



ARCUS

PRELIMINARY ECOLOGICAL APPRAISAL

NINFIELD GREENER GRID PARK

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1 SUMMARY

This report has been produced for Statkraft UK LTD in support of a planning application for a Greener Grid Park development (the Development) on land adjacent to Ninfield 400kV Substation, East Sussex (the Site).

A Preliminary Ecological Appraisal (PEA) was undertaken and identified that the Site had the potential to support a range of important ecological features that may be sensitive to development and recommended further surveys of these features to provide the necessary information to inform the assessment of impacts for each of these features. The results of the PEA and recommended additional surveys required to inform the assessment, and mitigation to address any identified effects are included within this report or where applicable are referenced to separate standalone reports.

In the absence of mitigation, the Development has the potential to impact a range of relatively common habitats and species, as well as some legally protected or otherwise notable ones that required further surveys. However, a range of mitigation measures have been recommended to safeguard sensitive habitats and species during construction to ensure impacts can be negated. Enhancement measures are proposed to improve foraging, commuting and sheltering opportunities for a range of species including mammals, amphibians, reptiles, and birds, to provide positive effects. No designated sites will be directly or indirectly impacted by the Development.

Further survey work have been undertaken to inform the assessment of ecological impacts to great crested newts and breeding birds. The results of these surveys and the associated assessment of impacts and mitigation have been reported and submitted separately.

2 INTRODUCTION AND BACKGROUND

Arcus Consultancy Services Limited (Arcus) was commissioned by Statkraft UK LTD to undertake a Preliminary Ecological Appraisal (PEA) at land south-west of Ninfield Substation, East Sussex (the Site); centred on National Grid Reference TQ 72239 11724.

This report is submitted as part of a planning application for a Greener Grid Park development (the Development) at the Site and presents the ecological baseline conditions and potential ecological impacts from the Development, taking into account relevant planning policy and legislation. Further surveys and mitigation have been described, where applicable, in order to provide additional information for assessing potential impacts and to inform recommendations to avoid or reduce such impacts.

Further information on the Development is included in the Planning Design and Access Statement and suite of Planning Drawings submitted with the planning application.

2.1 Key Terms

The following key terms are used throughout this report:

- Ecology Survey Area (ESA) – The area on which the ecology surveys were based, with appropriate buffer areas outside this surveyed where necessary;
- Site Boundary – The planning application boundary and wider landownership boundary; and
- The Development – The Greener Grid Park development including energy management buildings, battery containers and associated infrastructure.

2.2 Planning Policy and Legislation

All relevant legislation and policy discussed in the report are detailed in Appendix A.

3 METHODS

3.1 Desk Study

Natural England's Multi Agency Geographic Information for the Countryside¹ (MAGIC) website was consulted to obtain information about any local or national statutory designated sites such as Sites of Special Scientific Interest (SSSI) within 2 km of the Site. A search of 'National Site Network' sites, such as Special Areas of Conservation (SAC) or Special Protection Areas (SPA), within 5 km of the Site was also undertaken.

A desk study was undertaken in October 2019 to obtain local records of features of ecological interest from Sussex Biodiversity Record Centre (SXBRC). Records of non-statutory designated sites, such as Local Wildlife Sites (LWSs) and, notable and protected species were requested from within 2 km of the Site.

A review of historic aerial satellite imagery² was undertaken to gain an understanding of past land-use.

3.2 Extended Phase 1 Habitat Survey

An Extended Phase 1 Habitat Survey was conducted on 1 October 2019 by a suitably experienced ecologist. The survey covered the ESA (shown on Figure 1–3, Appendix B). The aim of the survey was to classify and map habitats according to standard methods³ and to assess their potential to support notable and protected species, including mammals,

¹ Multi Agency Geographic Information for Countryside (MAGIC). Available at <https://magic.defra.gov.uk/home.htm> [Accessed January 2021] [Accessed March 2021].

² Google Earth, Available at: <https://earth.google.com/web/> [Accessed March 2021]

³ JNCC (2010) *Handbook for Phase 1 habitat survey: a technique for environmental audit*. Nature Conservancy Council.

nesting birds, amphibians and reptiles. Target Notes (TN) were recorded for notable features. The survey was carried out following the Guidelines for Preliminary Ecological Appraisal⁴.

3.3 Bat Roost Assessment

During the Extended Phase 1 Habitat Survey, buildings and trees within the ESA were assessed for their potential to support roosting bats. An assessment was also undertaken to evaluate the quality of habitats to support commuting or foraging bats. The bat assessment work and recommendations followed guidelines produced by the Bat Conservation Trust (BCT)⁵. This initial bat assessment informed whether or not further surveys were required to assess the potential effects of the Development on bats.

3.3.1 Roosts

A ground-level inspection of trees was undertaken to identify Potential Roost Features (PRFs) suitable for roosting bats such as woodpecker holes, spilt limbs and peeling bark. Based on these observations, trees were assigned a level of suitability (negligible, low, moderate or high). Should evidence of bats be recorded or the features assessed to provide suitability for bats, then further surveys may be required.

3.3.2 Habitats

A visual assessment of habitats was undertaken to determine their potential to support commuting, foraging or swarming bats, such as good habitat connectivity and linear features. Based on these observations, the Site will be assigned a level of suitability. Should suitable habitat for bats be recorded, then further surveys may be required.

3.4 Great Crested Newt Habitat Survey

3.4.1 Habitat Suitability Index Assessment

During the Extended Phase 1 Habitat Survey, a Habitat Suitability Index (HSI) assessment was carried out on waterbodies (where accessible) within the ESA and located within 250 m of the Site. The HSI assessment considers a range of habitat variables that affect the suitability of waterbodies to support GCN; e.g., size of waterbody, extent of shading, abundance of aquatic plants, presence of fish and quality of surrounding habitat. The assessment results in a score that helps to determine the suitability of waterbodies and the need for further, more detailed surveys. Locations of all the waterbodies within a 250 m buffer of the Site are shown in Figure 2, Appendix B.

3.4.2 Environmental DNA Surveys

In June 2020, environmental DNA (eDNA) surveys were carried out on waterbodies (where accessible) within the ESA and located within 250 m of the Site. Water samples were collected from each pond and tested for the presence of GCN DNA in order to determine presence/ likely absence of the species in each waterbody. Surveys were undertaken by a GCN Natural England Class Licence ecologist.

3.5 Badger Survey

As part of the Extended Phase 1 Habitat Survey, a thorough inspection of the ESA and surrounding habitat, up to 30 m (where accessible), was carried out. Particular attention

⁴ CIEEM (2017) *Guidelines for Preliminary Ecological Appraisal, 2nd Edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

⁵ Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd ed.). The Bat Conservation Trust, London.

was paid to dense areas of vegetation to check for badger setts and evidence of badger activity, including:

- Presence of holes with evidence of badger, such as prints, discarded bedding etc.;
- Presence of dung pits and latrines;
- Presence of well-used runs with evidence of badger activity; and
- Presence of other indications of badger activity, such as signs of foraging and prints.

3.6 Ornithological Walkover

A walkover of the ESA and adjacent habitats, up to 30 m (where accessible), was carried out at the same time as the Extended Phase 1 Habitat Survey. The aim of this survey was to determine the potential of the ESA and surrounding areas to support breeding or wintering birds of conservation concern (for example birds listed in Schedule 1 of the Wildlife and Countryside Act 1981¹⁵ (as amended) and Annex I of the EC Birds Directive¹⁸).

3.7 Limitations and Assumptions

The survey was undertaken in optimal weather conditions by a suitably experienced ecologist who is a graduate member of the Chartered Institute of Ecology and Environmental Management (CIEEM).

Whilst the initial Phase 1 Habitat survey was undertaken in 2019, the survey data is still considered valid⁶ given to the range of habitats present, the species these habitats support and the localised nature of the Development proposal on habitats and species present. Furthermore, site conditions were assessed during visits for GCN surveys, with no overarching changes noted.

Six ponds were identified within 250 m of the Site Boundary. Access to the five identified off-site ponds during the PEA was restricted and so HSI assessment was not undertaken. Further efforts were made in the 2020 survey season to access off-site ponds, with access granted to two of the five ponds.

Four small Category C trees identified along the existing Site access track require removal to facilitate the Development outside the ESA. Photographic evidence has been provided by an arboriculturist, based on an initial visual scrutiny of the images, the trees appear to show negligible opportunities for roosting bats. As a precautionary approach, given the constraint, it is recommended that the trees are assessed prior to felling in line with BCT guidance on trees assessed as having low bat roost potential.

4 BASELINE RESULTS

4.1 Desk Study

4.1.1 Designated Sites

4.1.1.1 Statutory

One National Site Network site, Pevensey Levels SAC and Ramsar, is located within 5 km of the Site. One nationally designated site is located within 2 km of the ESA: High Woods SSSI. Further details of these Sites are provided in Table 4.1.

⁶ CIEEM (2019) *Advice Note on the Lifespan of Ecological Reports and Surveys*. Chartered Institute of Ecology and Environmental Management, Winchester.

4.1.1.2 Non-Statutory

Two non-statutory designated sites were recorded within 2 km of the Site: High Peartree Smiths and High Woods LWS and Woodland Complex at Buckholt Farm LWS. Further details of these non-statutory designated sites are presented in Table 4.1.

Table 4.1: Designated sites and their proximity to the ESA

Site	Status	Minimum Distance (km) and Direction from ESA	Description/Reason for Designation
Statutory designated sites			
High Woods	SSSI	1.5 km south-west	Site is of primary importance for its sessile oak <i>Quercus petraea</i> coppice, a type of woodland not known to occur anywhere else in East Sussex. The woods have developed over Weald Clay and Lower Tunbridge Wells Sandstone and the variation in soils, drainage and management have resulted in a mosaic of woodland types, three of which are becoming rather rare in the national context. Several other semi-natural habitats: ponds, streams and an area of wet heath with acidic grassland are also present, thus increasing the diversity and interest of the site.
Pevensey Levels	SAC	3.6 km west	Designated site protecting those habitats and species present on Site that are listed in annex I and II of Habitats Directive, which are considered to have European interest.
	Ramsar	3.6 km west	Site is one of the largest lowland wet grassland systems in south-east England, including a small area of shingle and intertidal muds and sands. Site supports a variety of important wetland communities, including nationally rare and scarce aquatic plants, invertebrates and a notable assemblage of breeding and wintering wildfowl such as wintering Lapwing <i>Vanellus vanellus</i> and snipe <i>Gallinago gallinago</i> .
Non-statutory designated sites			
High Peartree, Smiths and High Woods	LWS	1.5 km south west	Area of ancient woodland with ancient/veteran trees, some deciduous woodland present.
Woodland Complex at Buckholt Farm	LWS	1.6 km south-east	Area of ancient woodland with some ghyll woodland.

4.1.2 Protected and Notable Species

The desk study returned a number of protected and priority/notable species records within 2 km of the Site, dated from 2009 to 2019, which were relevant to the habitats present and the proposed Development. These species are protected under UK legislation^{15,20} and

are listed under the NERC Act 2006¹⁷ as species of principal importance. A summary of these records are provided in Table 4.2.

No badger or otter records were returned by the desk study due to confidentiality reasons made by the record centre.

Three GCN European Protected Species (EPS) licences were identified within 2 km of the ESA. The closest licence relates to the damage or destruction (under licence) of a resting place in 2017.

Furthermore, class licence returns records showed a number of waterbodies within 2 km of the Site were surveyed between 2015 and 2017 and confirmed GCN presence within these ponds. The closest class licence return record was 100 m from the ESA.

Table 4.2: Protected and Priority Species within 2 km of the ESA

Taxonomic group	Species	Number of records	Distance and direction of closest record from Site (date)
Amphibians	Great crested newt	44	0.3 km east-south-east (2016)
	Palmate newt	27	0.4 km north-east (2016)
	Smooth newt	19	0.4 km north-east (2016)
	Common toad	1	1.2 km east (2018)
	Common frog	4	1.2 km east (2019)
Bats	Serotine	42	1.3 km east-north-east (2018)
	Brown long-eared	11	1.2 km west-north-west (2017)
	Common pipistrelle	3	1.2 km south-south-west (2011)
	Soprano pipistrelle	1	0.7 km north-east (2015)
	Unidentified <i>Plecotus</i> species	4	1.2 km west-north-west (2014)
	Daubenton's	1	1.9 km west-north-west (2014)
	Noctule	1	1.9 km west-north-west (2014)
	Unidentified <i>Myotis</i> species	1	1.9 km west-north-west (2014)
Birds	Red kite	2	1.2 km east (2018)
	Hobby	2	1.5 km north-north-east (2011)
	Turtle dove	1	1.5 km north-north-east (2011)
	Cuckoo	3	1.3 km east (2015)
	Kingfisher	1	1.2 km east (2015)
	Bee-eater	2	1.5 km west-north-west (2012)
	Lesser-spotted woodpecker	1	1.3 km east (2015)

	Dunnoch	10	1.1 km south-east (2011)
	Song thrush	11	1.1 km south-east (2011)
	Marsh tit	1	1.8 km north-west (2010)
	Starling	8	1.1 km south-east (2011)
	House sparrow	10	1.1 km south-east (2011)
	Linnet	5	1.4 km west-south-west (2010)
	Bullfinch	10	1.1 km south-east (2011)
	Yellowhammer	6	1.1 km south-east (2011)
	Hazel dormouse	2	0.8 km west-south-west (2011)
Reptiles	Grass snake	4	0.8 km west-south-west (2011)
	Adder	2	1.2 km east-south-east (2013)
	Slow-worm	4	0.8 km west-south-west (2011)
	Common lizard	1	0.8 km west-south-west (2011)

4.1.3 Priority Habitats

Multiple areas of ancient and semi-natural woodland and ancient replanted woodland are located within 2 km of the ESA. Further priority habitats include areas of deciduous woodland, ghyll woodland and traditional orchards within 2 km of the ESA.

The Site is bordered by two areas of ancient woodland: Sprays Wood is located immediately adjacent on the north-western boundary of the ESA; Kiln Wood is located on the southern boundary of the ESA. An existing access track bisects Kiln Wood, connecting the Site to Potman's Lane.

These priority habitats are listed under the NERC Act 2006.

4.1.4 Site History

Satellite imagery shows that the ESA has been maintained as grassland since at least 2004 and up to 2018 (latest imagery date). The pond in the southern field was surrounded by trees until at least 2004 but these had been lost by 2009.

4.1.5 Extended Phase 1 Habitats

Scientific names are excluded from plant species names in the following sections and only the common names are used. A list of species, including scientific names, is presented in Appendix E.

4.1.6 Poor semi-improved grassland

With the exception of the access track and a small area of woodland, the rest of the ESA was maintained as poor semi-improved grassland, heavily grazed by cattle, sheep and horses. Species included self-heal, white clover, dandelion, creeping buttercup, creeping thistle, spear thistle, nettle and dock species. The grassland was split into two fields by a line of scattered trees. Due to heavy grazing, it was not possible to identify the grass species present.

4.1.7 Mixed semi-natural woodland

Two small areas of woodland were recorded. A triangular parcel of woodland was recorded in the northern section of the southern field (Photograph 2, Appendix C), and woodland flanked the stream which ran alongside the north-eastern boundary (Photographs 11 and 13, Appendix C). Species included oak, field maple, hawthorn, hazel, blackthorn, dog rose and holly. Ground flora consisted of bramble and ivy, with bracken and other ferns by the stream. Himalayan balsam was also dominant adjacent to the stream (see Section 3.5.1).

4.1.8 Scattered trees/scrub

A central line of scattered trees, dominated by mature oaks, separated the two fields (Photograph 3, Appendix C). Scattered trees were also present at the north-east boundary, adjacent to the stream and at the remaining Site boundaries. Species included willow and ash. Scattered hawthorn scrub was also recorded along the length of the access track.

4.1.9 Bare ground

The access track was predominately bare earth with log and material piles present along its entire length (Photograph 4, Appendix C). The access track ran through a sweet chestnut coppiced woodland.

4.1.10 Pond

A large on-site pond (P2) was present in the southern field. The pond was exposed, with heavily grazed vegetation around the margins and submerged and emergent aquatic plants (Photograph 5, Appendix C).

4.1.11 Buildings

Several buildings were recorded immediately adjacent to the Site boundary including horse stables (Photograph 7, Appendix C) and cattle shed (Photograph 7, Appendix C) with farm buildings along the access track (Photograph 8, Appendix C).

4.2 Protected Species

4.2.1 Bats

4.2.1.1 Roosts

Twenty trees within the ESA were recorded with Potential Roosting Features (PRFs) and assessed as having potential to support roosting bats. Nine trees were assessed as having moderate bat roosting potential and the remaining 11 were assessed as having low potential (Figure 3, Appendix B). All other trees in the ESA were assessed as having negligible potential to support roosting bats due to their young age and lack of PRFs.

No buildings were suitable to support roosting bats due to their lack of suitable roosting features present, frequent use and associated disturbance. The buildings were either small stable or cattle sheds, with a corrugated metal roof and wall structure.

Four small Category C trees, T4, T7, T10 and T98, identified along the existing Site access track have been assessed by photographic evidence provided by an arboriculturist⁷. The trees appear to show negligible opportunities for roosting bats (Photographs 15 and 16, Appendix C). The desk study returned 68 records of bats, the nearest was located 0.7 km north-east, in 2015.

⁷ Tracey Clarke Tree Consultancy (2021) Arboricultural Impact Assessment and Method Statement

4.2.1.2 Habitats

Habitat features such as the large pond, the line of trees within the centre of the ESA, scattered trees along the boundaries, scattered scrub along the access track and the on-site woodland have potential to support foraging bats. There is good habitat connectivity between the Site and the wider landscape. Furthermore, immediately off-site, adjacent woodland habitat also provides potential to support foraging bats. The stream and ditches located on the boundaries provide suitable habitat for foraging and commuting bats, further connecting the Site to the wider landscape. Despite this, the Site is predominantly grazed grassland and on this basis the Site was classed as having 'low-moderate' suitability for foraging and commuting bats.

4.2.2 Amphibians

A large pond (P2) was located in the southern field and was assessed as having 'good' suitability to support GCN. The pond supported emergent and submerged vegetation. The vegetation surrounding the edges of the pond was heavily grazed and poached by the cattle, sheep and horses and their presence is considered to have caused the resulting turbidity of the water. No amphibians or evidence of amphibians were recorded during the survey

A further five off-site ponds (P1, P3–6) were identified within 250 m. P1 and P4 were assessed to have, respectively, 'average' and 'excellent' suitability to support GCN. Due to restricted access during the 2020 survey season, it was not possible to undertake an HSI assessment on P3 and P5. Furthermore, P6 was dry and therefore not assessed. Locations of waterbodies are shown on Figure 2, Appendix B.

eDNA surveys were undertaken on P1, P2 and P4 in 2020. GCN presence was confirmed in P2 only. Table 4.3 summarises the results of the HSI and eDNA surveys and full HSI scores are provided in Appendix C.

Table 4.3 Level of Suitability of Ponds

Waterbody Number	HSI Score	Level of Suitability	eDNA Result
P1	0.63	Average	Negative
P2	0.77	Good	Positive
P4	0.81	Excellent	Negative

Population surveys were undertaken in P2 in 2021. Full details of the GCN population surveys are provided in a standalone GCN report⁸.

In addition, other amphibians such as common toads may also take the opportunity to spawn in the waterbodies.

Suitable terrestrial habitat on Site included the scrub and woodland habitat providing good foraging and sheltering opportunities and connecting the waterbody on Site to the wider landscape. However, the grassland was heavily grazed and was considered to provide limited foraging or sheltering opportunities for GCN. A number of log piles were also recorded within the ESA and considered to provide suitable hibernacula for amphibians (TN1 & TN2).

The desk study returned 44 records of GCN, with a further 27 records of palmate newt, 19 of smooth newt, four of common frog and one common toad. The nearest record was of a GCN, located 0.3 km to south-east, in 2016.

⁸ Arcus (2021) *Great Crested Newt Survey Report – Ninfield Greener Grid Park*

4.2.3 Badger

A separate confidential report is available on request but is not to be put into the public domain due to its confidential nature.

The areas of woodland, located on- and off-site were considered suitable habitat for sett establishment. The habitats located within the ESA and immediate surrounds provide suitable foraging and commuting habitat for badgers.

No records of badger were returned by the desk study due to confidentiality reasons.

4.2.4 Reptiles

The on-site woodland, tree lines and waterbodies have the potential to support foraging, commuting and sheltering reptiles. A number of log piles and material piles were also recorded within the ESA, including on the access track, which were considered suitable for sheltering and hibernating reptiles (Photograph 9, Appendix C). The heavily grazed grassland was considered sub-optimal to support foraging and/or sheltering reptiles.

The desk study returned four records of grass snake, two records of adder, four records of slow-worm and one record of a common lizard. The closest was a grass snake, adder and common lizard record, located 0.8 km south-west, in 2011.

4.2.5 Birds

The central tree line, on-site woodland, scattered trees and scrub (Photograph 10, Appendix C) provide suitable bird nesting habitat. The grassland, however, provides limited potential for ground nesting birds given its exposed nature and heavy disturbance by livestock.

The desk study returned 159 records of 33 species; however, no records were returned for the land within or immediately surrounding the BBS Area. The closest record provided was Yellowhammer recorded approximately 1.1 km away in 2011.

Further details of bird interests within the Site are provided in a standalone ornithology report⁹.

4.2.6 Otter and Water Vole

A small watercourse was located on the north-eastern, western, and south-eastern boundaries of the ESA. The watercourse lacked suitable vegetation on the banks (Photograph 11, Appendix C) and where it ran through the adjacent woodland at the north-eastern boundary, no vegetation was present and the water depth was not suitable to support water vole (Photograph 12, Appendix C). No evidence of water vole was recorded and the species is considered to be absent from the Site. There were no habitats considered suitable for foraging or resting otter within the Site and no evidence of the species was recorded.

The desk study returned no records of water vole or otter. Otter and water vole are not considered further in this report.

4.2.7 Hazel Dormouse

Suitable dormouse habitat was recorded on the boundaries of the ESA and the adjacent off-site woodland (Photo 14, Appendix C). The on- and off-site habitat is considered to provide foraging, commuting and nesting opportunities for this species. An analysis of aerial imagery indicates there is excellent woodland and scrub habitat connectivity and continuity to support dormouse within the local area.

⁹ Arcus (2021) *Ornithology Report – Ninfield Greener Grid Park*

The desk study returned two records of dormouse, the closest being 0.8 km south-west of the Site boundary in 2011.

4.2.8 Other Protected / Notable Species

4.2.8.1 Invertebrates

During the survey suitable habitat for invertebrates was noted including the treeline and scattered trees, the woodland and the on-site pond.

The desk study returned 32 invertebrate records including records of small heath butterfly and Cinnabar moth. The closest and most recent record is for small heath butterfly approximately 750 m to the south-west, in 2012. This species of butterfly is a priority species in the NERC Act 2006.

4.2.8.2 Hedgehogs

The Site and wider landscape also have the potential to support commuting, foraging and hibernating hedgehogs, with areas of brash piles, leaf piles, hedgerows and areas of undisturbed grassland.

4.2.9 Non-Native Invasive Species

Himalayan balsam, an invasive plant under Schedule 9 of the Wildlife and Countryside Act, was recorded along the length of the stream adjacent to the north-eastern boundary, on the opposite bank to the Site (Photograph 14, Appendix C).

5 DISCUSSION, FURTHER SURVEY REQUIREMENTS AND MITIGATION

5.1 Cumulative Impact

Whilst a full cumulative impact assessment has not been undertaken as part of this PEA, a similar battery storage scheme with associated infrastructure has recently had planning permission granted, which is located within 1.5 km of the Site (Rother District Council Ref: RR/2020/1817/P). This development will result in the loss of low value grassland, with the main impact to protected species being the closing of two badger setts. This may result in badgers expanding their territory into the Site, however, as measures have been provided below to ensure no impact to badgers there will be no cumulative impact from the two projects.

The loss of similar habitat in the area will increase the impact to protected species in the locality; however, overall, the loss of habitats is still considered low impact due to the level of similar habitat in the area. Furthermore, the higher value habitats are set to be retained, protected and the majority enhanced. Both sites will also meet the government target of net biodiversity gain, which will offset any habitat lost.

5.2 Designated Sites

5.2.1 Statutory Designated Sites

The High Woods SSSI is located 1.5 km south-west of the ESA. The Pevensey Levels SAC and Ramsar are located 3.6 km west of the ESA.

Due to the characteristics of the Development and the lack of clear functional connectivity between the Site and the designated sites, impacts on these designated sites are extremely unlikely, during both construction and operation, and therefore further assessment is not considered necessary.

5.2.2 Non-Statutory Designated Sites

There are two non-statutory designated sites, both LWS, within 2 km of the ESA. The closest is High Peartree, Smith and High Woods LWS, located 1.5 km south-west.

Due to the characteristics of the Development and the lack of clear functional connectivity between the Site and the designated sites, impacts to these designated sites are extremely unlikely, during both construction and operation, and therefore further assessment is not considered necessary.

5.3 Habitats

The Development will lead to the loss of predominantly low value semi-improved grassland and the ecological effects of this will be minimal. Higher value habitats, such as trees and woodland, are restricted to the boundaries of the Site and will not be impacted by the Development due to a sensitive design that has ensured separation from them and through the implementation of the construction-phase mitigation (e.g., Root Protection Zones) set out in the Landscape and Visual Appraisal (LVA)¹⁰. However, a small number of scattered trees and scrub will be removed to facilitate access to the Development and mitigation and compensation will be implemented to address this potential adverse effect. No development will take place in watercourses or the pond and standard good practice^{11,12} pollution prevention measures will mitigate potential effects.

Habitat creation and enhancements will be implemented around the perimeter of the Development infrastructure, as detailed in the LVA and associated figures, and will include:

- Native tree planting;
- Native shrub planting;
- A swale; and
- Wildflower and wetland meadow.

These measures will help to compensate for the habitat losses arising during construction and will provide mitigation for potential operational effects to habitats and species by providing buffering/screening habitat between the Development and off-site areas.

5.4 Species

5.4.1 Bats

No buildings have potential to support roosting bats and trees with roosting potential will be retained and not be directly impacted by the Development. Four small Category C trees identified along the existing Site access track require removal to facilitate the Development. Photographic evidence has been provided by an arboriculturist, based on an initial visual scrutiny of the images, the trees appear to show negligible opportunities for roosting bats. As a precautionary approach, given the constraint, it is recommended that the trees are assessed prior to felling in line with BCT guidance on trees assessed as having low bat roost potential.

The Site has been assessed as having a 'low-moderate' suitability for bats, however, no further surveys are recommended due to the low and spatially restricted impacts of the Development. The Development will affect mainly semi-improved grassland and a small section of hedgerow. Nonetheless, bats are active in most habitats and so it is reasonable

¹⁰ Arcus (2021) *Landscape and Visual Appraisal – Ninfield Greener Grid Park*

¹¹ NetRegs (2018) *Guidance for Pollution Prevention Works and maintenance in or near water: GPP 5 Version 1.2 February 2018* [online] Available from: <http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf> [Accessed February 2021]

¹² Gov.UK (2019) *Pollution Prevention for businesses: Guidance* [online] Available from: <https://www.gov.uk/guidance/pollution-prevention-for-businesses> [Accessed February 2021]

to consider potential impacts to them and thus a range of good practice mitigation measures are proposed to reduce disturbance to bats.

The loss of habitats will have only a minor impact on bats in terms affecting foraging/commuting habitats. Habitat enhancements will compensate for these effects such that the overall impact on bats will be neutral. In addition, a minimum of three bat boxes will be installed on retained mature trees within the Site to provide enhanced roosting opportunities. Boxes will be installed in accordance with good practice¹³.

5.4.1.1 Mitigation

Mitigation will include the following measures:

- Ensuring all site operatives are made aware of current legislation protecting bats via a Toolbox Talk; and
- In the unlikely event that bats are encountered then works will cease and an ecologist contacted for advice.

5.4.1.2 Lighting and Disturbance

Lighting can adversely affect invertebrates and bats (as well as other animal species). New lighting should be designed in line with good practice¹⁴ to ensure the Site is able to provide continued undisturbed foraging and commuting habitats for bats. Should lighting be required (during both construction and operation), the following approach will be followed:

- Motion-sensitive security lighting will be installed and floodlighting avoided;
- Avoidance of lighting with ultra-violet (UV) components in areas where lighting is required for public safety purposes. UV light is particularly disruptive to bat behaviour;
- Use of flat-glass protectors on luminaires to help reduce light spill above angles greater than 70° from the vertical plane; and
- Avoidance of light spill on to surrounding habitats such as the adjacent woodland, treelines and streams, by using accessories such as shields, louvres, hoods and cowls.

5.4.2 Amphibians

The three ponds, P1, P2 and P4, were assessed as Average, Good and Excellent suitability to support GCN, respectively. There is suitable terrestrial habitat present on site and within the immediate surrounds. Furthermore, the desk study returned results of GCN within the local area.

Environmental DNA (eDNA) surveys were carried out on P1, P2 and P4 in 2020. GCN presence was confirmed in P2 only.

Detailed population surveys were therefore recommended for Pond 2, which were undertaken between mid-March to June 2021, with at least half the surveys completed between mid-April and mid-May.

The methods and detailed results of these further surveys, as well as an assessment of impacts, associated mitigation and enhancements are provided in a separate report.

5.4.3 Badger

Evidence of badger was located within the Site and therefore it is likely badgers use the habitats within the Site. Please note that due to the confidential nature of badger setts it is not envisioned that the location of these setts become available in the public domain.

¹³ http://www.bats.org.uk/pages/bat_boxes.html - Putting up your box

¹⁴ Bat Conservation Trust (2018) *Bats and Artificial Lighting in the UK: Bats and the Built Environment Series* [online] Available at <https://theilp.org.uk/publication/guidance-note-8-bats-and-artificial-lighting/>

The Development will not directly impact any known setts; however, in the absence of mitigation, there is potential that the Development will cause harm or disturbance to commuting and foraging badgers (and other terrestrial mammals) during the construction phase of the Development.

The access tracks are currently in frequent use by farm machinery, meaning that any potential badgers using the area will be habituated to a certain level of disturbance. Whilst this vehicular movement is set to increase this will be during daylight hours, therefore is unlikely to pose a direct threat to badgers although will increase disturbance levels.

5.4.3.1 Mitigation

A pre-commencement badger survey is recommended before construction works begin to provide up-to-date information about the status and distribution of badgers on the Site.

A separate confidential report is available on request but is not to be put into the public domain due to its confidential nature. This report will outline measures to reduce the harm to badgers.

A number of additional controls will be implemented during construction in order to minimise disturbance. Key measures include:

- Cover excavations overnight to prevent animals falling into them. Inspect excavations daily for the presence of animals before recommencing work on them;
- Any deep excavations that are to be left open overnight will include a means of escape for any animals that may fall in;
- Where possible, works will be limited to the hours from dawn to one hour before sunset. If work is to be undertaken outside of daylight hours, lighting will be required to the works areas only and shall not to be allowed to spill onto neighbouring habitats of value to badgers and other wildlife. Any lighting required during works will be shielded or fitted with hoods to reduce light spill. Quieter works activities at this time would be undertaken to reduce disturbance;
- The creation of large stockpiles of earth will be avoided as these may be attractive for badgers and other animals;
- Store building materials above ground on pallets; and
- Should any new mammal burrows be identified, works in the area will need to stop and a suitably experienced ecologist contacted for advice.

5.4.4 Reptiles

The Site is not considered to be of high value for reptiles, although small amounts of potential sheltering habitat is present. Linear habitats that provide commuting opportunities for reptiles will be retained and will not be directly impacted by the Development.

Given the limited habitat suitability and low and spatially restricted impacts of the Development, no further surveys are considered necessary, however, precautionary mitigation is recommended.

5.4.4.1 Mitigation

To ensure compliance with the Wildlife and Countryside Act 1981 (as amended), it is recommended that works involving clearance of the log and material piles found across Site, are supervised. The clearance exercise will need to be carried out as a precautionary approach by an experienced ecologist with any reptiles found moved to an area of habitat which will remain unaffected by the Development. The works will need to be completed during the appropriate time of the year where reptiles are fully active (although weather and temperature-dependant), from April through to September. Should works not be able to be completed during April through to September, works to remove all hibernation features must be completed in that timeframe with the works area signed off by an

ecologist as being devoid of hibernation features. The hibernation features will be moved an area of habitat which will remain unaffected by the Development. Works will then be able to carry on outside of April through to September as long as the works area remains free of hibernation features.

5.4.5 Birds

The Site was considered to be of value to birds and further breeding bird surveys were recommended. The methods and detailed results of this survey, as well as an assessment of impacts, associated mitigation and enhancements, have been provided in a separate report⁹, which will be submitted with the planning application.

5.4.6 Hazel Dormouse

Habitats that provide foraging, commuting and nesting opportunities for dormice will be retained and not be directly impacted by the Development. Whilst the Development design seeks to avoid habitat that could be used by hazel dormouse, a small area of habitat will be impacted, although this will be compensated by the habitat prescriptions to be incorporated into the landscape design. Error! Bookmark not defined.

Given the low and spatially restricted impacts of the Development, no further surveys are considered necessary, however precautionary mitigation is recommended as a small area of scrub and scattered trees will be removed to facilitate access to the Site.

5.4.6.1 Mitigation

The following controls should be implemented during the works:

- Toolbox talk for all site contractors explaining the ecology of hazel dormice and their legal status, precautionary measures being taken to protect them and what to do in the unlikely event that one is discovered unexpectedly during works;
- Precautionary methods of working including 'hand searches', staged clearance and supervision by a licensed dormouse ecologist;
- Sensitive timing of vegetation clearance works to avoid potential disturbance of hazel dormice during breeding or hibernation; and
- Retained habitat, adjacent to the construction footprint, will be protected by the use of Herras fencing and clearly signed throughout works.

5.5 Other Protected Species/ Notable Species

5.5.1 Non-Native Invasive Species

Himalayan balsam, an invasive plant under Schedule 9 of the Wildlife and Countryside Act, was recorded along the length of the stream adjacent to the north-eastern boundary, on the opposite bank to the Site. As part of best practice, the bank on the Site side must be monitored for signs of Himalayan balsam, with control measures put in place if recorded. Furthermore, general measures for biosecurity must be updated regularly in the CEMP to ensure invasive species are not spread.

5.5.2 Invertebrates

The habitats that will be lost to the Development have very limited potential to support notable species of invertebrates and no further surveys or mitigation are required.

5.5.3 Hedgehog

Habitats on site provide suitable terrestrial habitats for hedgehog, which are a rapidly declining priority species. Although no specific surveys for hedgehogs are recommended,

the habitat enhancements, as part of the landscape design, and mitigation for reptiles and badgers, will be sufficient to address potential impacts on hedgehogs.

6 CONCLUSIONS

Several protected species have the potential to be negatively impacted by the Development in the absence of precautionary mitigation including bats, amphibians, reptiles, badger, birds, invertebrates and other species. A range of mitigation measures have been recommended to safeguard these species during construction and habitat enhancements will provide positive effects for some species.

Further survey work, as described in Section 5, will be undertaken to inform the assessment of effects and mitigation for great crested newts and breeding birds.

APPENDIX A – PLANNING POLICY AND LEGISLATION

The Wildlife & Countryside Act 1981

The Wildlife and Countryside Act 1981¹⁵, as amended by the Countryside and Rights of Way Act (CROW) 2000¹⁶ and the Natural Environment and Rural Communities Act (NERC) 2006¹⁷, consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive)¹⁸, making it an offence to:

- Intentionally kill, injure or take any wild bird or their eggs or nests (with certain exceptions) and disturb any bird species listed under Schedule 1 to the Act, or its dependent young while it is nesting;
- Intentionally kill, injure or take any wild animal listed under Schedule 5 to the Act; intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by any wild animal listed under Schedule 5 to the Act; intentionally or recklessly disturb certain Schedule 5 animal species while they occupy a place used for shelter or protection; and
- Pick or uproot any wild plant listed under Schedule 8 of the Act. Schedule 9, Part II of the Act also lists many species for which it is an offence to plant, or otherwise cause to grow, in the wild. Any material containing Japanese knotweed is also identified as controlled waste under the Environment Protection Act 1990 and must be disposed of properly at licenced landfill according to the Environmental Protection Act (Duty of Care) Regulations 1991.

Habitat Regulations 2017 (as amended)

The Conservation of Habitats and Species Regulations 2017¹⁹ (the 'Habitat Regulations'), as amended by the Conservation of Habitats and Species and Planning (Amendment) (EU Exit) Regulations 2019²⁰, are the principal means by which Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna (the 'Habitats Directive') is transposed into law in England and Wales. The objective of the Habitats Directive is to protect biodiversity through the conservation of natural habitats and species of wild fauna and flora. The Directive lays down rules for the protection, management and exploitation of such habitats and species and makes it an offence to deliberately capture, kill or disturb wild animals protected under the Habitat Regulations. It is also an offence to damage or destroy a breeding site or resting place of such an animal (even if the animal is not present at the time).

Natural Environment & Rural Communities (NERC) Act 2006

The NERC Act 2006¹⁷ places a duty on local planning authorities to have due regard for biodiversity and nature conservation during the course of their operations, and thus ensures that biodiversity is a key consideration in the planning process.

¹⁵ Legislation.gov.uk *Wildlife and Countryside Act 1981* (as amended) [online] Available from: https://www.legislation.gov.uk/ukpga/1981/69/pdfs/ukpga_19810069_en.pdf [Accessed March 2021]

¹⁶ Legislation.gov.uk *The Countryside and Rights of Way Act 2000*. Available from: <http://www.legislation.gov.uk/ukpga/2000/37/contents> [Accessed March 2021]

¹⁷ Legislation.gov.uk *Natural Environment and Rural Communities Act 2006* [Online] Available from: <https://www.legislation.gov.uk/ukpga/2006/16/contents> [Accessed March 2021]

¹⁸ Birds Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds *EUR Lex: Access to European Law* [online] Available from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32009L0147> [Accessed March 2021]

¹⁹ Legislation.gov.uk *The Conservation of Habitats and Species Regulations 2017* [Online] Available at: <https://www.legislation.gov.uk/uksi/2017/1012/contents/made> [Accessed March 2021]

²⁰ Legislation.gov.uk *The Conservation of Habitats and Species and Planning (Amendment) (EU Exit) Regulations 2019* [Online] Available at: <http://www.legislation.gov.uk/ukdsi/2019/9780111176573> [Accessed March 2021]

Protection of Badgers Act 1992

Badgers receive strict protection under the Protection of Badgers Act 1992²¹, which prohibits the taking, injuring, selling, possessing or killing of badgers and makes it an offence to ill-treat any badger, damage, destroy, disturb or cause a dog to enter a badger sett. The 1992 Act defines a badger sett as "*any structure or place, which displays signs indicating current use by a badger*".

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997²² (as amended by the Hedgerow [Amendment] [England] Regulations 2002; hereafter collectively called the Hedgerow Regulations) were made under Section 97 of the Environment Act in 1995 providing the necessary legislation for the protection of certain hedgerows. The overall aim of the Hedgerow Regulations is to secure the retention of important countryside hedgerows, principally ancient and species-rich hedges. The Hedgerow Regulations also introduced new arrangements for planning authorities in England and Wales to protect important hedgerows in the countryside by controlling their removal through a system of notification.

National Planning Policy Framework 2019

The National Planning Policy Framework (NPPF) 2019²³ sets out the Government's requirement for the planning system in England and in doing so establishes framework within which local planning authorities can develop their own planning policies. The NPPF explicitly addresses the conservation and enhancement of the natural environment, including biodiversity, through paragraphs 174–177.

Biodiversity Action Plans

The UK Biodiversity Action Plan (UKBAP) was developed to fulfil the Rio Convention on Biological Diversity in 1992, to which the UK is a signatory. The UK Post-2010 Biodiversity Framework' now (as of July 2012) succeeds the UKBAP, although the UKBAP priority species and habitats are retained through the NERC Act 2006¹⁷. Regional and local BAPs have also been organised to develop plans for species/habitats of nature conservation importance at regional and local levels.

²¹ Legislation.gov.uk *Protection of Badgers Act 1992* [online] Available from: <https://www.legislation.gov.uk/ukpga/1992/51/contents/enacted> [Accessed March 2021]

²² Legislation.gov.uk *The Hedgerow Regulations 1997* [online] Available from: <http://www.legislation.gov.uk/uksi/1997/1160/contents/made> [Accessed March 2021]

²³ Gov.uk *National Policy Planning Framework 2019* [online] Available from: <https://www.gov.uk/government/publications/national-planning-policy-framework--2> [Accessed March 2021]

APPENDIX B – FIGURES AND TARGET NOTES

Target Notes (Figure 1)

Target Note	Description
1	Standing deadwood
2	Adjacent habitat was coppiced sweet chestnut

APPENDIX C – HABITAT SUITABILITY INDEX (HSI) RESULTS

HSI Scores for Ponds Accessed

HSI Parameter	HS Number	HSI Score		
		P1	P2	P4
Location	S1	1	1	1
Pond Area	S2	0.8	0.95	0.2
Pond Drying	S3	0.9	0.9	0.9
Water Quality	S4	0.67	0.67	1
Shade	S5	1	1	1
Fowl	S6	0.33	0.67	1
Fish	S7	0.33	0.67	0.67
Ponds	S8	1	1	1
Terrestrial	S9	0.67	0.33	1
Macrophytes	S10	0.3	0.85	1
Total HSI Score		0.63	0.77	0.81

APPENDIX D – PHOTOGRAPHS

Photographs taken during the Extended Phase 1 Habitat Survey



Photograph 1: Evidence of cattle using field, heavy grazed and damaged.



Photograph 2: Small area of woodland in the north of the Site.



Photograph 3: Central line of scattered trees, dominated by mature oaks.



Photograph 4: Access track with farm buildings along the length.



Photograph 5: On-site pond in the southern field.



Photograph 6: On-site horse stables with storage.



Photograph 7: On-site cattle shed.



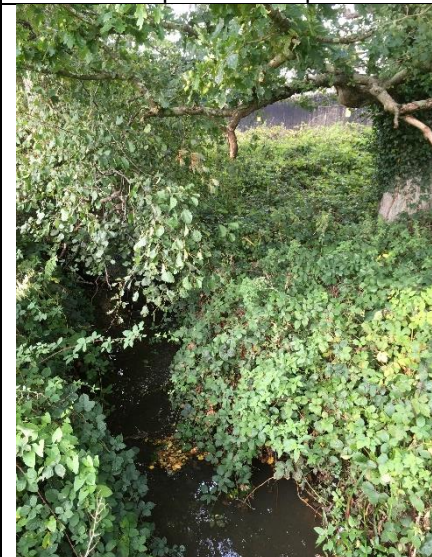
Photograph 8: On-site farm buildings along the access track.



Photograph 9: Example of log and material piles suitable for reptiles and amphibians.



Photograph 10: Scattered scrub along access track, suitable for nesting birds and dormice.



Photograph 11: Stream adjacent to Site boundary



Photograph 12: Stream within woodland showing poor water vole habitat.



Photograph 13: Example of suitable on-site hazel dormouse habitat.



Photograph 14: Himalayan balsam along the opposite bank of north-eastern stream.



Photograph 15: T4 located at junction of the existing access track and main road.



Photograph 16: T98 located along existing access track. Tree is position in the bottom left of photograph at foot of building.

APPENDIX E – PLANT SPECIES LIST

Plant Species Recorded During the Extended Phase 1 Habitat Survey

Common name	Latin name
Ash	<i>Fraxinus excelsior</i>
Blackthorn	<i>Prunus spinosa</i>
Bracken	<i>Pteridium aquilinum</i>
Common nettle	<i>Urtica dioica</i>
Creeping buttercup	<i>Ranunculus repens</i>
Creeping thistle	<i>Cirsium arvense</i>
Dandelion	<i>Taraxacum</i> agg.
Dock	<i>Rumex</i> sp.
Dog rose	<i>Rosa canina</i>
Field maple	<i>Acer campestre</i>
Hawthorn	<i>Crataegus</i> sp.
Hazel	<i>Corylus avellana</i>
Himalayan balsam	<i>Impatiens glandulifera</i>
Holly	<i>Illex aquifolium</i>
Oak	<i>Quercus robur</i>
Self-heal	<i>Prunella vulgaris</i>
Spear thistle	<i>Cirsium vulgare</i>
Sweet chestnut	<i>Castanea sativa</i>
White clover	<i>Trifolium repens</i>
Willow	<i>Salix</i> sp.