WINKING HILL STORAGE PROJECT

Preliminary Ecological Appraisal Report (PEAR)

Client:

RENEWABLE ENERGY SYSTEMS (RES)

Report Reference:

RSE_7308_RL_V5_PEAR

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RammSanderson

ECOLOGY
FLOOD RISK
ARBORICULTURE
HABITATS
TRAINING

CIEEM REGISTERED PRACTICE 2023-2024

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EXECUTIVE SUMMARY

i RammSanderson Ecology Ltd (RS) were commissioned by Renewable Energy Systems Ltd. (RES) to undertake a Preliminary Ecological Appraisal (PEA) and a Habitat Suitability Assessment (HSA) to assess the potential ecological constraints to the proposed Battery Energy Storage System (BESS) and associated infrastructure (hereafter referred to as the Scheme), located in Nottinghamshire, south of the A453 and Ratcliffe-on-Soar Power Station.

ii The land within the Scheme Boundary (hereafter referred to as the Site) is 4.5ha in size and comprised of a fallow arable field (now rough grassland) and hedgerows.

Ecological Feature	Potential to be affected by the Scheme	Further Surveys, Assessment or Mitigation Recommended?
Designated Sites	Potential for pollution of Local Wildlife Sites/candidate Local Wildlife Sites (7 within 1km of Site, see section 2.3) during construction.	Implement Pollution Prevention Guidance during construction.
Habitats	Significant positive biodiversity net gain in habitats as a result of the Scheme. Potential for pollution/damage to retained habitats during construction.	Produce and implement 30-year management plan to secure net gain. Implement Pollution Prevention Guidance and protective fencing during construction.
[redacted]		
Bats	Highly unlikely bat roosts in trees/buildings (if present) would be impacted by the Scheme. Site contains suitable commuting/foraging habitat for bats (hedgerows); potential for disruption of activity by artificial nocturnal lighting.	Implement sensitive lighting scheme for bats during construction and operational phase.
Otter and Water Vole	HSA determined there is a lack of suitable riparian habitat for these species within 100m of Site.	N/A
Great Crested Newt	Highly unlikely present due to low suitability of waterbodies within 250m for GCN breeding.	N/A
Reptiles	Risk of mortality/injury to common reptiles present on Site during clearance/construction.	Clear vegetation during reptile active season (i.e., between march and October (inclusive) in a systematic manner to allow displacement.
Birds	Risk of destruction of active bird nests if present during vegetation clearance.	Clear vegetation outside core bird nesting season i.e., during September (in line with recommendations for reptiles), or inspection by ecologist for active nests 24 hours prior to clearance if not possible.

Ecological Feature	Potential to be affected by the Scheme	Further Surveys, Assessment or Mitigation Recommended?
Terrestrial Invertebrates	Likely to be positively impacted through biodiversity net gain and increase in native species diversity.	N/A
Other Notable Species	Risk of mortality/injury to brown hare, common toad, or hedgehog during clearance/construction.	Recommendations for badger (best practice guidance) and reptiles (systematic clearance) will also reduce risks to these specie negligible.

iii A biodiversity net gain of 77.40% in habitat units (+6.74 units) and 66.16% in hedgerow units (+4.27 units) is possible on Site, through creation of species-rich neutral grassland, mixed scrub, tree planting, and hedgerow planting.

iv Other enhancements for biodiversity that could be delivered as part of the Scheme include bat boxes, bird boxes, hedgehog nest boxes, herptile hibernacula, and invertebrate refugia.

v Whilst the Site is situated within the greenbelt, it is concluded that the Scheme would have a significant positive impact on biodiversity; both a substantial measurable net gain as per the DEFRA metric and through additional habitat provisions, such as bird boxes, bat boxes, hedgehog boxes, and refugia for invertebrates and herptiles. Therefore, a negative impact on the integrity of the greenbelt from a biodiversity and ecological perspective is not foreseen, as a result of the Scheme.

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1 INTRODUCTION

1.1 Terms of Reference

i RammSanderson Ecology Ltd (RS) were commissioned by Renewable Energy Systems Ltd. (RES) to undertake a Preliminary Ecological Appraisal (PEA) and Habitat Suitability Assessment (HSA) to assess the potential ecological constraints to the proposed Battery Energy Storage System (BESS) and associated infrastructure (hereafter referred to as the Scheme), located in Nottinghamshire, south of the A453 and Ratcliffe-on-Soar Power Station. All land situated within the red line of the Scheme is hereafter referred to as the Site and is shown on Figure 1.

ii The PEA has been undertaken with reference to current good practice[1] and forms part of the technical information commissioned by RES in connection with the Scheme. The results of the PEA are presented in this PEA report (PEAR), which addresses relevant wildlife legislation and planning policy as summarised in Appendix 1. The PEAR is consistent with the requirements of British Standard 42020:2013 *Biodiversity. Code of Practice for Planning and Development*.

iii This PEAR is intended for advice in respect of Scheme design, site layout and / or site investigation. Further ecological surveys and / or ecological impact assessment (including detailed mitigation measures) may be required in connection with a planning application or to contribute to an Environmental Impact Assessment once the Scheme proposals have been finalised and any required surveys have been completed.

1.1 The Scheme

i The Scheme is an energy storage project, expected to deliver up to 99.9MW, with the current layout shown within Figure 2. The landscape plan for the Scheme is shown in Figure 11.

ii This is understood to consist of enclosures, with dimensions of 6.1m x 2.4m x 2.9m. Other equipment and features required are likely to include:

- Power conversion systems and transformers
- Substations
- Auxiliary Transformer
- Grid Compliance Equipment
- Security (incl. CCTV cameras and lighting)
- Fencing
- Access track
- Attenuation basin with an associated outfall

1.3 The Site

i The Site is located to the south of the A453, Remembrance Way, with the Ratcliffe-on-Soar Power Station to the north of the highway, at Ordnance Survey national grid reference SK 51080 29832. It is approximately 4.5ha in size.

ii The Site is located within the greenbelt.

[1] CIEEM (2017). Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester.

iii The Site comprises an agricultural field and is bounded by open fields to the east, south and west, with an existing access from West Leake Lane to the east. The Ratcliffe on Soar Power Station is to the north, and the wider area consists of further open fields, the River Trent and the village of Thrumpton to the north of the Power Station, and the River Soar and Ratcliffe-on-Soar to the west.

1.4 Scope of the Preliminary Ecological Appraisal

I This PEAR presents ecological information obtained during the following:

A desk-study undertaken on 9th November 2023 to obtain records of designated sites, notable habitats[2] and protected and notable species[3] up to 1km of the Site (the area covered by the desk study is hereafter referred to as the Study Area); and,
A walkover survey of accessible land within the Site (the area covered by the survey is hereafter referred to as the Survey Area) on 21st September 2023.
A Habitat Suitability Assessment (HSA) of accessible waterbodies and watercourses within 100m of the Site boundary on 9th May 2024.

ii The purpose of the PEAR is to provide a high-level ecological appraisal of the Site, specifically to:

establish baseline conditions and determine the presence of Important Ecological Features (IEF)[4] (or those that could be present), as far as is possible;
to identify potential ecological constraints to the Scheme and make initial recommendations to avoid impacts on IEFs, where possible;
to identify requirements for mitigation, where possible, including mitigation measures that will be required and those that may be required (depending on results of further surveys or final scheme design);
to establish any requirements for more detailed surveys; and,
to identify any opportunities offered by the Scheme to deliver biodiversity enhancements.

iii The methodology followed for undertaking the desk study and field surveys is detailed in Appendix 2.

[2] Notable habitats are taken as principal habitats for the conservation of biodiversity listed under Section 41 of the Natural Environment and Rural Communities Act 2006; habitats listed under the Nottinghamshire Biodiversity Action Plan (BAP); hedgerows identified as being 'important' under the wildlife criteria of the Hedgerow Regulations 1997, ancient woodlands and veteran trees.
[3] Notable species are taken as principal species for the conservation of biodiversity listed under Section 41 of the Natural Environment and Rural Communities Act 2006; any species listed in an IUCN Red Data Book; and any other species listed under the Nottinghamshire Local Biodiversity Action Plan.
[4] Important Ecological Features are habitats, species, ecosystems and their functions and processes that are of conservation importance and could potentially be affected by the Scheme.

2 BASELINE CONDITIONS, CONSTRAINTS AND RECOMMENDATIONS

2.1 Surveyor Competence

i The walkover survey was led by Amy Skuce, whom has been a professional ecologist for nine years and has the required competencies (Chartered Institute of Ecology and Environmental Management) to undertake this type of survey.

ii The Habitat Suitability Assessment (HSA) was led by Nicky Woods, whom has been a professional ecologist for five years and has the required competencies to undertake this type of survey.

2.2 Limitations to the Assessment

i General limitations to undertaking desk and field-based assessments are provided in Appendix 2. There were no specific limitations to the assessment.

2.1 Designated Sites

2.3.1 Desk Study

i There are no statutory designated sites for nature conservation within the Study Area.

ii There are seven non-statutory designated sites for nature conservation within the Study Area. These are Local Wildlife Sites (LWS) and candidate Local Wildlife Sites (cLWS).

iii Table 1 summarises the designated sites situated within the Study Area.

Table 1. Designated Sites within Study Area

Site Name	Designation	Location[5]	Brief Description
Ratcliffe on Soar Pond	LWS	0.2km W	A small depression of botanical interest.
Ratcliffe on Soar Flyash Grassland 1	cLWS	0.3km SW	Vegetated fly ash.
Ratcliffe on Soar Flyash Grassland	cLWS	0.4km S	Vegetated fly ash.
Gotham Hill Woods	LWS	0.6km NE	Mixed woodland with some remnant floral interest.
Copse, Kingston on Soar	LWS	0.6km S	An area of semi-natural deciduous woodland.
Thrumpton Park	LWS	0.7km N	A valuable mosaic of deciduous woodland ad species-rich scarp grassland in a parkland setting.
Ratcliffe on Soar Flyash Track Grassland	cLWS	0.7km SW	Grassland habitat.

[5] Where designated sites are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site

2.3.1 Field Survey

- There are no designated sites within the Survey Area.

2.3.1 Constraints and Recommendations

- The closest LWS is Ratcliffe on Soar Pond, which is 0.2 km west of the Site. There is no direct connectivity between the LWS and the Site, as the A453, Remembrance Way, acts as a barrier.

ii Ratcliffe on Soar Flyash Grassland 1 LWS is directly connected to the Site via the hedgerows, however the remaining LWS are not directly linked to the Site, with intervening land largely consisting of arable fields a works access road forming a buffer.

iii Since the Site is relatively small scale and the Scheme is not of a type to increase visitor pressure, is it is unlikely that any designated sites will be impacted. However, best practice in terms of watercourse pollution prevention and dust suppression should be adhered to during construction.

2.4 Habitats

2.3.1 Desk Study

- Table 2 summarises the records of notable habitats and protected or notable flora[6] (including veteran trees[7]) within the Study Area.

Table 2. Notable Habitats and Protected and Notable Flora within Study Area

Habitat/ Flora Feature	Reason for Conservation Interest	Location[8]
Deciduous Woodland	Priority Habiat	0.2km W; additional 22 parcels N, E, S, and W
Wood pasture and Parkland BAP Priority Habitat	May support ancient woodland, ancient trees or veteran trees	0.7km N
Traditional Orchard	Priority Habitat	Directly adjacent to the western boundary of the Site 0.9km N

ii The parcels of deciduous woodland were well distributed across the Study Area, but particularly clustered in the north. One of the parcels of traditional orchard was within the landowner's residence, just beyond the western boundary of the Site.

2.3.1 Field Survey

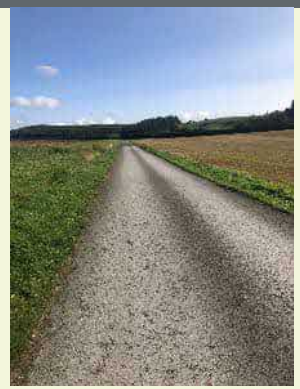
- Summary descriptions of the habitats within the Survey Area are provided below in Table 3 and shown on Figure 3.

ii Habitat types detailed are listed in order of the Phase 1 Habitat Survey Handbook (Joint Nature Conservation Committee, 2010). The UKHabs (2023) habitat classifications have also been provided, as per the results of the BIA. The species list provided in this report reflect only those taxa observed during the survey and are not an exhaustive list of all species that may be present, as the survey only provides a snapshot of the Site.

[6] For this assessment 'flora' includes vascular and non-vascular plants, fungi and lichens.
[7] For this assessment the definition of a veteran tree is taken from Annex 2 of the National Planning Policy Framework (glossary): "A tree which, because of its great age, size or condition is of exceptional value for wildlife, in the landscape, or culturally."
[8] Where features are situated outside of the Site boundary, the distance and direction is given at the closest point of the designated site from the Site

Table 3: Habitats within Survey Area

Habitat JNCC	Habitat UKHabs	Description	Area (m^2)	Length (m)	Proportion of site (%)	Ecological Importance & Outcome of Proposal	Photograph
B6 Poor semi-improved grassland	g4 Modified Grassland	The majority of the Site is a fallow arable field, dominated by tall ruderal species, with a grassland margin. Couch (*Elymus repens*) and cocksfoot (*Dactylis glomerata*) and perennial rye (*Lolium perenne*) dominate. Creeping thistle (*Cirsium arvense*), nettle (*Urtica dioica*) and curly dock (*Rumex crispus*) are occasional. Other species present include ragwort (*Senecio jacobaea*), sow thistle (*Sonchus oleraceus*), false oatgrass (*Arrhenatherum elatius*), broad leaved dock (*Rumex obtusifolius*), soft brome (*Bromus hordeaceus*) and greater plantain (*Plantago major*). Within UKHabs, the species present at the time of survey resulted in its classification as modified grassland, rather than cropland, despite its prior arable usage.	42601	-	99%	Little ecological value overall due to low botanical diversity, however, may offer foodplant species for invertebrates and may be suitable habitat for ground nesting birds and herptiles. To be removed for battery storage or enhanced to habitat of greater species-richness.	
J6 Hardstanding	u1b Developed Land; Sealed Surface	A hardstanding road runs through the southern edge of the Site, from West Leake Lane.	495	-	1%	No ecological value.	

Habitat JNCC	Habitat UKHabs	Description	Area (m^2)	Length (m)	Proportion of site (%)	Ecological Importance & Outcome of Proposal	Photograph
							
J2.1.2 Intact hedgerow – species poor	h2a6 Other native hedgerow	There are two native, species-poor intact hedgerows on Site (H1 and H2). Both are hawthorn dominated and have an associated dry ditch. H1 runs along the eastern edge of the Site, and is approximately 2.5m by 1m wide, with small mammal push throughs. Dog rose, bramble and young ash standards are also present. H2 runs along the northern edge of the Site. It is approximately 3 m high and 2 m wide, with occasional ash standards and field maple.	-	524	N/A	Hedgerows are of high ecological importance and these qualify as Priority Habitats. Under current proposals, these hedgerows will be retained.	

Habitat JNCC	Habitat UKHabs	Description	Area (m^2)	Length (m)	Proportion of site (%)	Ecological Importance & Outcome of Proposal	Photograph
J2.1.3 Intact hedgerow – Ornamental	h2b Non-native and ornamental hedgerow	There are three intact ornamental hedgerows on Site (H3, H4 and H5). All three are cypress dominated and are approximately 3-4 m high and 1.5 m wide. H3 is located to the west of the site, adjacent to the farm buildings to the west and the area of traditional. It has the occasional hawthorn and rare prunus species throughout, and gaps at the base and within the length. H4 is located to the north of the farm buildings in the west of the Site. It is managed, as it was recently trimmed at the time of the survey. It is appears to be recently planted, as tree guards were present. H5 runs east of the farm buildings, in the southern area of the Site. It is much the same as H4, but there is an ash and cherry tree line behind it.	-	208	N/A	Ornamental hedgerows have little ecological value due to lack of native species, but may still provide nesting, foraging and commuting opportunities for birds and bats. These hedgerows are to be retained under current proposals.	

2.4.1 Constraints and Recommendations

i The modified grassland is to be removed for the battery storage. Under the current proposals, this grassland is to be replaced with a species-rich grassland and other biodiverse habitats. Details of this are covered in the Biodiversity Impact Assessment (RSE_7308_BIA_V3R5). This will be supported by a 30-year management plan.

ii All hedgerows formed of >80% native woody species are a Habitat of Principal Importance under the NERC Act (2006). As such these habitats are a material consideration during planning. A full assessment under the Hedgerow Regulations 1997 was beyond the remit of this preliminary survey, although it is understood that all hedgerows will be retained under current proposals (except where a very minor section of removal is required for access, approximately 12m of H2). Should proposals change and onsite hedgerows will be significantly impacted as a result of the Scheme, a hedgerow survey is recommended to determine whether the hedgerows classify as 'important' under the Hedgerow Regulations 1997.

iii The Site is directly adjacent to a patch of traditional orchard Priority Habitat. This habitat has been maintained as an orchard, with scattered apple trees over a modified grassland. It is understood that this habitat is not to be impacted by the Scheme since no building is to be conducted directly adjacent to this boundary. As such, no further survey is required. If this should change, then further botanical survey will be required to fully assess the habitat and ground flora.

iv Mitigation measures to protect retained habitats should be provided within an accompanying Construction Environmental Management Plan (CEMP). These should include protective fencing in line with the root protection areas for trees and hedgerows, and the following of pollution prevention guidelines to minimise potential impacts upon watercourses/waterbodies. This includes disposing of contaminated water off-site, and using drop trays, spill kits, dust suppression techniques and silt traps.

2.6 Bats

2.6.1 Desk Study

i There are two recent records of bats within the Study Area, one common pipistrelle (*Pipistrellus pipistrellus*) and one soprano pipistrelle (*Pipistrellus pygmaeus*). Both of these records are located approximately 0.8 km from the Site boundary.

2.6.2 Field Survey

i No was no evidence of bats present during the survey.

ii Buildings adjacent to the Site, within Winking Hill Farm, may provide suitable roosting sites for bats. Buildings include storage barns, garages, and a residential property.

iii Trees were identified on Site along the north boundary, and to the east of the farm and within the hedgerows. No potential roosting features were incidentally identified on these trees; however, full Ground Level Tree Assessments (GLTAs) were beyond the scope of the survey.

iv The hedgerows provide good connectivity for commuting bats between the Site and the wider area to the south, and may also provide good foraging opportunities.

2.6.3 Constraints and Recommendations

i No trees or adjacent buildings are to be removed or directly impacted as part of the scope of works, so it is unlikely that further survey will be needed for bats. However, if Scheme proposals change or if indirect impacts (i.e., high levels of noise/percussive pressures/artificial lighting within c.10m of the trees/buildings) are to occur, further investigation should be conducted.

ii During both the construction phase and the operational phase, to minimise disturbance to bats' natural behaviour, a sensitive lighting scheme should be implemented on Site. This will include the following:

- Lighting to be provided for occasional operation and maintenance use only;
- Operation and maintenance activities shall normally be limited to hours of daylight to minimise use of artificial lighting;
- Lights to be manually switched rather than automated;
- Install lamps and the lowest permissible density;
- Lamps should be positioned to direct light to avoid upward spill onto any green corridors that could be used by commuting bats or features with bat roost potential.

2.7 Otter and Water Vole

2.7.1 Desk Study

i There are no recent records of otter or water vole within the Study Area.

ii There are two drainage ditches (D1 and D2) within 100 m of the Site (Figure 4). D1 is a road drain and runs directly adjacent to the south of the A453, Remembrance Way and D2 runs through fields to the east of the Site.

2.3.1 Field Survey

i H1 and H2 both have an associated drainage ditch, which were dry at the time of PEA survey. The two ditches are connected in the northeast corner. H2 had small mammal push throughs present throughout.

ii The HSA was conducted to determine if the ditches on Site, or within 100m of the Site, had suitability to support otter and/or water vole. All ditches (D1, D2, and those associated with H1 and H2) were found to be almost completely dry at the time of survey, and heavily overgrown with vegetation. Full survey results are presented within Table 5.

2.3.1 Constraints and Recommendations

i Under the current proposals, the Scheme will directly impact the ditch associated with H1. An attenuation basin is to be constructed, with an outfall directly into the H1 drainage ditch. However, this ditch is deemed unsuitable habitat for riparian mammals, or for aquatic species, therefore no significant impacts on fauna are anticipated as a result of this.

ii Since all other waterbodies within 100m of the Site are also deemed unsuitable habitat for otter and water vole, no disturbance impacts on these species are anticipated, and no further mitigation is required.

2.8 Great Crested Newt (GCN)

2.3.1 Desk Study

i There are no recent records of GCN within the Study Area.

ii All waterbodies beyond 250m have scoped out due to the relatively small-scale footprint of works and the small-scale loss of potential GCN habitat (rough grassland) (1.5ha of rough grassland lost to developed land).

iii A total of three ponds (P1, P2 and P3) and five ditches (D1, D2, D3, D6 and D7) are present within 250 m of the Site (Figure 4). All waterbodies north of the A453 (P2, P3, D6 and D7) have been scoped out as they are beyond a major barrier to dispersal[9].

2.3.1 Field Survey

iv P1 is a Sustainable Urban Drainage system (SUDs) pond. It is considered low in suitability for GCN breeding and highly unlikely to support GCN due to fluctuations in water levels and very shallow water levels generally. It is also situated beyond a partial barrier to dispersal (an A453 slip road with a single kerb and gully pot drains). Table 5 provides further information gathered during the HSA.

v D1 and D2 agricultural drainage ditches or attenuation ditches roadside. They were almost completely dry in May, during GCN breeding season (Table 5) so they are considered extremely low in suitability for breeding GCN. Although not accessible for survey, it is highly likely that D3 is the same.

iv The fallow arable land and hedgerows may be suitable terrestrial habitat for GCN. Hedgerow roots, if well established, could provide some suitable hibernacula for GCN. However, there is habitat of greater suitability for terrestrial GCN (woodland parcels) within close proximity of the Site. These include the areas of woodland and scrub in the surrounding habitat.

[9] The following constitute major barriers to dispersal and are unlikely to be traversed by great crested newts: rivers and larger brooks; main roads such as A-roads, motorways or any other road with high traffic volume (i.e. high traffic volume during the night when great crested newt are more likely to be dispersing/commuting); and major urban infrastructure including extensive areas of hardstanding and buildings and dense networks of minor roads with little green space.

2.3.1 Constraints and Recommendations

vii The waterbodies are very low suitability for breeding GCN, therefore, it is considered highly unlikely that GCN are present within 250 m of the Site and would be impacted by the Scheme. Therefore, further surveys are deemed disproportionate. In the very unlikely event that a GCN is discovered, or suspected, on Site, works should cease immediately, and advice of an ecologist sought.

2.1 Common Species of Reptile

- 'Common species of reptile' refers to common lizard, slow worm, adder and grass snake.

2.3.1 Desk Study

- There are no recent records of common lizard, slow worm, adder or grass snake within the Study Area.

2.3.1 Field Survey

- Surveyors did not observe any evidence of reptile presence during the survey.

ii The habitat on Site (rough grassland/fallow arable and hedgerows) offers some suitability for reptile foraging, refuge seeking, basking, and commuting but would not be considered optimal. Hedgerow roots or dense tussocks of vegetation, if well established, could provide some suitable hibernacula for reptiles. The A453 presents a major barrier to reptile dispersal.

2.9.4 Constraints and Recommendations

- Any loss of habitat as a result of the Scheme is very minimal (1.5ha of rough grassland lost to developed land) and is unlikely to have a significant negative impact on any local reptile populations since ample alternative habitat is available. The Scheme will retain hedgerows so is highly unlikely to fragment any key commuting routes. Therefore, no further survey for reptiles is required.

ii Although no further survey is required, there is a risk of mortality/injury to individuals present on Site at the time of clearance or construction in absence of mitigation, especially during the hibernation period. Any clearance of the grassland habitat should be conducted systematically during the reptile active period i.e., March to October (inclusive). Vegetation should first be cut to approximately 15-20cm by a tractor progressing at walking pace. The area should be left for 24-48 hours and then cut to 5cm using the same method, working in the same direction as the previous cut. In the event a reptile is encountered during these works, it should be allowed to escape unharmed at its own pace. Only a trained ecologist should attempt to move reptiles by hand. If multiple reptiles are encountered, works should cease and the methodology should be reevaluated. Additionally, ramps should be placed into any open excavations left overnight, to avoid entrapment of any herptiles which may enter. These recommendations would be written into a CEMP.

2.10 Birds

2.10.1 Desk Study

- There are recent records for a single notable[10] bird species within the Study Area, 0.91 km west of the Site. This record is of a stock dove (*Columba oenas*), and it is listed on the Birds of Conservation Concern 5 (BoCC5) Amber list, and the Nottinghamshire Local Biodiversity Action Plan (LBAP).

[10] Notable bird species are taken as those listed: on Annex I of the EC Birds Directive (2009/147/EC); on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended); as Species of Principal Importance (SPI) for the Conservation of Biodiversity in England listed in Section 41 of the Natural Environment and Rural Communities Act 2006; as Red or Amber in the Birds of Conservation

ii No Schedule 1 birds were identified in the Study Area.

2.10.1 Field Survey

- The habitats within the Site are suitable for a range of farmland bird species. The hedgerows may provide suitable nesting habitat while the fallow arable land is suitable for ground nesting birds such as skylark (*Alauda arvensis*), though none were recorded during the survey.

2.10.1 Constraints and Recommendations

- Under the current proposals, it is understood that the hedgerows are to be retained and only a small amount of rough grassland is to be lost (1.5ha of rough grassland lost to developed land). Ample alternative habitat is available in close proximity; therefore, the Scheme is considered low impact to bird species, and no further surveys are recommended. If proposals change, the risk to bird species and the need for further surveys will need to be re-evaluated.

ii In the absence of mitigation, there is a risk that active nests could be destroyed during clearance of the fallow arable land or any works to H1 during outfall construction. Where possible, this work should be minimised and undertaken outside the core bird nesting season (1st March and 31st August, though it should be noted that variation in dates is possible, for example from geographical variations in climate, or due to a particularly mild winter) to avoid damage or destruction of occupied nests or harm to breeding birds. It is noted that this recommendation, in conjunction with the recommendation for reptiles listed within Section 2.9, leaves only September for vegetation clearance. Therefore, if this cannot be achieved, works within the core bird nesting season will require an inspection of vegetation to be cleared for breeding birds and their occupied nests by a suitably qualified ecologist no more than 24 hours prior to any works being undertaken. If any nesting birds are identified during the survey, they will be left in situ for their entire nesting period and alternative approaches to the work proposed. This may include leaving an exclusion zone around the nests to avoid disturbance.

2.11 Terrestrial Invertebrates

2.10.1 Desk Study

- There is one recent record of notable[11] terrestrial invertebrates within the Study Area. This is a white-letter hairstreak butterfly (*Satyrium w-album*), which is listed on the Nottinghamshire LBAP, and is located approximately 0.64 km north of the Site boundary.

2.10.1 Field Survey

- The fallow arable land and hedgerows on Site provide opportunities for a range of terrestrial invertebrates to forage and seek refuge, however, the Site would not be considered optimal habitat for significantly important species or assemblages.

Concern (BoCC) 4 (Eaton MA, Aebischer NJ, Brown AF, Hearn RD, Lock L, Musgrove AJ, Noble DG, Stroud DA and Gregory RD (2015). Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and Isle of Man. British Birds 108, 708-746); bird species or groups listed under the Nottinghamshire BAP.

[11] Notable terrestrial invertebrates are taken as principal species for the conservation of biodiversity listed under Section 41 of the Natural Environment and Rural Communities Act 2006; any invertebrate listed under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended); any invertebrate listed under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended); any invertebrate listed in the IUCN Invertebrate Red Data Book (1991); and any invertebrate listed under the Nottinghamshire BAP.

2.11.3 Constraints and Recommendations

i Given the small scale of the habitat to be lost (1.5ha of rough grassland lost to developed land) and the availability of ample alternative habitat within close proximity, it is unlikely that the loss of habitat on Site would have a significant negative impact on any notable species or assemblages of terrestrial invertebrate.

ii By seeking to achieve a biodiversity net gain on Site through native species planting, the Scheme will likely have a positive impact on terrestrial invertebrates. No further specific surveys or mitigation for terrestrial invertebrates is recommended.

2.12 Other Notable Species

2.12.1 Desk Study

i There is one recent records of other notable species[12] within the Study Area; a record of brown hare *(Lepus europaeus)* approximately 100m to the north west of the Site boundary.

2.12.2 Field Survey

i No notable species were recorded during the field survey.

ii The Site is optimal habitat for brown hare, which are often associated with arable land, since it contains habitat for foraging, refuge seeking and commuting.

iii The Site also provides suitable habitat for hedgehog and common toad, particularly beneath hedgerows.

2.12.3 Constraints and Recommendations

i Given the small scale of the habitat to be lost (1.5ha of rough grassland lost to developed land) and the availability of ample alternative habitat within proximity, it is unlikely that the loss of habitat on Site would have a significant negative impact on any populations of brown hare, hedgehog, or common toad.

ii The measures to prevent mortality/injury of reptiles, described in Section 2.9.4, [redacted] described in Section 2.5.3, will also be applicable to common toad, brown hare, and hedgehog. No further specific survey or mitigation is recommended for these species.

[12] Notable species are taken as principal species for the conservation of biodiversity listed under Section 41 of the Natural Environment and Rural Communities Act 2006; any species listed in an IUCN Red Data Book; and any other species listed under the Nottinghamshire BAP that are not referred to in previous sections of the report.

3 BIODIVERSITY IMPACT ASSESSMENT

i A Biodiversity Impact Assessment (based on the current Scheme details) has been undertaken for the Scheme. This involves making a comparison between the biodiversity value of habitats present within the Site prior to development (i.e. the 'baseline') and the predicted biodiversity value of habitats following the completion of the Scheme (i.e. 'post development'). The comparison is undertaken in terms of 'biodiversity units', with a 'biodiversity metric' providing the mechanism to allow biodiversity values to be calculated and compared.

ii The biodiversity value of the Site is as follows:

8.70 units of Area based habitats;
6.30 units of Linear based habitats (hedgerows); and,
0 units of River based habitats.

iii Post development, the Scheme would result in the following:

A gain of 6.74 units of Area based units. This equates to a 77.40% gain;
A gain of 4.27 units of Linear based units. This equates to a 66.16% gain.

iv The assessment is based on the proposed Scheme details and suggested enhancements to the Site for biodiversity, as discussed between RS and RES. The enhancements have been discussed for feasibility and consultation with the landowner has been sought. It is understood a detailed landscape drawing containing the suggested enhancements is to be produced, based on the results of the BIA.

v The methodology for undertaking the assessment is provided in Appendix 2. Full details on the assessment calculations are provided in Appendix 3 and within the BIA Metric (RSE_7308_BIA_V3R5). A 30 year management plan for the created/enhanced habitats will be presented within a Landscape Ecological Management Plan.

4 OPPORTUNITIES FOR ENHANCEMENTS

This section highlights opportunities for providing ecological enhancements, based on the current Scheme details.

2.2 Biodiversity Net Gain

The Scheme would result in an approximate gain of 6.74 Area biodiversity units and 4.27 Linear based biodiversity units. To achieve these gains, the following would be delivered as part of the Scheme:

Creation/enhancement of fallow arable land into other neutral grassland i.e., wildflower meadow.
Modified grassland with greater native species-richness than currently present would be created in areas of higher disturbance, i.e., next to the battery storage area.
Creation of native mixed scrub habitat in parcels around the battery storage area. This would create a matrix structure in habitat types and would provide some of the visual screening that has been requested by the landowner of Winking Hill Farm.
Creation of native hedgerow habitat (some with trees) surrounding the battery storage area. This would create a further structural differences in habitat types to enhance biodiversity, as well as the visual screening, as mentioned above.
Scattered native tree planting towards the north-eastern extent of the Site. This would further enhance the biodiversity value of the Site and provide habitat for protected species.
Creation of a SUDs feature and bioswale feature to the north-western extent of the Site. This is required as part of the Scheme and can be planted with native species to add further diversity to the habitats present.

2.2 Other Enhancements

The following enhancements could be delivered for biodiversity as part of the Scheme, that don't contribute towards the calculation of biodiversity net gain but can still deliver significant improvements for biodiversity:

Bat boxes affixed to trees or posts, such as the Vivara woodstone box providing a long-term solution requiring limited replacement unlike wooden boxes which need regular replacement as a result of weathering.
Bird boxes affixed to trees or posts, such as the Schwegler 1B nest box, providing a long-term nest box solution which requires limited replacement unlike wooden boxes which need regular replacement as a result of weathering.
Herptile hibernacula, i.e., log piles, rocks, and/or deadwood under dense ground cover towards the peripheries of the Site.
Insect refugia, aka, 'hotels' for example the National Trust Apex Insect House, which would provide a variety of niches for a diverse spectrum of invertebrates to inhabit, situated within wildflower grassland.
Hedgehog nest boxes, such as those constructed of wood available from NHBS, situated beneath hedgerows.

5 CONCLUSION

i This PEAR is based on a desk study, undertaken November 2023, a Preliminary Ecological Appraisal survey undertaken September 2023, and a Habitat Suitability Assessment undertaken May 2024, to assess the ecological constraints to the Scheme and to provide advice in respect of Scheme design, site layout and / or site investigation.

ii The following further surveys and mitigation measures, summarised in Table 4, are recommended to support the planning application and Scheme implementation.

Table 4: Summary of Recommendations

Ecological Feature	Recommendation	Timing
Designated sites	Follow pollution prevention guidance	During construction phase
Habitats	Biodiverse native species planting Follow pollution prevention guidance	To be maintained for a period of 30 years.
[redacted]		
Bats	Implement sensitive lighting strategy	During construction phase and operational phase
Reptiles	Implement Precautionary Method of Works during vegetation clearance	During construction phase; clearance to be conducted between March and October
Birds	Clear vegetation outside of core nesting season or conduct nesting inspection 24 hours prior to clearance	During construction phase; clearance to be conducted September or preceded by inspection

iii A biodiversity net gain of 77.40% in habitat units (+6.74 units) and 66.16% in hedgerow units (+4.27 units) is possible on Site, through creation of species-rich neutral grassland, mixed scrub, tree planting, and hedgerow planting.

iv Other enhancements for biodiversity that could be delivered as part of the Scheme include bat boxes, bird boxes, hedgehog nest boxes, herptile hibernacula, and invertebrate refugia.

v Whilst the Site is situated within the greenbelt, it is concluded that the Scheme would have a significant positive impact on biodiversity.

5.2 Re-Survey of Site

i Due to the mobility of animals and the potential for colonisation of the Site, it is recommended that an updated ecological survey be undertaken prior to the redevelopment of this Site should this not occur within 18 months of the date of the most recent field survey.