Heckington Fen Solar Park

ENO10123

Environmental Statement | Volume 3: Technical Appendices

Appendix 8.4: Further Extended Phase 1 Habitat Survey Report – Energy Park

Applicant: Ecotricity (Heck Fen Solar) Limited

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APPENDIX 8.4 - FURTHER EXTENDED PHASE 1 HABITAT SURVEY REPORT – ENERGY PARK

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Appendix 8.4 - Further Extended Phase 1 Habitat Survey Report – Energy Park

1. SUMMARY

1.1 This report presents the results of a further phase 1 surveys conducted at Heckington Fen, near Boston, Lincolnshire.

1.2 The initial extended phase 1 survey of the Energy Park conducted in 2021 and did not map all the areas on the eastern part of the site (Six Hundreds Farm) that had been entered into Mid-Tier Stewardship scheme or a some of the grass margins adjacent water courses on the western part of the site. This was noted during still visit in spring 2022 and also by North Kesteven District Council. Also Phase 1 survey of the Off Site Grid Connection Corridor Route did not classify habitats of 6 fields within the final area Development Consent Order and areas within Bicker Fen Substation (Appendix 8.5 Extended Phase 1 survey – Cable Route Corridor (document reference 6.3.8.7) due to changes in the development area and lack of permission for access at the time of the initial survey.

1.3 Therefore, further surveys were conducted on the Energy Park and Off Site Grid Connection Corridor during site visits in 2022 to assess and map these areas. The extra habitat information is required to contribute to the baseline data for the Biodiversity Net Gain calculation as set out in Appendix 8.12 (document reference 6.3.8.12). In addition, during these walk over site visits further water vole (*Arvicola amphibius*), otter (Lutra *lutra*) and badger (Meles *meles*) survey were conducted and other species observed were recorded.

1.4 A total 47 rough grassland margins were identified with a total area 13.6 ha. As noted on previous survey the habitat along the wet ditches is suitable for otter and water vole. No evidence of water vole or otter was recorded although a mink was observed on one occasion. Badger were still present and results of the survey were incorporated in the confidential Badger report Appendix 8.7 (document reference 6.3.8.7).

2. INTRODUCTION

2.1 This report summaries the results of the further extended phase 1 surveys carried out during 2022 on Heckington Fen Energy Park. This part of the work being carried to contribute to an Environment Impact Assessment (EcIA) in relation to a DCO application for the construction, operation (including maintenance), and decommissioning of a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (hereafter referred to as "the Energy Park"), cable route to, and above ground works at, the National Grid Bicker Fen Substation (hereafter referred to as "the Proposed Development" (inclusive of Energy Park)) on land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire.

2.2 The area of land for the Energy Park is 524ha. The Energy Park Site is bounded by a drainage ditch which lies directly to the south of the Head Dike, which runs along the northern boundary, Holland Dike to the east, the A17 Sleaford to Holbeach road to the south and B1395 Sidebar Lane and agricultural land to the west. The Energy Park Site lies wholly within North Kesteven District, abutting Boston Borough boundary along the eastern edge. Land is in arable use and is subdivided into rectilinear parcels by long linear drainage ditches that lie principally north-south, connected east-west by shorter ditches including Labour in Vain Drain. The ditches have an engineered profile, colonised in part by emerging aquatic plant species.

2.3 A number of ecological surveys have carried out on the Energy Park including Appendix 8.3 - Phase 1 Habitat Survey Report - Energy Park (document reference 6.3.8.3), Appendix 8.6 - Botany Report including Aquatic Plants and Rare Arable Plants (document reference 6.3.8.6); Appendix 8.7 - **CONFIDENTIAL** Badger Survey (document reference 6.3.8.7); Appendix 8.8 - Bat survey (document reference 6.3.8.8), Appendix 8.10 - Ornithological surveys (document reference 6.3.8.10), Appendix 8.11 - Great crested newt surveys (document reference 6.3.8.11); and Appendix 6.3 - Arboricultural Impact Assessment (document reference 6.3.6.3).

2.4 The initial extended phase 1 survey conducted in 2021 did not map all the area on the eastern part of the site that had been entered into Mid-Tier Stewardship scheme or a some of the grass margins adjacent water courses on the western part of the site. Therefore, further surveys were conducted during site visits in 2022 principally to assess and map these areas. The extra habitat information was required to contribute to the baseline data for the Biodiversity Net Gain calculation as set out in Appendix 8.12 (document reference 6.3.8.12).

2.5 In addition, during these site visits further targeted water vole (Arvicola *amphibius*) , otter (Lutra *lutra*) and badger (*Meles meles*) survey were conducted in suitable habitat. Other species observed whilst on site were recorded.

3. METHODS

3.1 The surveys were conducted during various sites visits (6 No.) in 2022 the Energy Park as set out in Table 1. The extra phase one survey on Off Site Grid Connection Corridor were conducted on the 18/10/2022.

Date	Temperature	Cloud cover	Wind	Precipitation
23/03/2022	9-18 °C	5 %	S 2-3	Dry
24/03/2022	8-17°C	10%	SE 2	Dry
25/03/2022	7-16 °C	10%	S 1	Dry
30/06/2022	16-19°C	20%	SW 2-3	Dry
18/10/2022	9-18 °C	5%	W 2-3	Dry
19/10/2022	8-14 °C	10-60%	E 2-3	Dry
20/10/2022	11-13°C	100% fog am	SW 2-4	Fog am heavy rain pm

Grass Margins and missing fields in the Cable Corridor Route

3.2 The field survey was based on the Phase 1 habitat survey approach (Joint Nature Conservation Committee 2010)[1] Each Grass margin within the Energy Park was mapped and then digitised. The habitat was then classified following the UK Habitat Classification system (Butcher *et al* 2020)[2] and the condition assessed using the Biodiversity Metric 3.1 Condition Assessment Methodology.

3.3 The habitats within the missing fields were recorded in Standard Phase 1 habitat survey categories and data used to complete **Figure 8.4 - Phase 1 Habitat Survey** (document reference 6.2.8).

Water Voles

3.4 In habitats with the potential for water vole 50m either side of all existing drain crossings were surveyed for evidence of water vole activity were carried out following standard methods from Dean *et al.* (2016). All of the suitable bankside and water-edge habitats were thoroughly searched for field signs including:

- burrows;
- feeding platforms and evidence of feeding;
- food remains;
- latrines; and
- footprints.

3.5 The site visit in March 2022 was used to assess the habitat potential for water voles on all the water courses on site and in particular search for old burrows and old feeding platforms/latrines exposed due to the lack of vegetation. The site visit in June checked the most suitable habitats along the Internal Drainage Board (IDB) maintained drains. The site visit in October re-checked the whole site for evidence of water vole activity during 2022 within 50m of all drain crossing and where practical all of the main IDB drains within the Energy Park Site.

[1] Handbook for Phase 1 habitat survey. A technique for environmental audit. JNCC (2016) CIEEM (2018) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine, second Edition. Chartered Institute of Ecology and Environmental Management.
[2] Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweeek, J (2020) The Uk Habitat Classification User Manual Version 1.1

Otters

3.6 There are limited locations within or adjacent to the Energy Park with soft mud where otter may leave footprints or suitable sprinting within the Energy Park. Therefore, targeted Otter surveys were carried out, checking under the two bridges over the Head Dike and areas of soft mud, close to the pumping station just to the north of Energy Park, for spraints and footprints. The grassy banks at confluences of the main IDB drains and all drain crossing within the Energy Park were surveyed for spraints, footprints or evidence of feeding otters (fish scales, remnants of fish).

Badgers

3.7 All the previously recorded badger setts were checked for activity along with all blocks of woodlands for badger activity. The banks of all the ditches and grass margin were checked for evidence of badger: setts, latrines, scratches on trees, badger hair on barbed wire across animal trails, snuffle holes or feeding activity. The results of these survey are reported in the CONFIDENTIAL Badger Report Appendix 8.7 (document reference 6.3.8.7).

Personnel

3.8 These surveys were conducted by Dr Simon Pickering, a professional ecologist with over 40 years' experience of ecological field surveys and training ecological field skills. Principal Ecologist at Ecotricity since 2008. He is responsible for overseeing the ecological assessment process for renewable energy as well as other development projects for the company and has experience of writing over 30 Ecological Impact Assessments (EcIA) and acting as expert witness at public inquiries.

Survey Constraints

3.9 The two main survey periods were at the beginning and end of the survey season therefore it is possible some grass or forb species may have been missed. However, the mid-summer walk over re-checked a number of areas surveyed in the spring and found little difference in species composition. Whilst the water vole survey in March and October were outside the core water vole survey season, 2022 was a particularly warm year and water vole were observed to be active of other sites in England during these periods. Had water vole been present on the Energy Park site survey in October 2022 would have recorded feeding signs, burrow and latrines.

4. RESULTS

Grass Margins within the Energy Park

4.1 A total of 47 grassland margins were mapped (Figure 1, at Appendix 3 of this document and Table 2). These typically dominated by Cocksfoot (*Dactylis glomerata*), Perennial Rye-grass (*Lolium perenne*) Creeping Bent (*Agrostis stolonifera*) and Yorkshire-fog (*Holcus lanatus*). Other grass species recorded included False Oat-grass (*Arrhenatherum elatius*), Black Grass (*Alopecurus myosuroides*). A number of herbs species including Nettle (*Urtica diotica*), Creeping Thistle (*Cirsium arvense*), Horse-radish (*Armoracia rusticana)*, Fat Hen (*Chenopodium album*, Cow Parsley (*Anthriscus sylvestris*) and Hogweed (*Heracleum sphondylium*) were also recorded.

4.2 Those grass strip not cut during early spring or regularly used as access tracks tended to be

dominated a limited number of species including Cocksfoots, Yorkshire fog and false oat grass with blocks of Cow Parsley and Hogweed. Whilst those that were used, that were cut in spring tended to be dominant by grasses with fewer herbs.

4.3 A number of grass margins with a greater level of disturbance include species such as Annual Meadow- grass (Poa annua), Pineappleweed (*Matricaria discoidea*), Common Whitlowgrass (*Erophila verna)* Common Mouseear (*Cerastium fontanum*) and Greater Plantain (*Plantago major*). It may be that these could have been grasslands prior stewardship scheme.

4.4 The majority of the grass margins were tussocky field margin (cla5) and grass field margin (cla) which is to be expected as they are part of the Mid-Tier Stewardship. There were three grass margins with greater species diversity on the eastern side of side along a track known as Crab Lane and bordering the Labour in Vain Drain. There are three other areas of grass previously identified firstly the small section relatively species rich adjacent to the gas main substation identified in Appendix 8.6 - Botany and rare arable plant survey report (document reference 6.3.8.6) and the two grass fields in stewardship scheme adjacent to the woodland in the southeast part Six Hundred Farm identified as semi-improved grassland in the original phase 1 survey Appendix 8.3 (document reference 6.3.8.3).

Missing Fields within Off site Cable Corridor Route

4.5 All of the six fields within the Cable Corridor Route were in intensive arable cultivation use at the time of the survey cultivated up to the field margins. Each was bounded by a dry drainage ditch with typical dryland species including nettle (*Urtica dioica*), False Oat grass (*Arrehenatherum elatuius*), Clevers (*Gallium aparine*), Cow Parsley (*Anthriscus sylvestris*), Creeping thistle (*Cirsium arvense*).

4.6 The habitat within the Bicker Fen Substation was a mosaic of semi-improved grassland (B6) and developing scattered Hawthorn (Crataegus monogyna) scrub (A2.2). Species within the semi-improved grassland include Cock's-foot (*Dactylis glomerata*), Perennial Rye-grass (*Lolium perenne*) ,Crested Dog's-tail (*Cynosurus cristatus*) and Red Fescue (*Festuca rubra*) as the Broad-leaved Dock (*Rumex obtusifolius*), Clustered Dock (*Rumex conglomeratus*), Common Ragwort (*Jacobaea vulgaris*), Common Knapweed (*Centaurea nigra agg*.), White Clover (*Trifolium repens*) and Common Mouseear (*Cerastium fontanum*), Creeping Buttercup (*Ranunculus repens*), Bristly Ox-tongue (*Helminthotheca echioides*).

Water vole

4.7 The main IDB managed drains within the Energy Park and the IDB managed drain along the northern boundary of the energy park were identified as providing very suitable habitat for water vole. The internal drains which were wet during the summer were also considered as suitable water vole habitat. No evidence of water voles was recorded either side of the culverts on any of the drains or water courses throughout the Energy Park. A small number of brown rat (*Rattus novegicus*) burrows were identified in both spring and autumn on ditches close to farm buildings in the centre the site. A small number of Barn owl pellets were also found beneath a nest box in one of the modern farm barns. Examination of the pellets found no remains of water vole (only field vole (*Microtus agrestis)* and brown rat remains). Information provided by Black Sluice IDB during consultation on the potential water course management on the Energy Park confirmed that no water vole have been recorded in this area and the closest recent records of water vole are 20km south of the Energy Park (Appendix 3 of this document).

Otter

4.8 The main IDB drains within and adjacent to the Energy along the Head Dike provide suitable habitat for otter. However, no signs of these species were recorded during targeted surveys. However, given the quality of habitat in is considered likely that otter may use the area.

Badger

4.9 There was considerable level of badger activity. The two main setts were both occupied with evidence of active use in spring 2022 and autumn 2022. It was found that a number of outlying setts active in spring 2022 were new since the initial phase 1 in 2021. Also, by autumn 2022 a number of outlying setts active in spring 2022 appeared to have fallen out of use and new outlying setts created as well as two with no evidence of use in spring 2022 were being used. Full details of these survey are reported in Appendix 8.7 CONFIDENTIAL Badger Report (document reference 6.3.8.7).

Other mammals

4.10 During various site visit European hare (Lepus *europaeus*) and European rabbit (*Oryctolagus cunicilus*) were observed within the Energy Park area. There is also a small population of Roe deer (*Caperolus caperolus*) were noted within the Energy Park and surrounding area maximum count of 6 individuals was recorded.

4.11 In late afternoon 19th October a North American Mink (*Neovison vison*) was observed swimming along the IDB controlled drain along the northern boundary of the Energy Park.

Other species

4.12 A number of common and widespread invertebrates recorded during site visit including Large Skipper (*Ochlodies sylvanus)* Ringlet (*Aphantopus hyperantus)*, Meadow Brown (*Maniola jurtina*), Red Admiral (*Vanessa atlanta*), Peacock (*Aglais io*), Small Tortoiseshell (*Aglaris urticae*), Comma (*Polygonia c-album*), Migrant Hawker (*Aeshna mixta*), Emperor Dragonfly (*Anas imperator*), Common Blue Damselfy (*Enallagma cyathigerum*), Common Darter (*Sympetrum striolatum*).

5. CONCLUSIONS

5.1 The grass margins are part of Mid-Tier Stewardship scheme where largely low conservation value grassland however with a combination of overseeding with arrange of native flower species. The unclassified fields within the initial phase 1 survey of the Off Site Cable Corridor Route where all intensive arable fields. The habitat within the Bicker Fen Substation was a mosaic of semi-improved grassland and developing scattered Hawthorn scrub and an appropriate cutting/grazing regime there is potential to restore to good quality conservation grasslands.

5.2 Although water vole and otter surveys found no evidence of these species within the Energy Park there is suitable habitat within the Energy Park. It is recommended that prior to construction further water vole and otter surveys are conducted particularly at infrastructure crossing of drains, existing bridges across drains which may require improvement or locations of any new drain crossing.

5.3 There is clearly an active and dynamic badger population within the Energy Park and surrounding area. It will be essential that further badger surveys are conducted prior to construction to allow

modified of the final design or applications to licensed works close to active setts.

6. REFERENCES

Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweeek, J (2020) The Uk Habitat Classification User Manual Version 1.1 [redacted]

Dean, M., Strachan, R., Gow, D. & Andrews, R. (2016), The Watervole Mitigation Handbook, In The Mammal Society Mitigation Guidance Series (Eds Fiona Mathews and Paul Chanin). The Mammal Society, London.

Harris, S. Cresswell, P. & Jefferies , D. Surveying Badger . The Mammals Society 1969.

Strachan, R. (1998). Water Vole Conservation Handbook. Wildlife Conservation Research Unit, Oxford

APPENDIX 1 – GRASS MARGINS

Name	Size (ha)	UK Habitat classification	Condition
SH6NE	0.1	cla5	n/a
SH6E	0.14	cla5	n/a
SH6S	0.18	cla5	n/a
SH6W	0.26	cla5	n/a
SH5N	0.18	cla5	n/a
SH5E	0.11	cla5	n/a
SH5S	0.17	cla5	n/a
SH5E	0.15	cla5	n/a
SH4N	0.12	cla5	n/a
SH4E	0.28	cla5	n/a
SH4W	0.23	cla5	n/a
SH1N	0.16	cla5	n/a
SH1SE	0.1	cla5	n/a
SH1E	0.43	cla5	n/a
SH1W	0.42	cla5	n/a
SH2E	0.6	cla5	n/a
SH2N&W	0.42	cla5	n/a
SH2W	0.35	cla5	n/a
SH5W1	0.14	cla5	n/a
SH4S	0.2	cla5	n/a
SH8S	0.13	cla5	n/a
SH8W	0.4	cla5	n/a
SH8N	0.27	cla5	n/a
SH8E	0.42	cla5	n/a
SH9E	0.16	cla5	n/a
SH9N	0.16	cla5	n/a

Name	Size (ha)	UK Habitat classification	Condition
SH9w	0.21	cla5	n/a
SH9s	0.19	cla5	n/a
SH10W	0.46	cla5	n/a
SH10S	0.24	cla5	n/a
SH12N	0.34	cla5	n/a
SH12E	0.26	cla5	n/a
SH12S	0.34	cla5	n/a
SH12W	0.12	cla5	*n/a*
SH13N	0.24	cla5	*n/a*
SH13E	0.23	cla5	*n/a*
SH13S	0.25	cla5	n/a
SH13W	0.21	cla5	n/a
SH14N	0.18	cla5	n/a
SH14W	0.39	cla5	n/a
SH14E	0.5	cla5	n/a
SH14S	0.14	cla5	n/a
SH15n	0.13	cla5	n/a
SH15E	0.22	cla5	n/a
SH15S	0.18	cla5	n/a
G15S	0.15	cla1	n/a
G7E	0.34	cla1	n/a
G7N	0.13	cla1	n/a
G7W	0.32	cla1	n/a
G10E	0.24	cla1	n/a
G10S	0.16	cla1	n/a
G9S	0.14	cla1	n/a
Crab lane	0.1	g3c	moderate
G6N (footpath)	0.24	cla1	n/a
G5S	0.1	g3c	moderate
G13W	0.13	cla1	n/a
G19N Labour Vain S	0.12	g3c	moderate
G17E	0.33	cla1	n/a
Total Area	**13.613**		

APPENDIX 2 - COUNTRYSIDE STEWARDSHIP HABITAT MANAGEMENT PRESCRIPTIONS

Item Code	SW1	4-6m buffer strip on cultivated land
Aim (not binding)	To provide new habitat, protect existing landscape features and may contribute to improving water quality.	
Eligibility Rules		
E21	Around the edges of cultivated fields, adjacent to an existing feature identified on your FER such as hedgerows, hedge trees, remnant boundary tree lines, stone walls, woodlands or ditches, rivers and streams.	
E22	Adjacent to trackways which channel run-off water directly to a watercourse.	
E23	Adjacent to fence lines where they form links between areas of wildlife habitat identified on your FER.	
E256	The buffer strip must not overlap with a public right of way.	
Prescriptions		
P2	Do not apply any fertilisers or manures.	
P10	Only use pesticides, including herbicides, to spot-treat or weed-wipe for the control of injurious weeds, invasive non-natives, nettles or bracken.	
P96	Where hedgerow trees over 30 cm diameter at breast height are present do not remove tree limbs, including lower limbs. Leave fallen timber beneath the canopy. Stack if necessary to allow management of the buffer strip.	
P97	Establish or maintain a 4 - 6 m wide grass buffer strip during the first 12 months of your agreement.	
P99	After establishment of the buffer strip, cut between 1 and 3 m next to the crop edge annually after 15 July. Only cut the remaining width to control woody growth. Do not cut areas with fallen timber.	
P677	Do not use the buffer or grassed area for vehicle or stock access routes.	

APPENDIX 3 - FIGURES

Figure 1 Updated Assessment of Habitats within Energy Park
Figure 2 BSIDB Records

ecotricity

Legend

- DCO Boundary
- Species Line of Trees
- Species Poor Hedgerow
- IDB Drainage Ditch
- Species Poor Defunct Hedge
- Decidious Plantation Woodland
- Pond
- Tall Ruderal
- Semi Improved Neutral Grassland
- SI Semi Improved Neutral Grassland
- A Arable

Figure: 1
Title: Updated Assessment of Habitats within Energy Park

N

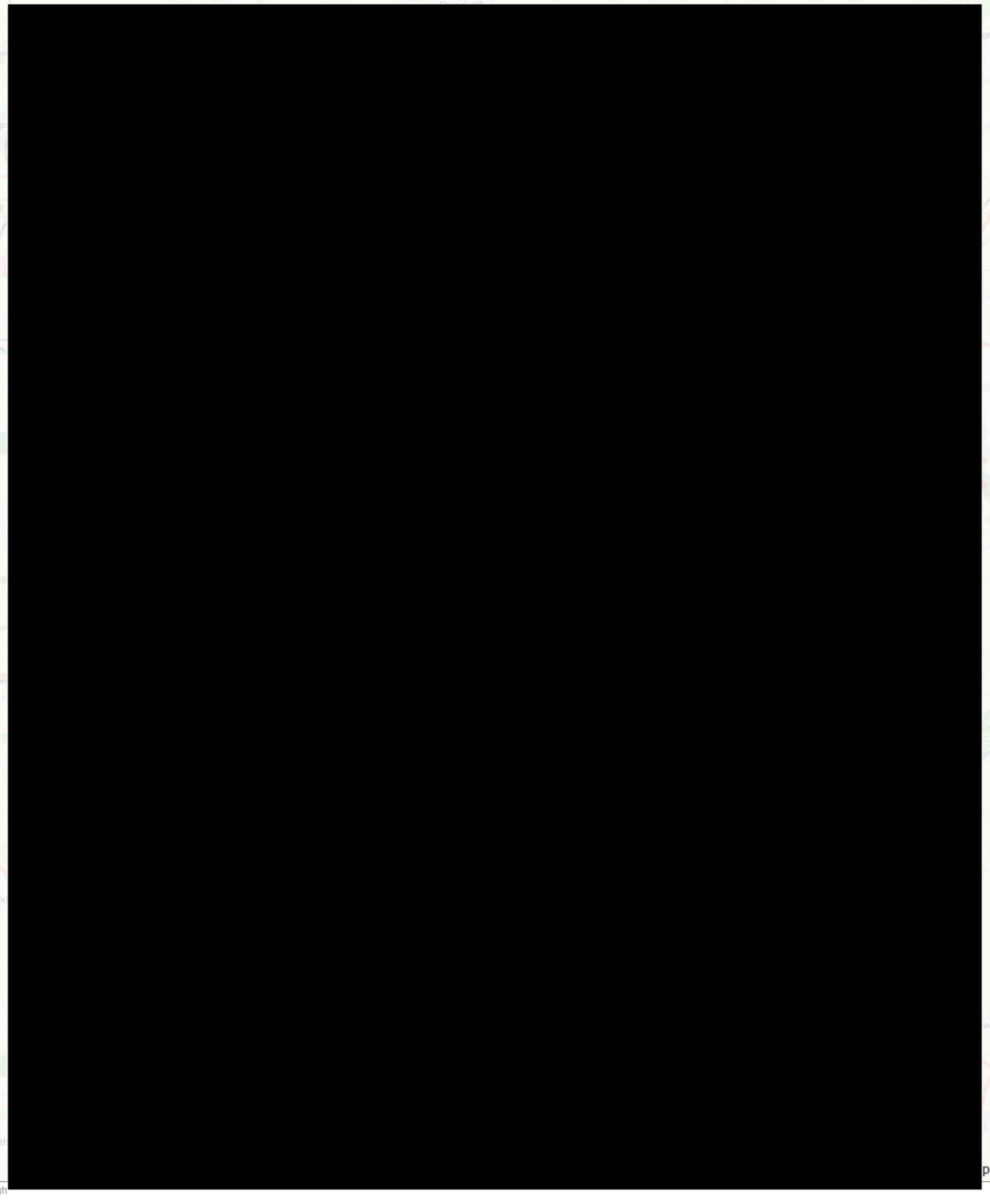
0 0.5 km

Scale: 1:12,500 @ A3

Drawn by:	Checked by:	Approved by:
RS	SP	SP

Ref: 6945_T0091_01 **Date:** December 2022

Heckington Fen Solar



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Legend

Environment_2022

Animal

- Badgers/Foxes
- Grass Snakes

Environment_2021

Animal

- Badgers/Foxes
- Water Voles
- Proposed Order Limits

Figure 2

Title: BSIDB_Records

N

0 3.5 km

Scale: 1:125,000 @ A3

Drawn by:	Checked by:	Approved by:
MW	RS	LW

Ref: BSIDB_Ecology_ **Date:** December 2022

Heckington Fen Solar