022 Single foraging over Field 26		NR		NR	One Multiple areas and dates
Jay <i>Garrulus glandarius</i>	J.	Green		18/01/2021 A single in the woodland block within Field 7.		11/11/2020 Single boundary of Field 12-16.		13/11/2020 Two in Backhouse Wood adjacent to Field 28-29. 19/01/2021 Single in Backhouse Wood adjacent to Field 28-29. 14/02/2021 Single in Backhouse Wood adjacent to Field 28-29.		13/11/2020 Single recorded at boundary of Field 20-21. 26/12/2020 Single recorded at boundary of Field 20-21. 14/02/2021 Two in boundary hedge of Field 20-21.		NR	Two Area C, 13/11/2021
Magpie <i>Pica pica</i>	MG	Green		Recorded on every visit.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on most survey visits.	N/A



Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	
Jackdaw <i>Corvus monedula</i>	JD	Green		18/01/2021 Five in fields to the east of Bank Farm.		11/11/2020 Five boundary of Field 17.		13/11/2020 141 in Field 26.		19/01/2021 Nine foraging in Field 20-21		Recorded on most survey visits.	141 Area C, 13/11/2021
Rook	RO	Amber: ERLOB		NR		NR		13/11/2020 14 in Field 22.		19/01/2021 60 foraging in Field 20-21.		NR	60 Area D, 19/01/2021
Carrion crow <i>Corvus corone</i>	C.	Green		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on every survey visit.	Y	13/11/2020 Flying over the area only.		Recorded on most survey visits.	N/A
Raven <i>Corvus corax</i>	RN	Green		29/12/2020 A single flying over Field 3. 18/01/2021 A single in Field 3.		11/11/2020 One in Field 12-16. 30/12/2020 Two flying over Field 12-16.		13/11/2020 Three flying over Field 28-29.		NR		NR	Three Area C, 13/01/2020
Blue tit <i>Cyanistes caeruleus</i>	BT	Green		Recorded across Survey Area A on every visit.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on most survey visits.		Recorded on most survey visits.	N/A
Great tit <i>Parus major</i>	GT	Green		Recorded across Survey Area A on every visit.		Recorded on every survey visit.		Recorded on most survey visits.		Recorded on most survey visits.		Recorded on most survey visits.	N/A

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Skylark	S.	Section 41 species Red: BDp2		<p>10/11/2020 34 in field adjacent to Field 1. 11 in Field 1-2. 23 in Field 5. Single in Field 9.</p> <p>29/12/2020 Eight in Field 3. 33 in Field 5-6 (largest flock of 29).</p> <p>18/01/2021 34 in Field 5-5. 14 in Field 3.</p> <p>17/02/2021 Five in Field 1-2. 18 in Field 5-6. One in Field 9.</p>		<p>11/11/2020 Three in Field 10-11. 99 in Field 12-16.</p> <p>30/12/2020 43 in Field 10-16.</p> <p>22/01/2021 21 in Field 10-11. 26 in Field 12-16.</p> <p>20/02/2021 16 in Field 10-11. 15 in Field 12-16. One in Field 17</p>		<p>13/11/2020 Flyover and a single in Field 28-29.</p> <p>14/02/2021 Three in Field 25. 19 in Field 26.</p> <p>19/01/2022 16 in the large cereal field to the east of Field 28-29.</p> <p>11/02/2022 Two in the large cereal field to the east of Field 28-29.</p> <p>04/03/2022 Four in the large cereal field to the east of Field 28-29.</p>		NR		<p>19/01/2022 66 in Field 19 (23 flew into adjacent Fields 12-16)</p> <p>11/02/2022 Single in Field 18. 49 in Field 19.</p> <p>04/03/2022 Nine in Field 19.</p>	104 Area B, 11/11/2020
Cetti's warbler	CW	WCA Sch1. Green	NR		NR		<p>19/01/2021 Single at the boundary of Fields 27/28-29</p>		NR		NR		One Area C, 19/01/2021

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Long-tailed tit <i>Aegithalos caudatus</i>	LT	Green		10/11/2020 Eight at boundary of Field 1-2.		30/12/2020 Three boundary of Field 17.		13/11/2020 Four in Field 28-29. 26/12/2020 Three in woodland pocket Field 27. 04/03/2022 Single in hedge bordering Field 26. Single in the woodland block to the east of Field 27		NR		NR	8 Area A, 10/11/2021
Goldcrest <i>Regulus regulus</i>	GC	Green		NR		NR		26/12/2020 Single boundary of Field 28-29 and Backhouse Wood		NR		NR	One Area C, 26/12/2020

Wren	WR	Amber: BI	Recorded across Survey Area A on every visit.		11/11/2020 Single boundary of Field 5-6.  30/12/2020 Two boundary of Field 10-11.	13/11/2020 One in Field 24. One in Field 26. Three in boundaries of Field 27. 26/12/2020 Single in Field 24. Three boundary of Field 27. 19/01/2021 Single boundary of Field 27. 14/02/2021 Single boundary of Field 27. Two Field 28-29. 30/12/2021 Two at boundary of Field 27. 19/01/2022 Single in the woodland block to the east of Field 27. 11/02/2022 Two in the woodland block to the east of Field 27. 04/03/2022 Two in hedges bordering Field 26. Two in hedges bordering Field 27. Three in the woodland block to the east of Field 27.		26/12/2020 Single in boundary hedge of Field 20-21. 19/01/2021 Two in boundary hedges of Field 20-21. Single in boundary hedge of Field 22.		30/12/2021 Single in hedgerow boundary of Field 18. 19/01/2022 Single in hedgerow boundary of Field 18. 11/02/2022 Two in boundaries of Field 19. 04/03/2022 Single in boundary of Field 18. Three in boundary hedges of Field 19.	Seven Area B, 04/03/2020
Treecree per <i>Certhia familiaris</i>	TC	Green	10/11/2020 Single in woodland block between Field 7 and Field 5-6.	NR	13/11/2020 One in woodland pocket between Fields 26-27.	NR	NR	NR	NR	One Area B, 13/11/2020	

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Starling	SG	Section 41 species Red: BDp1/2		10/11/2020 32 in Field 1-2. 29/12/2020 89 foraging in Field 1-2. Four in Field 4. 49 in Field 8. 18/01/2021 15 in Field 1-2. 61 in Field 7 foraging with winter thrushes. 19 foraging in fields to the east of Bank Farm. 17/02/2021 30 in Field 1-2.		11/11/2020 Eight over Field 10-11.  20/02/2021 22 boundary of Field 10-11.		26/12/2020 36 in Field 25.		13/11/2020 Flying over the area only. 26/12/2020 Four in boundary hedgerow of Field 20-21.		30/12/2021 26 in trees at boundary of Field 18. 71 foraging in Field 23. 04/03/2022 Six flying over Field 23	138 Area E, 30/12/2021
Blackbird <i>Turdus merula</i>	B.	Green		Recorded across Survey Area A on every visit. 10/11/2020 Eight at boundary hedges of Field 7 suggesting winter migrant birds.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on every survey visit in low numbers. 26/12/2020 13 in boundary hedges of Field 20-21 indicating wintering migrants. Eight in boundary hedges of Field 22.		Recorded on most survey visits.	13 Area C, 26/12/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Fieldfare	FF	WCA Schedule 1 species Red: BDP1/2, BDr1, BDMr2, BR		29/12/2020 Two in Field 1-2. 18/01/2021 A single in Field 4. Five foraging with redwings in Field 7.		11/11/2020 Two in boundary of Field 10-11. 164 in boundary trees of Field 12-16.		26/12/2020 Single in boundary of Field 24. 19/01/2022 69 in tree boundary of Field 26.		26/12/2020 Five in boundary hedgerow of Field 20-21. Four in boundary hedgerow of Field 22.		30/12/2021 50 in trees at boundary of Field 18. Single at boundary of Field 19. 19/01/2022 16 flying over the area.	69 Area B, 19/01/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Redwing	RE	WCA Schedule 1 species Red: BDMr1/2, BR		<p>29/12/2020 11 boundary hedge and chicken sheds of Field 1-2. 16 in boundary hedge of Field 3. 28 in boundary hedge of Field 4. Two in boundary hedge of Field 7. 120 in the woodland block between Field 7 and Field 5-6. Three in boundary hedge of Field 8. 18/01/2021 19 in Field 3. 314 foraging in Field 7. Six in fields to the east of Bank Farm. 17/02/2021 20 in Field 7.</p>		<p>11/11/2020 Four in boundary of Field 10-11.  30/12/2020 Six in boundary of Field 17/18</p>		<p>26/12/2020 Five over Field 24. Six boundary of Field 27. 19/01/2021 Two in Field 25. 19/01/2022 12 in tree boundary of Field 26. 04/03/2022 Six in woodland block to the east of Field 27.</p>		<p>13/11/2020 25 in boundary hedges of Field 22. 26/12/2020 17 in boundary hedges of Field 20-21. 13 in boundary hedges of Field 22.  19/01/2021 Single in boundary hedge of Field 22.</p>		<p>30/12/2021 22 in trees at boundary of Field 18. 04/03/2022 35 in tree boundary of Field 18. 108 in tree boundary of Field 323.</p>	339 Area E, 04/03/2022

Song Thrush	ST	Section 41 species Amber: BDMp2	<p>10/11/2020 14 in boundary hedges of Field 3. Four in the woodland block within Field 7. Single in the woodland block between Field 4 and Field 5-6. Single in boundary hedge of Field 5-6. Four in boundary hedgerows of Field 8.</p> <p>29/12/2020 Three in Field 1-2. Single in boundary hedge of Field 3. Two in woodland block within Field 7. One in Field 8.</p> <p>18/01/2021 Two in boundary hedge of Field 1-2. Two in Field 7. Single in fields to the east of Bank Farm.</p> <p>17/02/2021 Single in boundary hedge of Field 1-2. Single in boundary hedge of Field 3. Three in woodland block between Field 7 and Field 5-6.</p>	<p>11/11/2020 Three in boundaries of Field 10-11. One in boundary of Field 12-16. Five boundary of Field 17.</p> <p>30/12/2020 Single boundary of Fields 10/5-6. Five boundary of Fields 15/17. Single boundary of Field 17.</p> <p>22/01/2021 Single boundary of Fields 15/17.</p> <p>20/02/2021 Single boundary of Field 17.</p>	<p>13/11/2020 One in Field 15. Two boundaries of Field 26. Two in boundary of Field 27.</p> <p>26/12/2020 Single in Field 25. Single in Field 24. Five boundary of Field 27. Three in boundary of Field 28-29 and Backhouse Wood.</p> <p>19/01/2021 Single in Field 27.</p> <p>14/02/2021 Single in Field 25. Two in Field 24. Two in Field 27.</p> <p>30/12/2021 Single at boundary of Field 27.</p> <p>19/01/2022 Single in boundary hedge of Field 27.</p> <p>11/02/2022 Two in the woodland block to the east of Field 27.</p>	<p>13/11/2020 Single at boundary of Field 20-21. Four in boundaries of Field 22.</p> <p>26/12/2020 10 in hedgerow boundaries of Field 20-21. Nine in hedgerow boundaries of Field 22.</p> <p>19/01/2021 10 in hedgerow boundaries of Field 20-21. Three in boundary hedge of Field 22.</p> <p>14/02/2021 Three in boundary hedges of Field 20-21. Single in boundary hedge of Field 22.</p>	<p>30/12/2021 Three in hedgerow boundaries between Fields 18/12-16. Five at boundary hedges of Field 23.</p> <p>19/01/2022 Two in hedge boundary of Field 18.</p> <p>11/02/2022 Two in boundaries of Field 18.</p> <p>04/03/2022 Single at Field 23.</p>	<p>19 Area C, 26/12/2020</p>
Mistle thrush	M.	Red: BDp2, BDMp1	<p>10/11/2020 Single in woodland block between Field 7 and Field 5-6.</p>	<p>11/11/2020 Four boundary trees of Field 17.</p>	NR	NR	NR	<p>Four Area A, 11/11/2020</p>



Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
						22/01/2021 One boundary trees of Field 17.							
Robin <i>Erithacus rubecula</i>	R.	Green		Recorded across Survey Area A on every visit.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on every survey visit.		Recorded on most survey visits.	N/A
Stonechat <i>Saxicola rubicola</i>	SC	Green		NR		11/11/2020 Three in Field 12-16. One boundary of Fields 10/5-6. 30/12/2020 Single boundary of Fields 16/19. 22/01/2021 Two boundary of Fields 16/19. One boundary of Fields 10/5-6. 20/02/2021 Pair boundary of Field 10-11.		13/11/2020 Two in Field 28-29. 19/01/2021 Single at the boundary of Fields 27-29.		NR		NR	4 Area A, 11/11/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
House Sparrow	HS	Section 41 species Red: BDp2		10/11/2020 15 at Bank Farm.  29/12/2020 10 boundary hedgerows of Field 1-2. Seven boundary hedge of Field 8. 18/01/2021 Eight at Bank Farm. Small flocks recorded at the boundary of Field 3. 17/02/2021 Four at Bank Farm.		30/12/2020 Recorded in southern boundary hedge along Bank Road.		NR		NR		NR	17 Area A, 29/12/2020

Dunnock	D.	Section 41 species Amber: BDMp2	10/11/2020 Single in boundary hedge of Field 3. Single in boundary hedge of Field 7. 18/01/2021 Two in the boundary of fields to the east of Bank Farm. 17/02/2021 Four boundaries of Field 1-2. Two boundaries of Field 3. Single boundary of Field 8.	11/11/2020 Two boundary of Field 17. 30/12/2020 Two in boundaries of Field 12-16. Single boundary of Field 17.  22/01/2021 Two boundaries of Field 10-11. Two boundary of Field 17. 20/02/2021 One boundary of Fields 10-11/13-14.	13/11/2020 One in Field 26. One in Field 27. One in Field 28-29. 26/12/2020 Single in Field 25. Single in Field 26. Single boundary of Field 28-29 and Backhouse Wood. 14/02/2021 Two boundaries of Field 26. 30/12/2021 Single in hedge boundary of Fields 27/28-29. 19/01/2022 Two in boundary hedge of Field 26. 11/02/2022 Two in boundary of Field 26. Three in boundary of Field 27. 04/03/2022 Single in hedge bordering Field 26. Two in hedges bordering Field 27. Single in the woodland block to the east of Field 27	13/11/2020 Two in boundary hedges of Field 22. 26/12/2020 Single in boundary hedge of Field 20-21.	19/01/2022 Single in boundary of Field 23. 11/02/2022 Single in boundary of Field 19. Single in boundary of Field 23. 04/03/2022 Three in boundaries of Field 18.	6 Area A, 17/02/2021
Grey wagtail	GL	Amber: BDMp2	10/11/2020 Single flying over Bank Farm. 17/02/2021 Single in Field 7.	NR	13/11/2020 Single flying over Field 28-29. 26/12/2020 Single in Field 26.	NR	NR	One Area C, multiple dates
Pied Wagtail	PW	Green	10/11/2020 Three in Field 1-2. Three in Field 8.	NR	26/12/2020 Single in Field 26.	NR	19/01/2022 Single in Field 23.	6 Area A, 10/11/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
<i>Motacilla alba</i>				29/12/2020 Four at the chicken sheds of Field 1-2. 18/01/2021 A single in Field 1-2. Two at Bank Farm.				19/01/2021 Single in Field 25.				04/03/2022 Single flying over field 23.	
Meadow pipit	MP	Amber: BDMp2		10/11/2020 63 foraging in Field 1-2, mainly around the chicken sheds. Two in Field 3. 71 in Field 5-6. Three in Field 9. 32 in Field 8.  29/12/2020 Single in Field 3. Two in Field 5-6. 18/01/2021 Three in Field 1-2. 46 in Field 8. Three to the east of bank farm. 17/02/2021 Six in Field 1-2.		11/11/2020 Two in Field 6 in Field 12-16. Two in Field 17. 30/12/2020 53 in Field 12-16. 22/01/2021 Three in Field 12-16		13/11/2020 Single flying over Field 27. 26/12/2020 27 in Field 25. Two in Field 26. Single in Field 28-29. 19/01/2021 Five in Field 25. 14/02/2021 Six in Field 25. 18 in Field 26		NR		30/12/2021 Flying over only. Four in crop of Field 19. 19/01/2022 Single in Field 23. 11/02/2022 Single in Field 23.	141 Area A, 10/11/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	
Chaffinch <i>Fringilla coelebs</i>	CH	Green		Recorded on every visit. Associated with houses, boundary hedgerows and trees.  29/12/2020 Six in Field 7. 18/01/2021 Singles recorded across Survey Area A.		11/11/2020 Three boundary of Field 12-16. 30/12/2020 Single boundary of Field 10-11. 22/01/2021 Three boundary of Field 10-11. 20/02/2021 Three boundary of Field 10-11.		Recorded on every visit in low numbers.		13/11/2020 Three at boundaries of Field 20-21. 45 in boundary hedge of Field 20-21.		Recorded on every visit in low numbers.	48 Area C, 13/11/2020
Bullfinch	BF	Section 41 species Amber: BDMp2		29/12/2020 Four in boundary hedge of Field 3. 18/01/2021 Single in Field 1-2 boundary. Single in Field 7 boundary.		NR		19/01/2021 Single boundary of Field 27.		14/02/2021 Single in boundary hedge of Field 20-21. Two in boundary hedge of Field 22.		19/01/2022 Single flying over the area.	Four Area A, 29/12/2020
Greenfinch	GR	Red: BDp1/2		10/11/2020 Single at the chicken sheds, Field 1-2. Five boundary hedges of Field 8.		NR		NR		NR		NR	Six Area A, 26/12/2020
Linnet	L.	Red: BDp2		NR		NR		26/12/2020 Single in Field 27.		NR		NR	1 Area C, 26/12/2020

Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	Fly over only	Notes	
Lesser redpoll	LR	Section 41 species Red: BDp2		NR		NR		19/01/2022 Two in trees within the woodland block to the east of Field 27.		NR		NR	2 Area F, 19/01/2021
Goldfinch <i>Carduelis carduelis</i>	GO	Green		Recorded on every visit. 10/11/2020 13 in Field 1-2. 18/01/2021 Two in fields to the east of Bank Farm.		11/11/2020 Two boundary of Field 12-16. Five boundary of Field 17. 22/01/2021 Three boundary of Field 10-11.		19/01/2021 Three boundary of Field 27. 19/01/2022 Eight in trees within the woodland block to the east of Field 27.		NR		30/12/2021 Flying over the area. 19/01/2022 Single in hedge boundary of Field 19.	13 Area A, 10/11/2020
Siskin <i>Spinus spinus</i>	SK	Green		NR	Y	11/11/2020 A single flying over Field 12-16.		13/11/2020 Single flying over Field 27. 14/02/2021 Eight at the boundary of Field 28-29 and Backhouse Wood. 19/01/2022 Eight in trees within the woodland block to the east of Field 27. 11/02/2022 Two at woodland block in Field 27.		NR		30/12/2021 Flying over only.	Eight Area F, 19/01/2022

Yellowhammer	Y.	Section 41 species Red: BDp2, BDMp1	<p>10/11/2020 Two boundaries of Field 1-2. 14 around the chicken sheds in Field 1-2. Single in boundary hedge of Field 3. Single in boundary hedge of Field 5-6. Two in boundary hedges of Field 9. 32 at Field 8 boundary nearest Bank Farm. 29/12/2020 Two in boundary hedges of Field 1-2. Single in boundary of Field 3. Single in boundary hedge of Field 4. Single in boundary hedge of Field 7. Six in boundary hedges of Field 5-6. Single in Field 8. 18/01/2021 Three in Field 1-2. Four in Field 3. Two in Field 7. 70 at Field 8 boundary nearest Bank Farm. 13 in Field 9. 17/02/2021 Single boundary of Field 1-2. Two boundary of Field 3. 24 boundaries of Field 8.</p>	<p>11/11/2020 13 in boundaries of Field 10-11. Nine in boundaries of Field 12-16. 84 in boundary of Fields 15/17. 30/12/2020 Two boundaries of Field 10-11. Eight in boundaries of Field 12-16. 22/01/2021 Five in Field 12-16. Two boundary of Fields 16/19. One in Field 17.  20/02/2021 Four boundaries of Field 10-11. Four boundaries of Field 12-16. One boundary of Fields 15/18. One boundary of Fields 15/17. One boundary of Field 17. Three boundaries of Fields 17/18</p>	<p>13/11/2020 Four in Field 25. One in Field 24. Three in boundaries of Field 27. Two in Field 28-29. 26/12/2020 Single in Field 24. Single Field 27. Single Field 28-29. 30/12/2021 Single in hedge boundary between Fields 27-29. 19/01/2022 Single in hedge boundary of Field 28-29 and large cereal field to the east. 11/02/2022 Three in boundary of Field 26. Single on wires at large cereal field to the east of Field 29. 04/03/2022 Three in hedges bordering Field 26. Three in hedges bordering Field 27. One in scrub bordering woodland block to the east of Field 27.</p>	<p>13/11/2020 12 at boundaries of Field 20-21. Six in boundary hedges of Field 22. 26/12/2020 Single in hedgerow boundary of Field 20-21. Two in hedgerow boundary of Field 22. 19/01/2021 Single in boundary hedge of Field 22.</p>	<p>30/11/2021 Nine in boundary hedges of Field 18/17 30/12/2021 24 in hedge boundaries and foraging in crop of Field 21.(including 12 in hedgerow boundary between Fields 18/17) 19 in hedge boundaries and foraging in crop of Field 19. Six in boundary hedges of Field 23. 19/01/2022 14 in hedge boundaries and foraging in crop of Field 18. Five in hedge boundaries of Field 19. Single in boundary hedge of Field 23. 11/02/2022 10 at boundaries of Field 18. 10 at boundaries of Field 19. Two at boundaries of Field 23. 04/03/2022 Six at boundaries of Field 21 with three close by in adjacent Field 17. 12 in hedge boundaries of Field 19. Four in hedge boundaries of Field 23.</p>	<p>97 Area B, 11/11/2020</p>
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Species	Species code	Status	Area A between 10/11/2020 and 20/02/2021.		Area B between 10/11/2020 and 20/02/2021.		Area C between 10/11/2020 and 20/02/2021 and Area F between 30/12/2021 and 04/03/2022.		Area D between 10/11/2020 and 20/02/2021.		Area E between 30/11/2021 and 04/03/2022.		Largest observed single survey count
			Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	Flyover only	Notes	
Reed bunting	RB	Section 41 species Amber: BDMp2		10/11/2020 Single in boundary hedge of Field 3. Single boundary hedge/ditch of Field 5-6. 17/02/2021 Two in boundaries of Field 7		11/11/2020 One in boundary of Field 10-11. Five in boundaries of Field 12-16. Four in boundary of Fields 15/17. 22/01/2021 Two boundaries of Field 10-11. Single boundary of Fields 10-11/13-14. 20/02/2021 One boundary of Field 10-11. Two boundaries of Field 12-16.		13/11/2020 Two in Field 28-29. 14/02/2021 Single at boundary of Field 24. Single at boundary of Fields 27-29. 11/02/2022 Single in boundary of Field 26. Two in ditch within woodland block to the east of Field 27. 04/03/2022 Single in hedge bordering Field 26.		13/11/2020 Single at boundary of Fields 20/21		30/12/2021 Four in ditch between Fields 19-16. 19/01/2022 Single in ditch between Fields 19-16. 11/02/2022 Three at boundaries of Field 18. Four in ditch boundaries of Field 19. 04/03/2022 Three in boundaries of Field 18. Four in boundaries of Field 19.	Ten Area B, 11/11/2020



*RESULTS FOR SURVEY AREA A*

- 4.20 In total, 41 species were recorded during the survey visits. Of these, one species was recorded flying over the Area A and not making further use of it.
- 4.21 Therefore, 40 species were recorded directly using Area A. Of these, 10 are red status species: Woodcock, herring gull, skylark, starling, fieldfare, redwing, mistle thrush, house sparrow, greenfinch and yellowhammer and 12 are amber status species: Stock dove, woodpigeon, common gull, lesser black-backed gull, kestrel, wren, song thrush, dunnoek, grey wagtail, meadow pipit, bullfinch and reed bunting.
- 4.22 Of these species nine are listed as a Species of Principal Importance: herring gull, skylark, starling, song thrush, house sparrow, dunnoek, bullfinch, yellowhammer and reed bunting.
- 4.23 Two species: fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).

*RESULTS FOR SURVEY AREA B*

- 4.24 In total, 37 species were recorded during the survey visits. Of these, six species were recorded flying over Area B and not making further use of it.
- 4.25 Therefore, 31 species were recorded directly using Area B. Of these, seven are red status species: skylark, starling, fieldfare, redwing, mistle thrush, house sparrow and yellowhammer and nine are amber status species: Stock dove, woodpigeon, sparrowhawk, rook, wren, song thrush, dunnoek, meadow pipit and reed bunting.
- 4.26 Of these species seven are listed as a Species of Principal Importance: skylark, starling, song thrush, house sparrow, dunnoek, yellowhammer and reed bunting.
- 4.27 Two species: fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).

*RESULTS FOR SURVEY AREAS C AND F*

- 4.28 In total, 53 species were recorded during the survey visits. Of these, two species were recorded flying over Areas C and F and not making further use of it.
- 4.29 Therefore, 51 species were recorded directly using Areas C and F. Of these, 10 are red status species: lapwing, snipe, skylark, starling, fieldfare, redwing, linnet, lesser redpoll and yellowhammer and 16 are amber status species: greylag goose, mallard, stock dove, woodpigeon, black-headed gull, Mediterranean gull, common gull, kestrel, rook, wren, song thrush, dunnoek, grey wagtail, meadow pipit, bullfinch and reed bunting.
- 4.30 Of these species nine are listed as a Species of Principal Importance: lapwing, skylark, starling, song thrush, dunnoek, bullfinch, lesser redpoll, yellowhammer and reed bunting.
- 4.31 Four species: kingfisher, Cetti's warbler, fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA)

*RESULTS FOR SURVEY AREA D*

- 4.32 In total, 24 species were recorded during the survey visits. Of these, two species were recorded flying over Area D and not making further use of it.
- 4.33 Therefore, 22 species were recorded directly using Area D. Of these, four are red status species: starling, fieldfare, redwing and yellowhammer and seven are amber status species: woodpigeon, rook, wren, song thrush, dunnock, bullfinch and reed bunting.
- 4.34 Of these species six are listed as a Species of Principal Importance: starling, song thrush, dunnock, bullfinch, yellowhammer and reed bunting.
- 4.35 Two species: fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).

*RESULTS FOR SURVEY AREA E*

- 4.36 In total, 33 species were recorded during the survey visits. Of these, six species were recorded flying over Area E and not making further use of it.
- 4.37 Therefore, 27 species were recorded directly using Area E. Of these, six are red status species: lapwing, skylark, starling, fieldfare, redwing and yellowhammer and 10 are amber status species: mallard, stock dove, woodpigeon, green sandpiper, wren, song thrush, dunnock, meadow pipit, bullfinch and reed bunting.
- 4.38 Of these species eight are listed as a Species of Principal Importance: lapwing, skylark, starling, song thrush, dunnock, bullfinch, yellowhammer and reed bunting.
- 4.39 Three species: green sandpiper, fieldfare and redwing are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) (WCA).

## 5. EVALUATION

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### SUMMARY

- 5.1 Of the bird species recorded, given the total of bird species and peak counts, the Site is likely to be of ecological importance at a Local (district) level for its wintering bird assemblage and the following levels of importance for individual species:
- County importance for wintering yellowhammer (based on peak counts); and
  - Local (district) importance for wintering skylark and meadow pipit (based on peak counts).
- 5.2 Overall, the Site is considered to support a typical winter bird assemblage for intensively managed farmland with small woodland pockets and ditch habitats. The majority of birds encountered are common and widespread species of low conservation concern.
- 5.3 During the winter bird survey visits it was noted that the Site supports wide field margins with tall herbaceous vegetation that are adjacent to the crop.
- 5.4 Bird species recorded on-Site were registered utilising the woodland edges, hedgerows, scrub and ditch habitat and any adjacent gardens and associated buildings.

### CONSERVATION STATUS

- 5.5 A total of 62 bird species were recorded within the Site, with 61 directly using the Site (excluding flyover of great white egret). Of these, 37 are notable species as follows:
- 12 are listed as a Species of Principal Importance: lapwing, herring gull, skylark, starling, song thrush, house sparrow, dunnock, bullfinch, linnet, lesser redpoll, yellowhammer and reed bunting.
  - 14, are red status species: lapwing, snipe, woodcock, herring gull, skylark, starling, fieldfare, redwing, mistle thrush, house sparrow, linnet, lesser redpoll, greenfinch and yellowhammer.
  - 19 are amber status species: greylag goose, mallard, stock dove, woodpigeon, green sandpiper, sparrowhawk, rook, black-headed gull, Mediterranean gull, common gull, lesser black-backed gull, kestrel, wren, song thrush, dunnock, grey wagtail, meadow pipit, bullfinch and reed bunting.
  - Six species are listed under Schedule 1 of the Wildlife and Countryside Act 1981 (WCA) using the Site: Mediterranean gull, green sandpiper, kingfisher, Cetti's warbler, fieldfare and redwing, though noting these species are recorded as winter visitors only.
- 5.6 Due to the large size of the survey area and combination of habitats present, this assemblage is assessed as typical. These notable species have however been

further assessed in relation to abundance, species diversity, habitat importance and ZoI below.

#### DESIGNATED SITE CRITERIA

- 5.7 Lapwing was recorded in a small group (2) roosting and foraging within survey Area C and as a fly over. This species is however only referenced within the Dungeness Romney Marsh SPA citation as a species within the overall numbers contributed to the site being *regularly by over 20,000 waterbirds* and is in itself not a qualifying species. Given the very small numbers recorded within the Survey Area (with no other waterbird aggregations recorded), it is assessed that this is not a significant contribution towards the 20,000 waterbird assemblage.
- 5.8 As a result, it is assessed that wintering lapwing within the site is not significant or functionally linked to the Romney Marsh and Rye Bay SPA on the basis of small numbers, recorded irregularly during the winter season only.
- 5.9 No other species listed on the qualifying criteria for the Dungeness Romney Marsh and Rye Bay SPA and Ramsar were recorded, therefore no further evaluation has been undertaken in respect of these sites.

#### SPECIES ABUNDANCE

- 5.10 At a national level, no counts of any breeding bird species recorded within the Site approach 1% of national breeding population estimates (Woodward et al., 2020). As such, the Survey Area did not support breeding populations of national importance for any species.
- 5.11 At a county level, peak counts recorded during the field survey were compared with those detailed within the Kent Bird Reports (Kent Ornithological Society, 2015-2019). All species were recorded in low numbers in comparison with county records aside from the species discussed below.
- Given the max counts of 92 wintering yellowhammer in Area A on 18/01/2021 and 106 in Area B on 11/11/2020 (and consistent recording of smaller groups of this species), the Site is assessed to be of County importance for wintering yellowhammer.
  - Given the max counts of 67 wintering skylark in Area A on 10/11/2020 and 102 on 11/11/2020 (along with consistent recording), the Site is assessed to be of Local (district) importance for wintering skylark at an inland location.
  - Given the max count of 141 of wintering meadow pipit in Area A on 10/11/2020 and several other counts of large flocks under 50, the site is occasional utilised by large aggregations of this species but may represent seasonally dispersing passage birds from the wider area rather than consistent use by large numbers from site and surrounds. The Site is assessed to be of Local (district) importance for wintering meadow pipit.

### SPECIES DIVERSITY

- 5.12 Of the other bird species recorded, given the total of bird species and peak counts the Site is likely to be of ecological importance at a Local (district) level for its wintering bird assemblage.
- 5.13 The Site is unlikely to qualify in whole or in part as a Kent LWS under Kent selection criteria, but it is noted that a small number of Kent Red Data Book species (cormorant, grey heron, little egret, Cett's warbler and Mediterranean gull) have been recorded on occasion within the Site. The on-Site habitats are however similar to abundant agricultural habitats within the district, which are expected to contain a similar species diversity.

### HABITAT AND DISTRIBUTION

- 5.14 Habitats of key value for wintering birds within the Site are the connected network of hedgerow, woodland parcels and field margins for small passerines as well as riparian habitats associated with the East Stour River
- 5.15 Open arable expanses were used irregularly by aggregations of gulls and foraging and roosting farmland birds but were generally of lower value than boundary habitats, aside from the usage by notable numbers of skylark and yellowhammer. These key fields are shown in Annex 3.
- 5.16 Species distribution was generally as expected (species corresponding to their traditional habitat association) with the exception of notable yellowhammer and skylark numbers in Area A described above.

### ZONE OF INFLUENCE

- 5.17 There will be a likely adverse impact to wintering skylarks within the Zol of the Project where the design of the Project creates structures within or adjacent to suitable skylark wintering habitat, noting this species prefers open fields and uninterrupted sight lines.
- 5.18 Given the winter use of hedgerows by yellowhammers, should the Project result in loss or reduction of linked hedgerows that extend out of the Site into adjacent land parcels then there will be a likely adverse effect to wintering yellowhammers.

### POTENTIAL IMPACTS FOR FURTHER ASSESSMENT

- 5.19 Skylark is a farmland specialist and it will not be possible to retain all the suitable wintering habitat to support this species within the Project. The Project is likely to result in the loss of the majority of arable farmland from the Site, and therefore there will be a permanent net loss of skylark habitat within the Site.
- 5.20 Yellowhammer territories are linear generally following hedgerows or clusters of suitable breeding habitat. Should the Project result in loss or reduction of hedgerows within the Site then there will be a likely adverse effect to breeding yellowhammers. Additionally, the loss or reduction to the wide field margins which are an important food source for foraging yellowhammer are also likely to have a similar adverse effect.

- 5.21 New nesting and foraging habitats for birds will be provided in the new landscaping scheme, with the creation and enhancement of woodland, hedgerows, scrub and tall grassland.
- 5.22 Details of avoidance, mitigation, compensation and enhancement measures relating to birds are not included in this report. These measures are summarised and assessed within **ES Volume 2, Chapter 9 Biodiversity (Doc Ref. 5.2)**. Details of long-term habitat management prescriptions that will benefit the local bird population are not included in this report; these measures are set out in the **Outline LEMP (Doc Ref. 7.10)**.

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## 7. ANNEX 1: SUMMARY OF LEGISLATION AND GUIDANCE

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### LEGISLATION

- 7.1 The level of protection afforded to protected species varies dependent on the associated legislation. A full list of protected species and their specific legal protection is provided within the Schedules and/or Sections of the associated legislation. Case law may further clarify the nature of the legal protection afforded to species.
- 7.2 The legal protection afforded to protected species overrides all planning decisions.
- Wildlife and Countryside Act 1981 (as amended)
- 7.3 The legislative provisions for the protection of wild birds in the UK are contained primarily in Sections 1-7 of the Wildlife and Countryside Act (WCA) 1981 (as amended).
- 7.4 When breeding, all birds, their nest, eggs and nestlings are afforded protection under the Wildlife and Countryside Act 1981, as updated by the 'Countryside Right of Way Act 2000'). Therefore, 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 eggs of any wild bird.
- 7.5 Additionally, special penalties exist for offences related to species listed on Schedule 1 of the Wildlife and Countryside Act, 1981 (as amended) for which there are additional offences for disturbing these birds at their nest, or their dependent young. Schedule 1 birds cannot be intentionally or recklessly disturbed when nesting and there are increased penalties for doing so. Generally, no licences are available for disturbance during a Project even in circumstances where that Project is consented including a valid planning permission.
- Directive of the Conservation of Wild Birds 2009 / Conservation of Habitats and Species Regulations 2017 (as amended)
- 7.6 A number of bird species recorded in the UK (including those that are resident, overwintering and migratory) are protected at a European level under the European Commission (EC) Directive of the Conservation of Wild Birds 2009 (2009/147/EC). The Directive applies to 193 bird species or sub-species which are:
- a. in danger of extinction;
  - b. rare, or have restricted local distribution;
  - c. vulnerable to specific changes in their habitat; or
  - d. in need of particular attention for reasons of the specific nature of their habitat.

7.7 These species are afforded enhanced legal protection and EU member states have a responsibility to maintain the populations of these species at a level that corresponds to their ecological, scientific and cultural requirements (Article 2). This Directive was transposed into English law through the Conservation of Habitats and Species Regulations 2017 (as amended).

The UK is no longer a member of the European Union (EU). EU legislation as it applied to the UK on 31 December 2020 is now a part of UK domestic legislation. EU legislation which applied directly or indirectly to the UK before 31 December 2020 has been retained in UK law as a form of domestic legislation known as 'retained EU legislation'.

7.8 The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the Conservation of Habitats and Species Regulations 2017 (referred to as the 2017 Regulations) so that they operate effectively. Most of these changes involve transferring functions from the European Commission to the appropriate authorities in England. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

7.9 Species listed on Annex 1 of the Directive are those for which the UK Government is required to take special conservation measures including the designation of land as Special Protection Areas (SPAs) to ensure the survival and reproduction of these species throughout their distributions.

7.10 These sites in the UK no longer form part of the EU's Natura 2000 ecological network. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (referred to as the 2019 Regulations) have created a national site network on land

2. These sites are automatically included within the Bern Convention Emerald Network; a network of core breeding and resting sites that are protected for rare and threatened species. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

The Natural Environment and Rural Communities Act 2006 (as amended)

7.11 Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act (2006) requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers, including local and regional authorities, in implementing their duty under Section 40 of the act to have regard to the conservation of biodiversity in England when carrying out their normal functions.

7.12 Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 has been used to identify habitats and species considered to be a conservation priority at a national scale. These are also called Habitats or Species of Principal Importance. The importance of these habitats and species are recognised in the National Planning Policy Framework (NPPF) (Ministry of Housing, Communities & Local Government, 2019).

- 7.13 The list of 49 bird 'priority species' comprises those identified as requiring action under the UK Biodiversity Action Plan (UKBAP), which continue to be regarded as species of conservation priority under the UK Post-2010 Biodiversity Framework (succeeded the UKBAP in July 2012).

## POLICY

### National Planning Policy Framework (NPPF)

- 7.14 In addition to primary legislation, the government published the National Planning Policy Framework on 20th July 2021. Within the NPPF, Chapter 15 is headed *Conserving and enhancing the natural environment* (Paragraphs 180 to 188).
- 7.15 Of relevance are the following statements: -  
*'Planning policies and decisions should contribute to and enhance the natural and local environment by... minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures* (Paragraph 180d).
- 7.16 Paragraph 181 states that: -  
*'Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.'*
- 7.17 To protect and enhance biodiversity and geodiversity, plans should: -  
*'Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including: the hierarchy of international, national and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation* (Paragraph 179a); and  
*'promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.'* (Paragraph 179b).
- 7.18 When determining planning applications, local planning authorities should apply the following principles (Paragraph 186): -  
*'a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;*  
*b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the*

*features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*

*c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists; and*

*d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.'*

7.19 In addition to the above, Paragraph 187 confirms that the following should be afforded the same protection as sites that are included within the definition at Regulation 8 of the Conservation of Habitats and Species Regulations 2017 (as amended) (Special Areas of Conservation, Sites of Community Importance, Special Protection Areas and any relevant Marine Sites (which are collectively referred to as 'habitats sites' in the NPPF)): -

*a) potential Special Protection Areas and possible Special Areas of Conservation;*

*b) listed or proposed Ramsar sites; and*

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

7.20 Paragraph 188 states that: -

*'The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site.'*

7.21 This statement applies to the assessment of effects in relation to all confirmed, possible, potential and/or proposed designated sites of international importance.

## GUIDANCE

### Kent Local Wildlife Site Selection Criteria

7.22 In Kent an individual LWS can be selected for birds if it meets the criteria within Kent Local Wildlife Site Selection Criteria (Kent Wildlife Trust, 2022). These guidelines state that the criterion for selection of Local Wildlife Sites applies to birds as follows

#### *'Birds*

*133) A set of criteria has been established by Kent Ornithological Society, as the relevant expert organisation, for the selection of Wildlife Sites on the basis of their bird fauna (which is here taken to mean the naturally occurring populations of wild birds on a site). The criteria are based on established criteria for the selection of Sites of Special Scientific Interest, and on the Kent Red Data Book.*

134) *The criteria are intended to be applied to areas of habitat which are more-or-less discrete and homogenous. For example, a large block of woodland should not be treated as part of the same site as a large block of farmland. However, an intimately mixed area of small fields, hedges and small woods may be treated as a unit, as may the mix of scrub, swamp, marsh and open water vegetation associated with flood plains or around abandoned quarries.*

135) *The criteria have been designed to recognise*

- a) The rarity of certain breeding and wintering bird species;*
- b) Birds which may be considered vulnerable because their populations are in decline;*
- c) Birds which are vulnerable because of their colonial nesting habitats;*
- d) Birds which may be considered vulnerable because their non-breeding populations are concentrated in a small number of sites; and*
- e) Sites of importance for the presence of a diversity of species.*

*A site should be selected as a Local Wildlife Site if it can be considered as a single, identifiable unit (as explained above) in terms of its bird fauna and where*

- It is occupied regularly by at least 2.5% of the county population of any one or more bird species, based on the most recent and authoritative data;*

*OR*

- It is occupied regularly as a breeding site by species with a Kent population of 50 or fewer territories;*

*OR*

- It holds ten or more Kent Red Data Book 2 (KRDB2) species in the breeding season;*

*OR*

- It holds three or more Kent Red Data Book 3 (KRDB3) species at the appropriate time of year (normally this should not include a combination of breeding and wintering species);*

*OR*

- It holds one of the five largest colonies of colonial seabirds (with the exception of herring gull and black-headed gull), grey heron, little egret or sand martin;*

*OR*

- It is occupied regularly by 5% or more of the county population of any one or more species in non-breeding seasons, based on the most recent and authoritative data;*

*OR*

- It has been recorded as being regularly used in recent years by at least 50 breeding bird species;*

OR

- It has been recorded as being regularly used in recent years by at least 60 wintering bird species;

OR

- It has been recorded as being regularly used in recent years by at least 100 passage bird species.

#### Birds of Conservation Concern (BoCC)

7.23 Although it does not offer any legal protection, Birds of Conservation Concern 5 (Stanbury *et al.*, 2021) provides guidance on the conservation status of UK bird species. Thus, it can be used to inform judgements on the ecological importance of bird populations and the habitats that they rely on, particularly at a local level.

7.24 The Birds of Conservation Concern (BoCC) assigns bird species red and amber status based on a set of criteria that are summarised in the following table. Red status species are those species of highest conservation concern and green status species are those of low or no conservation concern. Amber status species are those species of some conservation concern.

#### *Birds of Conservation Concern (BoCC) red and amber list criteria.*

Criteria	BoCC Status Code	Description
Red list	HD	Historical decline in breeding population.
	BDp <sup>1</sup> / BDp <sup>2</sup>	Severe breeding population decline over 25 years / longer term.
	BDr <sup>1</sup> / BDr <sup>2</sup>	Severe breeding range decline over 25 years / longer term.
	WDp <sup>1</sup> / WDp <sup>2</sup>	Severe non-breeding population decline over 25 years / longer term.
	WDr <sup>1</sup>	Severe non-breeding range decline over 25 years.
	IUCN	Globally threatened – CR (critically endangered) EN (endangered) VU (vulnerable).
Amber list	BDMp <sup>1</sup> / BDMp <sup>2</sup>	Moderate breeding population decline over 25 years / longer term.
	WDMp <sup>1</sup> / WDMp <sup>2</sup>	Moderate non-breeding population decline over 25 years / longer term.
	BDMr <sup>1</sup> / BDMr <sup>2</sup>	Moderate breeding range decline over 25 years / longer term.

Criteria	BoCC Status Code	Description
	WDMr <sup>1</sup>	Moderate non-breeding range decline over 25 years.
	ERLOB	Threatened in Europe – CR (critically endangered) EN (endangered) VU (vulnerable).
	HDrec	Historical decline in breeding population in recovery.
	BR / WR	Breeding rarity / non-breeding rarity.
	BL / WL	Breeding localisation / non-breeding localisation.
	BI / WI	Breeding bird of international importance / non-breeding bird of international importance.

STONESTREET GREEN SOLAR

ENVIRONMENTAL STATEMENT, VOLUME 4, APPENDIX 9.5F WINTER BIRD SURVEY REPORT

FOR EPL 001 LIMITED

STATUS: PLANNING

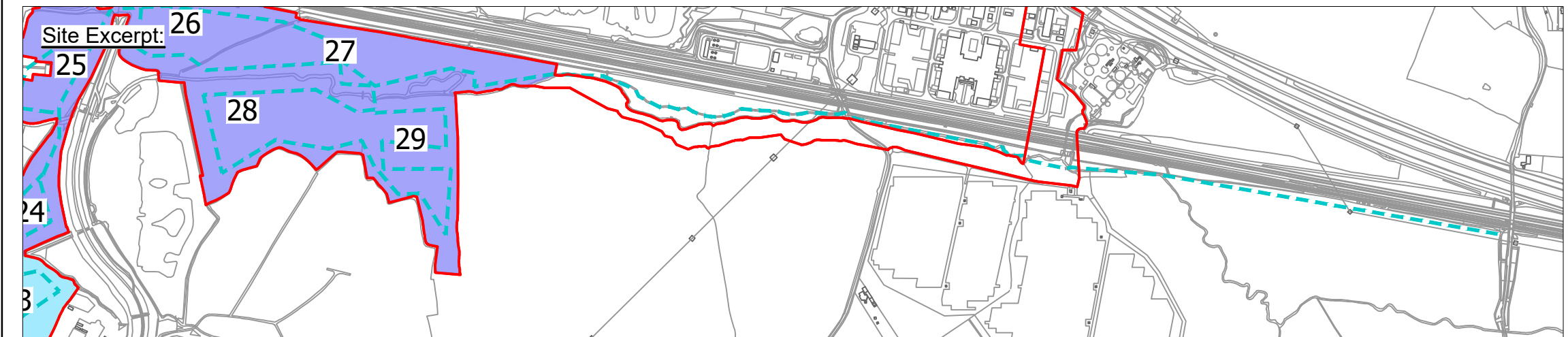
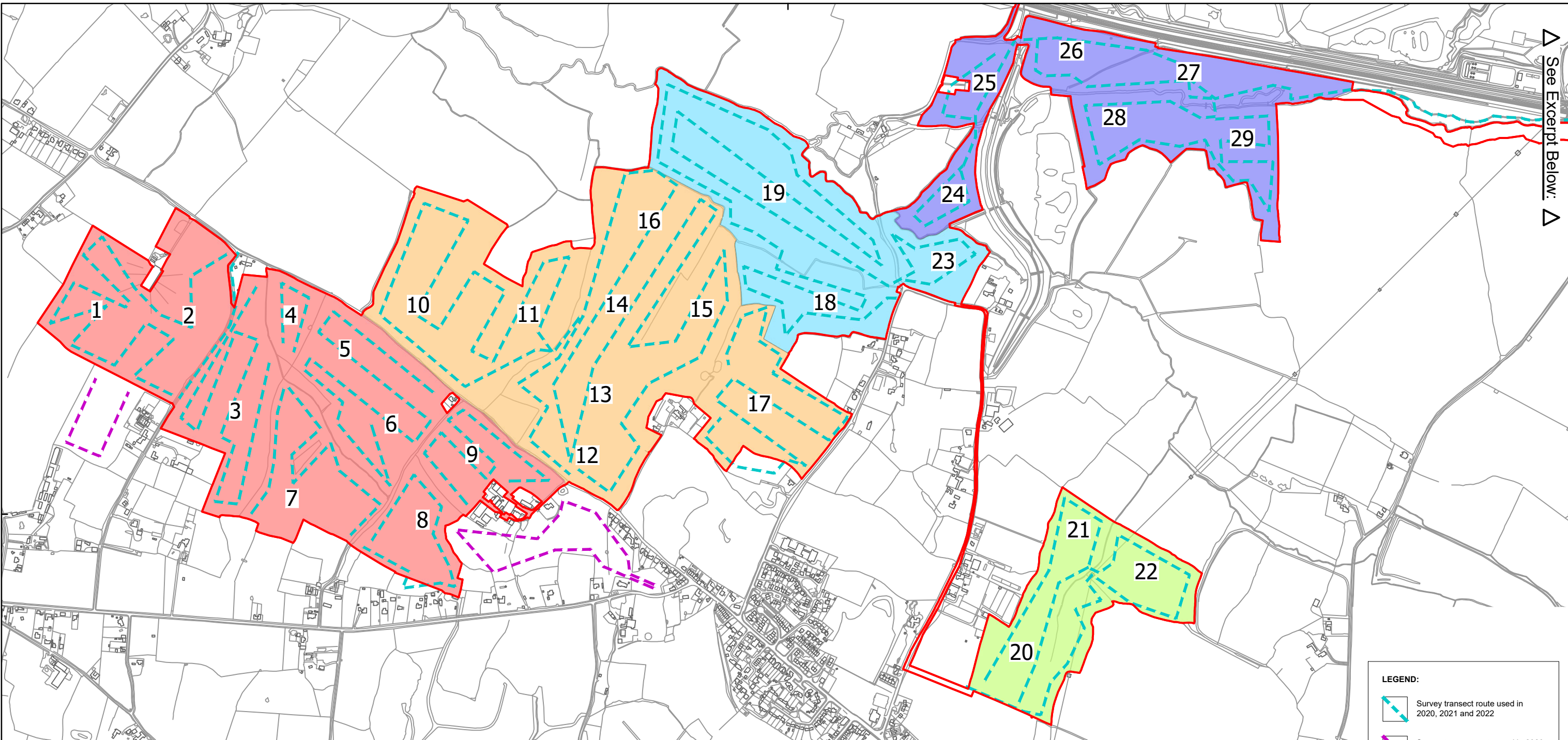
## 8. ANNEX 2: WINTER BIRD SURVEY ROUTES

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***[SEE OVERLEAF]***

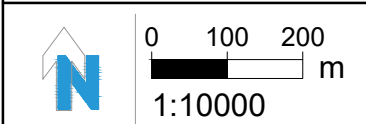


See Excerpt Below:  



**LEGEND:**

-  Survey transect route used in 2020, 2021 and 2022
-  Survey transect route used in 2020 only
-  Survey area A, encompassing field numbers: 1, 2, 3, 4, 5, 6, 7, 8, and 9
-  Survey area B, encompassing field numbers: 10, 11, 12, 13, 14, 15, 16, and 17
-  Survey area D, encompassing field numbers: 20, 21, and 22
-  Survey area E, encompassing field numbers: 18, 19, and 23
-  Survey area C & F, encompassing field numbers: 24, 25, 26, 27, 28, and 29
-  Order limits  
Total area approx: 191.538 ha.



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rev. rev. date auth. rev. note  
C01 14/05/24 MW Client approved for submission.

rev. rev. date auth. rev. note

client: **EPL 001 Limited**  
project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
**Kent**

drawing no. **5535-LLB-XX-XX-DR-Ec-0058** rev. **C01**  
drawing title: **Winter Bird Survey Routes**  
sult. **A4**  
APFP **5(2)(f)(ii)**

rev date: **14/05/24**  
scale: **1:10000**  
sheet: **A3**  
drawn: **NA**  
checked: **MW**

**lloyd bore** landscape ecology arboriculture  
33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
www.lloydbore.co.uk mail@lloydbore.co.uk

STONESTREET GREEN SOLAR

ENVIRONMENTAL STATEMENT, VOLUME 4, APPENDIX 9.5F WINTER BIRD SURVEY REPORT

FOR EPL 001 LIMITED

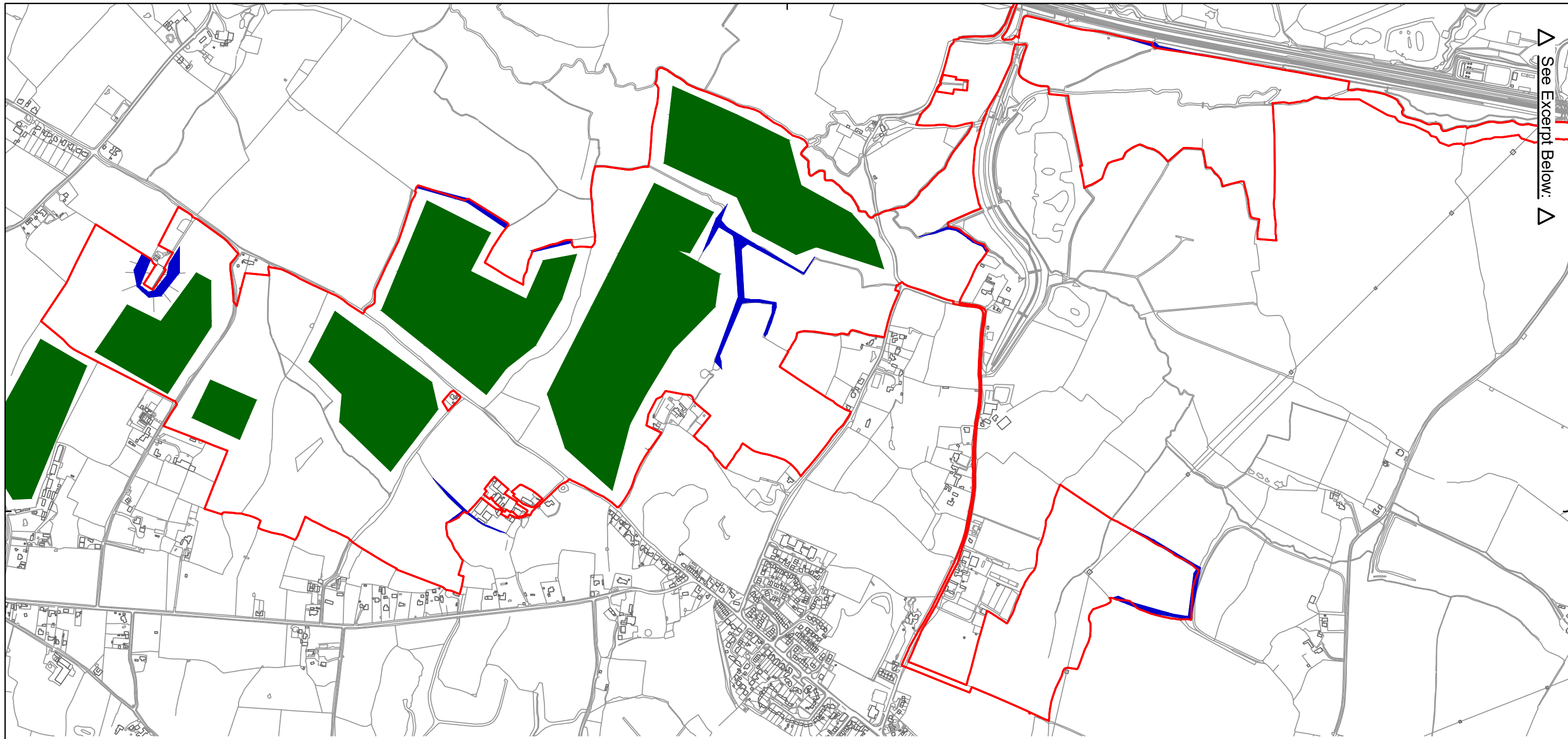
STATUS: PLANNING

9. ANNEX 3: IMPORTANT AREAS FOR YELLOWHAMMER AND SKYLARK

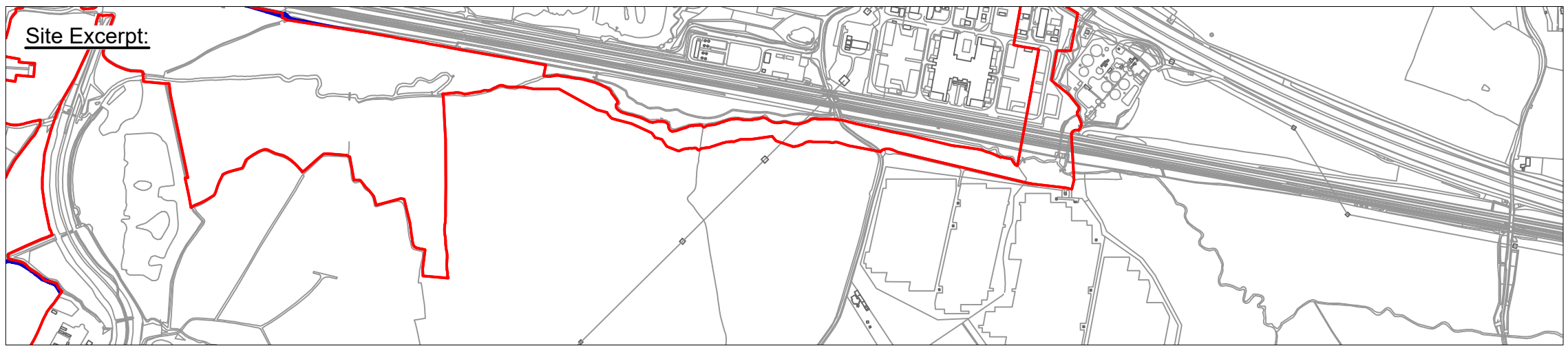
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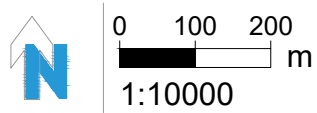


Site Excerpt:



**LEGEND:**

-  Area of importance - Yellowhammer in winter
-  Area of importance - Skylarks in winter
-  Order limits  
Total area approx: 191.538 ha.



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rev.	rev. date	auth.	rev. note
C01	14/05/24	MW	Client approved for submission.

rev.	rev. date	auth.	rev. note
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client: **EPL 001 Limited**  
project: **Stonestreet Green Solar**  
**Land North And West Of Aldington**  
Kent

drawing no. **5535-LLB-XX-XX-DR-Ec-0060** rev. **C01**  
drawing title: **Important Areas for**  
**Yellowhammer and Skylark**  
sult. **A4**  
APFP **5(2)(f)(ii)**  
drawn: **NA**  
checked: **MW**

rev date: **14/05/24**  
scale: **1:10000**  
sheet: **A3**  
drawn: **NA**  
checked: **MW**

**lloyd bore** landscape ecology arboriculture  
33 ST. GEORGE'S PLACE, CANTERBURY, KENT CT1 1UT 01227 464 340  
mail@lloyd bore.co.uk