National Grid

Little Horsted Grid Supply Point, Substation and Associated Works

Ecological Mitigation and Management Strategy

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EXPERTS IN ECOLOGY

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EXECUTIVE SUMMARY

1. This Ecological Mitigation and Management Strategy (EMMS) prescribes mitigation, enhancement and management measures regarding protected and notable habitats and species in relation to the National Grid development at Little Horsted, East Sussex (planning application: WD/2021/0733/MAJ).
2. The development includes the construction of a new 400/132kV Grid Supply Point substation, 132kV substation compound and associated infrastructure. Potential impacts from additional permitted National Grid development, including construction of two new towers (pylons) and the demolition/modification of adjacent towers are also addressed.
3. Ecology surveys undertaken by RSK Biocensus in 2020-2021 identified the following ecological features requiring specific mitigation, enhancement and management measures in order to improve the biodiversity value of the site and comply with protected species legislation (in accordance with pre-commencement planning conditions):
    - notable habitats including Habitats of Principal Importance (particularly hedgerows and woodland);
    - notable plant species (specifically Wild Strawberry and Heath Speedwell);
    - great crested newts;
    - common reptile species;
    - breeding bird species (potentially including barn owls);
    - roosting, foraging and commuting bats;
    - hazel dormice; and
    - badgers.
4. Mitigation and management prescriptions within this document include the following:
    - mitigation measures prior to and during construction; notably species translocations, precautionary working methods, and partial closure of a badger sett, under Natural England protected species mitigation licences as necessary;
    - delivery of on-site and off-site habitat creation and enhancement measures; notably an on-site receptor area for great crested newts and reptiles, and off-site creation/enhancement of scrub, wildflower meadow and woodland habitats; and
    - long-term management and monitoring of newly created and enhanced habitats to ensure they continue to be fit for purpose, and to maximise their value to biodiversity in general and to the specific species addressed in this document.
5. Objectives have been set for the monitoring proposals for relevant receptors, and triggers for remedial action specified.
6. Further surveys prior to construction are recommended in this document for roosting bats (in trees and buildings), barn owls and badgers.
7. This is an iterative document that will be regularly reviewed and updated throughout the duration of the development, informed by guidance from Wealden District Council and

Natural England (particularly in relation to protected species licences) and the findings of ongoing and future monitoring.

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1.0 INTRODUCTION

1.1 Purpose of this report

1.1.1 This report has been produced by RSK Biocensus on behalf of National Grid for a site known as Little Horsted near Uckfield, East Sussex (grid reference TQ 490 179) (*Figure 1*).

1.1.2 This is intended to be a 'live' document that will be regularly reviewed and updated throughout the duration of the development, informed by comments provided by Wealden District Council and Natural England following protected species licence applications, and following regular assessments of the enhanced and newly created habitats for mitigation and compensation of biodiversity impacts associated with the development.

1.1.3 It provides information on the mitigation measures to ensure protected or otherwise notable wildlife is protected during the construction of a new 400/132kV Grid Supply Point (GSP) substation, 132kV substation compound and associated infrastructure, including access routes and parking (planning application: WD/2021/0733/MAJ).

1.1.4 These measures are also required to mitigate the impacts of National Grid's permitted development works associated with the construction of two new towers (4VM068B and 4VM069B); demolition of an existing tower (pylon) (4VM069); and the modification of adjacent towers to the east (4VM068) and west (4VM070) to create semi-tension towers that will link up to the two new towers.

1.1.5 This report also provides information on the habitat enhancements and creation associated with protected species mitigation and for biodiversity gain. It outlines the long-term management and monitoring prescriptions required to ensure their success.

1.1.6 The mitigation and management that will be implemented at each stage of the development is also required in order to discharge the following pre-commencement planning conditions:

Condition 7

1.1.7 No development shall commence until a wildlife management plan has been submitted to and approved in writing by the local planning authority. The management plan shall include detailed proposals for the protection of bats, birds, reptiles, great crested newts, hazel dormice and badgers, water voles and otters, and measures, including translocation if required, for the mitigation of any harm to them likely to be caused by the development. The works and other measures forming part of that plan shall be carried out in accordance with it.

Condition 8

1.1.8 No development shall commence for the development hereby approved until a scheme for the enhancement of the site for biodiversity purposes has been submitted to and approved in writing by the Local Planning Authority, in accordance with:

- *paragraph 4.2 of Water Vole and Otter Report date-stamped 19 March 2021*
- *paragraph 4.2 of Reptile Report date-stamped 19 March 2021*
- *paragraph 4.3 of Hazel Dormouse Report date-stamped 19 March 2021*
- *paragraph 4.2 of Great Crested Newt Survey Report date-stamped 19 March 2021*
- *paragraphs 4.2 and 4.3 of Breeding Bird Report date-stamped 19 March 2021*
- *paragraph 4.3.2 of Badger Survey Report date-stamped 19 March 2021*
- *paragraphs 5.3.1 – 5.3.4 of Bat Survey Report date-stamped 19 March 2021*

1.1.9 Details shall include timescales for implementation and future management. The approved scheme of enhancements shall be implemented in accordance with the approved details and thereafter so retained.

1.2 Landscape context

1.2.1 The *c.*9.5 ha substation development site lies in a rural area to the south-east of the town of Uckfield, East Sussex. It is dominated by neutral grassland, with a small pocket of broadleaved and mixed woodland, dense and scattered scrub and hedgerows (*Figure 2*).

1.2.2 The land is bordered to the north and north-east by woodland, dense and scattered scrub, a pond and stream connected to High Cross Lake, and arable and horse-grazed fields; to the east by Crockstead Farm buildings, access tracks, horse-grazed fields and woodland corridors; to the south by the A22; and to the west by Eastbourne Road with sheep-grazed grassland fields, hedgerows and woodland pockets beyond.

1.2.3 The surrounding landscape is rural with a mixture of woodland, hedgerows, waterbodies (lakes, ponds and streams), farmland and some scattered residential properties, including Hamilton Palace and grounds.

1.3 Development proposal

1.3.1 UK Power Networks (UKPN) found that the distribution network in the Lewes area requires reinforcement due to an increase in consumer demand. National Grid and UKPN identified the need to establish a new grid supply point (GSP) substation on the Bolney – Ninfield 400 kV overhead line (OHL) within the Little Horsted area. The development includes the construction of a new 400/132 kV GSP substation, which will be connected to the National Electricity Transmission System (NETS) via the existing 400 kV OHL, 132 kV substation compound and associated infrastructure, including access routes and parking.

1.3.2 In addition, works on the existing OHL and the construction of two new / replacement towers (4VM068B and 4VM069B) are required, and will be completed under permitted development rights.

2.0 ECOLOGICAL CONTEXT

2.1 Habitats

2.1.1 Habitats on the site comprise neutral grassland, broadleaved woodland, dense and scattered scrub and hedgerows. The hedgerows on the site qualify as a Habitat of Principal Importance ('priority habitat') listed in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (RSK, 2020). The hedgerows will be protected where possible; however, a small section of hedgerow along the western edge of the site will be removed to widen the access into the site from Eastbourne Road.

2.1.2 Two notable plant species listed on the Vascular Plant Red List for England (Stroh *et al*. 2014) were found along the existing track in the south-west corner of the horse-grazed field close to a line of pine trees (RSK, 2020). These comprised:

- Wild Strawberry (*Fragaria vesca*); and
- Heath Speedwell (*Veronica officinalis*).

2.2 Protected species

2.2.1 Ecological surveys of the development site were undertaken by RSK Biocensus between November 2019 and November 2020.

2.2.2 The following species do not require mitigation as they were either not present on the site or because habitats that could have supported these species, namely the stream and other watercourses, will not be impacted by the development:

- fish;
- water vole (*Arvicola amphibius*); and
- otter (*Lutra lutra*).

2.2.3 In addition, surveys were not undertaken for invertebrates as habitats on site that will be impacted by the development were unsuitable for supporting notable invertebrate assemblages or individual species populations, and the various compensation habitats that are proposed will provide suitable habitat and larval food plants for a range of common, and notable, invertebrates.

2.2.4 The surveys did however find that the site supported the following species:

- great crested newts (GCN) (*Triturus cristatus*);
- common reptile species;
- common and widespread breeding bird species including priority species;
- roosting, foraging and commuting bats;
- hazel dormice (*Muscardinus avellanarius*); and
- badgers (*Meles meles*).

2.2.5 The survey findings are outlined below and locations are illustrated on *Figure 3* (constraints map).

Great crested newts

2.2.6 Surveys undertaken on ponds within 500 m of the site recorded a low (small) population of GCNs in the area and the site comprises low to moderately suitable terrestrial habitat for GCNs (RSK, 2021a).

Reptiles

2.2.7 Three species of reptile were found on the site: slow-worm (*Anguis fragilis*), common lizard (*Zootoca vivipara*) and grass snake (*Natrix helvetica)* (RSK, 2021b). The slow-worms were recorded across the site, and their peak numbers, as with common lizard, were recorded in the dense scrub in the eastern corner; grass snakes were only encountered along the northern boundary and field margins near to the High Cross Stream.

2.2.8 Based on published guidance by Froglife (1999), the *c.*9.5 ha site supports low (small) populations of grass snakes, slow-worms and common lizards.

Birds

2.2.9 A total of 32 species were recorded during the 2020 surveys (RSK, 2021c), 23 of which were recorded breeding or possibly breeding. Of these 23 species, five species are listed as being of Principal Importance under Section 41 of the NERC Act 2006; and seven species are listed as Species of Conservation Concern (BOCC) (four red-listed and three amber-listed species) (Eaton *et al*, 2015). One species afforded special protection under *Schedule 1* of *The Wildlife and Countryside Act 1981 (as amended),* barn owl (*Tyto alba*), was recorded within and near to the site, but was assessed as non-breeding.

2.2.10 Based on the above, the breeding bird assemblage at the site is assessed as being important at a local level. Breeding species were primarily using woodland, scrub and hedgerows around the periphery of the site.

Bats

2.2.11 Habitats of moderate to high value for commuting and foraging bats lie along the northern edge of the site, comprising broadleaved woodland, outgrown broadleaved hedgerows, dense scrub, a pond, and a stream leading to High Cross Lake. The watercourses and low-lying wet inundated areas support abundant insect activity; the semi-improved horse-grazed fields also provide a potential food source for foraging bats, although the high intensity of the grazing pressure on this habitat is likely to limit its value to bats.

2.2.12 Up to 12 species of bat have been recorded using the site: two are of high conservation importance. One of these, barbastelle (*Barbastella barbastellus*) is designated under Annex II of the EC Habitats Directive (Schedule 2 of the Habitats Regulations, 2017 (as amended)), and another is one of our rarest species (grey long-eared bat (*Plecotus austriacus*)) (RSK, 2021d). Grey long-eared bat has been identified from audio recordings only (and not found in any buildings to date, as described in earlier reports for this project (RSK, 2021d)), so this species is not confirmed.

2.2.13 Mitigation measures and compensation for the loss of semi-improved neutral grassland used by foraging bats is required. As such, off-site habitat enhancement and creation will be undertaken in accordance with this strategy to improve the quality of nearby land, which will provide benefits to local species of bat (including grey long-eared bat on a precautionary basis).

2.2.14 No trees were recorded as supporting roosting bats, but surveys did indicate that two structures [redacted]) immediately outside the [redacted] boundary supported day roosts of individual male and non-breeding female common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle *(Pipistrellus pygmaeus)*.

Hazel dormice

2.2.15 Woodland that comprised predominantly Pedunculate Oak (*Quercus robur*) with an understorey of Hazel (*Corylus avellana*) and Alder (*Alnus glutinosa*); dense scrub that comprised mostly Bramble (*Rubus fruticosus* agg.), Hawthorn (*Crataegus* species) and Field maple (*Acer campestre*); and hedgerows that comprised mostly Hawthorn, Pedunculate Oak and Field Maple provided moderate to good habitat suitable for hazel dormice. Semi-improved neutral grassland had little to no suitability for hazel dormice and was therefore not surveyed further for this species.

2.2.16 A presence / absence survey using 75 artificial nest tubes was undertaken in suitable habitat by RSK Biocensus between May and September 2020 (RSK, 2021e). Four dormice were found within five nests located along the northern and north-eastern edge of the site.

Badgers

2.2.17 The fact that badgers are present and active in the area is indicated by a large main badger sett (38 active holes were recorded in October 2020; 9 active holes were recorded in an updated survey in December 2021) [redacted] all of which displayed signs of current use by badgers. A number of latrines was also evident. A badger bait-marking exercise (where different coloured pellets are used to separate social groups) undertaken in November 2020 recorded signs of badger activity [redacted] (RSK, 2021f).

2.2.18 Following the discovery of another main sett [redacted] further bait-marking surveys were undertaken to provide additional information on the territorial organisation of these badger social groups (RSK, 2021g). Based on the results of the survey, it was reasonable to conclude that there are at least two social groups of badgers using the area. The locations of latrines that included coloured pellets fed at each of these setts indicated a territorial boundary [redacted].

3.0 MITIGATION MEASURES

3.1 Tool-box talks

3.1.1 All operatives will be briefed prior to working on the site. A tool-box talk will be provided as part of the induction process. It will ensure that all personnel working on the site are made aware of the local ecology, relevant legislation (*Appendix A*), the procedures to be followed to avoid breaches of legislation, and measures to prevent adverse impacts on protected species that occur in and around the working areas.

3.1.2 A site briefing record will be kept and signed by all personnel on the site following each tool-box talk. Tool-box talks will be repeated as new personnel join the staff.

3.1.3 Where specific mitigation is required, owing to a protected species mitigation licence or a precautionary works method statement (PWMS), all site operatives will be briefed by an appropriately licensed ecologist, who will oversee work as detailed in the documents and in *Sections 3.2* and *3.3* of this report. The ecologist will provide an overview of the ecology and legislation and information on working methods to avoid adverse impacts on protected species.

3.1.4 When working under a specific PWMS, a briefing record will be kept and signed by all personnel working to those methods.

3.2 Habitats

Hedgerows – priority habitat

3.2.1 As hedgerows on the site qualify as a Habitat of Principal importance ('priority habitats') they will be protected from construction activities. Where the loss of hedgerow habitat is unavoidable, compensation will be provided.

3.2.2 Security fencing will be installed around the periphery of the site. This fencing will be installed between the retained hedgerows and working footprint to ensure their protection.

3.2.3 A small section of hedgerow along the western edge of the site will be removed to widen the access route into the site from Eastbourne Road; the visual landscaping proposals include extensive post-construction hedgerow planting to compensate for this.

3.2.4 In addition, ancient hedgerows that surround the perimeter of the arable fields on the off-site compensation land will be maintained throughout the habitat enhancement and creation works.

Wild Strawberry and Heath Speedwell

3.2.5 Wild Strawberry and Heath Speedwell were found in the south-west corner of the site. Because the substation has already been moved southwards (to avoid impacts on protected species as well as the Priority Habitat 'lowland mixed deciduous woodland'), works affecting these species cannot be avoided. They will therefore be transplanted to the south-east corner of the site where there are similar low-nutrient, mesic (i.e. moist,

partially shaded) conditions and where there is evidence that Wild Strawberry is already starting to colonise naturally (*Figure 4*).

Translocation

3.2.6 Fencing is to be installed prior to vegetation clearance for the works in April-May 2022. Before this happens, individual Wild Strawberry and Heath Speedwell plants will be dug up using ordinary gardening hand-tools, taking care not to damage the root system (as this can reduce chances of survival). The plants will immediately be replanted in the pre-determined receptor area and watered in. Periodic watering of the transplants will then continue as necessary during the growing season in 2022, to facilitate the establishment of the plants. The need for such will be determined by a suitably experienced ecologist, depending on the weather conditions at the time.

3.2.7 As the receptor site is *c.*250 m south-east and as Wild Strawberry has already been confirmed as growing there naturally, it is highly likely that ground conditions will be suitable for accommodating Wild Strawberry and Heath Speedwell transplants.

3.3 Protected species

3.3.1 Protected species have been recorded within the working footprint. Measures following the mitigation hierarchy are therefore outlined to ensure impacts on protected species are avoided, mitigated or compensated for appropriately and according to published guidance.

3.3.2 Avoidance and mitigation measures are outlined below. Compensation and enhancement provisions are outline in *Section 4*. Long-term management and monitoring relating to these measures and relevant protected species is outlined in *Section 5*.

Great crested newts

3.3.3 GCNs were recorded in small numbers within 500 m of the site. GCN and their habitat (both terrestrial and aquatic) are protected by law and as such, a European protected species mitigation licence (EPSML) has been submitted to Natural England to allow the activities to proceed that would otherwise be illegal (*e.g.* the removal or disturbance of habitat used by GCNs).

3.3.4 As part of the EPSML application, the following mitigation works schedule (in April / May 2022) has been specified, taking into account seasonal constraints. This includes:

- the installation of GCN fencing (*Figure 5*);
- translocation of GCN from works areas (for at least 30 days);
- supervised vegetation clearance of the site;
- a supervised destructive search; and
- habitat enhancement or creation to ensure that the favourable conservation status of the GCN population is maintained.

3.3.5 In addition to the above, National Grid require a temporary compound (February / March 2023 to November 2024) to facilitate the development. This compound will be situated along the south-east edge of the site (beyond 250m from the nearest GCN breeding

pond) and habitat comprising neutral grassland will need to be cleared and made unsuitable for GCN prior to use. These habitats would need to be cleared under a PWMS and under the supervision of a GCN licensed ecologist. The following activities will be detailed within the PWMS:

- Two-stage vegetation clearance of *c.*1.3 ha with directional strimming using hand tools.
- The vegetation will be strimmed to a height of c.100 mm with an ecologist present in case any remaining GCNs or other amphibians or reptiles are encountered, to reduce the risk of animal mortality. The cut area will be left for a period of 24 hours prior to further strimming of vegetation down to ground-level. All arisings will be removed from the site.
- Topsoil will be stripped back to make the ground unsuitable for protected species.
- Exclusion fencing (*c*.320 m) will then be installed around this compound (*Figure 6*). It will join to the existing exclusion fence installed as part of the translocation exercise. The existing exclusion fence between the compound and substation will not be removed and will remain in situ until all fencing is removed upon completion of the development. Access to the site from the compound will be across the newt grid.

3.3.6 Habitats surrounding Tower 4VM69 (*c.*0.04 ha) are also suitable for GCN and measures to temporarily clear habitats here will also be detailed within a PWMS and supervised by a GCN licensed ecologist as described above.

Fencing

3.3.7 Hand searches and strimming will be undertaken under the supervision of the named ecologist or their accredited agent to enable the installation of GCN exclusion fencing around the perimeter of the site (1.3 km of semi-permanent), as well as creating multiple internal exclusion areas (1 km of temporary drift fencing) to ensure a more efficient capture effort (*Figure 5*). Buckets will be installed on the inside of the exclusion areas at *c.*5 m intervals with alternating refugia placed on the ground as additional refuges for GCN.

3.3.8 Any GCNs captured during the installation of the fence and buckets will be released into the pre-determined receptor area as soon as possible.

3.3.9 During construction, the semi-permanent perimeter fencing will remain in place to prevent re-colonisation of the site by GCNs. The GCN fencing will be protected from construction activities by a 1-metre buffer from which vehicles will be excluded (e.g. by chestnut paling or similar).

3.3.10 The fencing, which will allow for the dispersal of newts into the wider habitat, will be monitored throughout construction. Should repairs be required or any vegetation adjacent to the fence require strimming, these works will be undertaken under the supervision of an ecologist. After construction works have been completed, the fencing will be removed under an ecological watching brief.

Translocation

3.3.11 Buckets and carpet tiles will be checked according to best practice published guidelines, for 30 (suitable) days with five clear days (*i.e.* days in which no GCNs are found within the translocation area) at the end of the trapping period (HGBI, 1998). Trapping will take place in April-May 2022 in suitable weather conditions. The buckets will be checked once in the morning and, if there is unusually hot weather during this period, they will be checked in the afternoon also. However, if weather conditions are too cold (i.e. <5ºC), lids will be placed firmly onto the buckets and trapping will cease until suitable weather conditions recommence. If animals continue to be caught after 30 days, the translocation may need to continue until five consecutive capture-free (suitable) days have been achieved.

Destructive search

3.3.12 After the translocation is completed, a destructive search of the development site will occur under an ecological watching brief. All artificial refuges will be removed from the site and any remaining potential refuges (*e.g.* log or rubble piles) will be carefully dismantled and removed by hand by an ecologist. The vegetation will then be strimmed to a height of *c*.100 mm with an ecologist present in case any remaining GCNs or other amphibians are encountered to reduce the risk of animal mortality). The cut area will be left for a period of 24 hours prior to further strimming of vegetation down to ground-level. All arisings will be removed from the site.

3.3.13 Usually, topsoil is stripped shortly after vegetation is cleared. However, as topsoil will not be removed until 2023 (first site access for construction), vegetation re-growth will be kept short under the guidance of an ecologist, until topsoil stripping commences in 2023 (again, under the guidance of an ecologist). Any GCNs found at any stage of these works will be caught and translocated to the receptor site.

3.3.14 Construction will only commence once the supervising ecologist confirms that sufficient survey and translocation effort has been undertaken to fulfil the requirements of the licence in relation to the conservation of GCNs, and that captured GCNs have been relocated away from the development footprint.

Receptor site

3.3.15 An area of habitat along the northern edge of the site will be retained, including a small area of grassland and scrub, where one hibernaculum and two log piles will be created from local materials on the site, to form a receptor area for GCN (and reptiles). The newly created hibernaculum and log piles will provide refuge for any GCNs relocated out of the site during the translocation exercise. As these will be located along the northern edge of the site, this will enable the natural dispersal of captured GCNs to high-quality terrestrial habitat and a pond known to provide breeding opportunities for GCNs (most likely the same GCN population using the site). In addition, off-site habitat creation (to be created during construction works) will offer substantially better habitat to support a core population of foraging GCNs. Information pertaining to this enhancement and habitat creation is provided in S*ection 4.*

Reptiles

3.3.16 As low numbers of reptiles have been recorded on the site, reptiles found within the redline development boundary will also be translocated from the development site alongside the GCN, over a 30-day period. The methods used will be similar to those described above for GCN and will be in accordance with the methods provided in the *Little Horsted Substation, Uckfield - reptile translocation precautionary working method statement* (RSK, 2022a).

3.3.17 In addition to the above methods, a minimum of 230 artificial refuges will be placed between the buckets and carpet tiles (a higher number may give higher capture rates). The artificial refuges, as well as any natural refuges, will be checked daily, and reptiles using them will be hand-captured by trained personnel using best-practice handling techniques (Gent & Gibson 2003). Captured reptiles will be kept for the minimum practicable time in clean cloth bags allowing good ventilation during transport to the receptor area, where they will be released. In warm weather, they will be kept in a cool-box.

3.3.18 Refuge checks are best carried out between the hours of 08:30 to 11:00 and / or 16:00 to 18:30, temperature-dependent. Days with the air temperatures between 9 and 15ºC plus bright sunshine are generally accepted as suitable for reptile capture, or if there is hazy or intermittent sunshine and little wind (less than Beaufort Scale Force 3) then between 9 and 18ºC (HGBI 1998). Days with persistent rain are generally accepted as unsuitable, although sunny periods after rain can be productive as reptiles emerge from shelter to bask.

3.3.19 Capture effort and findings will be reviewed on a daily basis, with numbers captured and intervals between captures recorded.

3.3.20 The destructive search will follow measures set out for GCN.

3.3.21 In addition to the above, reptiles may also be present within National Grid's proposed compound area and surrounding Tower 4VM069. As such, methods used to clear habitat here (neutral grassland, scrub and woodland) will follow those outlined above for GCN. The PWMS will need to include measures targeted to reptiles as well as GCN and habitats will be cleared under the supervision of an ecologist.

Birds

3.3.22 To minimise impacts during construction, some vegetation clearance works will be timed to avoid the bird breeding season (March to August inclusive), for example, where small temporary vegetation clearance will be carried out under a PWMS to erect scaffolding. Where this is not possible due to other protected species constraints, such as GCN, reptiles and dormice, a check by an ecologist prior to any vegetation removal will be necessary to avoid impacts on nesting birds. If nesting birds are found, then an exclusion zone appropriate to that species must be set up to ensure the nest is not disturbed until the chicks have fully fledged.

3.3.23 One species listed on *Schedule 1* of the *Wildlife and Countryside Act 1981 (as amended)* is present in the local landscape, namely barn owl. Barn owls were not recorded as breeding on the site during the surveys for breeding birds in 2020, but one was recorded roosting in an old barn immediately east of the site in 2020. Barn owls are legally

protected against disturbance while nesting; occasional or prolonged noise from works could cause disturbance to them (if present). The barn will be re-surveyed prior to works, to confirm the continued absence of nesting (*i.e.* breeding) barn owls. If they are found to be nesting, then an exclusion zone will be set up to ensure the nest is not disturbed until the chicks have fledged. This will be determined on a case-by-case basis by a suitably experienced and licensed ecologist, since many factors can influence how barn owls on or near their nest will react to disturbance, including the stage of nesting, levels of habituation to background activities, bodily conditions of the birds and proximity of the nest to potentially disturbing activities.

Bats

3.3.24 Mitigation for the development has been designed to maintain the site's ecological function for bats, to reduce impacts to protected species, and to provide new long-term compensation and enhancement near to the site, to benefit those local species of bat recorded on the site during surveys completed in 2020.

Updated building and tree surveys for roosting bats

3.3.25 Updated surveys will be undertaken of all trees, buildings and structures (a brick pillar) in the working footprint or within 50 m of it that have potential roosting features for bats. These surveys are required to inform an EPSML application to destroy or cause disturbance to a bat roost.

3.3.26 One emergence and / or re-entry survey is required on between late May to mid-July to determine if a maternity roost has established or if the sheds are still used as previously recorded (day roost). The methods will follow current Bat Conservation Trust guidelines (Collins, 2016).

3.3.27 Working from height with mirrors, torches and endoscopes as appropriate, aerial inspections will be undertaken of all potentially impacted trees to assess the features noted during the 2020 ground level tree assessment (GLTA). The survey will be undertaken by two qualified tree-climbers of whom at least one will be a licensed bat ecologist.

3.3.28 A small group of trees outside the redline boundary is located under telephone cables and it is therefore not safe to climb these trees ahead of the planned permitted development works associated with Tower 4VM070. As such, emergence and / or re-entry surveys (supported by infra-red cameras) will be undertaken on these trees during the season when bats are active, in order to watch and listen for bats emerging or re-entering these trees.

3.3.29 Upon completion of these surveys, the mitigation measures described in this document may need to be updated to reflect any changes *e.g.* if roosts need be included within an EPSML application.

Removal of roosting features

3.3.30 Surveys completed in 2020 confirmed the likely absence of roosting bats in trees. However, updated surveys will be undertaken prior to vegetation removal in 2022. Should these surveys confirm the presence of roosting bats in any tree to be removed and / or if

the works are likely to cause material disturbance (as set out in the Habitats Regulations, 2017, see Appendix A), an EPSML application will need to be made and appropriate mitigation agreed with Natural England.

3.3.31 The mitigation measures required to remove any trees where roosts are confirmed will include:

- the installation of appropriate bat boxes (see *Section 4*) prior to the removal of trees, where required;
- removal will be completed under the supervision of an ecologist with a level-two bat licence when the structures or trees are least likely to be in use by bats;
- removal will be undertaken in a controlled manner in stages to allow the structure or tree to be checked for roosting bats and avoid unnecessary harm or injury;
- if bats are found at any point, the works will be stopped. Any bat discovered will be relocated (by a licensed ecologist) to a new roosting area, such as a bat box, provided for that purpose; or left to disperse of its own accord. The provision of bat boxes and the location of these is described in *Section 4* and shown on *Figure 9*.

3.3.32 Note that it would not be appropriate to remove the viewing sheds simply to avoid the risk of disturbing bats infrequently roosting there (see below), as this would not meet the licensing test of 'no satisfactory alternative' to removing the roost(s).

Avoidance and minimisation measures

3.3.33 Surveys in 2020 recorded very low numbers of non-breeding bats roosting in a large derelict barn and the eastern of two viewing sheds just outside the eastern and south-eastern boundary of the site. These structures will need to be protected throughout the works as will other buildings in the vicinity of the works known to support roosting bats, including Crockstead Farm buildings (RSK, 2021h); and any other structures or trees where bats or evidence of bats is identified during update surveys in 2022. In the absence of mitigation, the works may cause disturbance.

3.3.34 All species of bat are nocturnal and artificial lighting of areas in which bats are active is likely to disturb their normal activities. The site currently has very little or no lighting, and so any light-spill will result in a change to these baseline conditions. This includes light falling onto roost exit points, which can have a significant detrimental impact on bats. Illumination of foraging and commuting areas can prevent or reduce activity, causing bats to pass quickly through lit areas or to avoid them all together.

3.3.35 Night working will be avoided where possible. However, where construction lighting is required, it will be designed to minimise spillage onto adjacent areas to reduce the potential disturbance to any foraging bats. Lighting will also be minimised along the perimeter of the site, especially along the northern boundary of the site where bat activity is higher. The development will aim to limit light levels here to maintain a dark corridor for commuting as well as foraging bats.

3.3.36 Indiscriminate lighting will be avoided, with lighting angled below the horizontal plane and focused on the intended area. In areas where it is practical (given the secure nature of the site and the requirement for lighting), lux levels will be no higher than 0.5 lux to avoid

affecting bats commuting and foraging behavior. Methods of reducing lighting impact on bats include using variable lighting regimes (*i.e.* motion sensor lights and timers) and reducing the intensity of light (*e.g.* dimming, light barriers and changing the light source). The mitigation that is implemented will be in accordance with guidance on suitable lighting strategies in areas used by bats, as produced by the institute of Lighting Professionals and the Bat Conservation Trust (ILP and BCT, 2018).

3.3.37 Not all trees within the woodland were inspected for roosts and it is likely that the woodland supports breeding colonies of at least some species. The impacts of noise on bats are not well understood (Reason and Bentley, 2020) and therefore, as a precaution, it may be necessary to minimise disturbance within the habitat (unless short-lived) through the use of noise screening attached to the perimeter security fencing (this will also protect against lightspill).

3.3.38 To ensure bats are protected throughout the works, the site lighting strategy and construction environmental management plan (CEMP) will incorporate the above.

Hazel dormice

3.3.39 The design of the proposed works has taken account of the presence of dormice in the development area and has previously been amended (moved further south from the woodland) to minimise disturbance to protected species here. However, there remains the requirement to temporarily remove the habitats around Tower 4VM069 and to allow for suitable working areas around the new towers during construction. There is, therefore, a need to remove an area of scrub and broadleaved woodland (*Figure 7*) to facilitate the proposed works. An EPSML has been submitted to Natural England to allow activities to proceed that would otherwise be illegal (*e.g.* injuring or killing a dormouse or causing disturbance to a dormouse or an active nest).

3.3.40 As part of the licence application, the following mitigation works schedule has been specified, taking into account seasonal constraints including:

- single-stage vegetation removal as detailed in the *Dormouse Conservation Handbook* (Bright *et al.* 2006);
- capture and release (where applicable) and,
- habitat enhancements and creation to ensure the favourable conservation status of the dormouse population is maintained. The proposed habitat enhancement / creation measures are described in *Section 4*.

Single-stage vegetation removal

3.3.41 Short stretches of hedgerows and tree lines and small stretches of scrub and woodland along the northern edge of the site will be removed when dormice are active but least vulnerable (*i.e.* April or late September to mid-November), to minimise the risk of separating females from their dependent offspring. Small amounts of vegetation (50 m^2) will be removed on successive days in April 2022 and April 2023 to allow individuals time to naturally disperse into adjacent high-quality habitat to the north. The works will be carried out by contractors using hand tools under constant supervision by the named ecologist or accredited agent, who will first undertake hand searches for dormouse nests in all vegetation to be removed.

Capture and release (where applicable)

3.3.42 Where dormice are discovered during the works, they will be allowed to move independently to safe habitats, outside of the works area. However, where this is not possible (e.g. for reasons relating to the safety of the animal or site personnel), dormice will be relocated in their existing nest to a suitable habitat, or an erected dormouse nest box within 100 m of the location where the dormouse was found.

3.3.43 In the unlikely event that a breeding nest is discovered, works will cease, and provisions will be made to allow the nest to remain in situ, undisturbed and connected to wider habitats such that dormice may disperse naturally once young have been weaned. Only following the dispersal of all young from the nest will licensable works re-commence in this area.

Badgers

3.3.44 Pre-commencement checks of the site prior to works will be undertaken by an experienced ecologist to collect up-to-date information on badger activity and, in particular, to identify whether any new sett entrance holes have been created within or immediately adjacent to the working areas. They will also provide additional information to support the closure of the holes (if required). These surveys will be undertaken within 6 months of the following works starting:

- works associated with the GCN, reptile and dormice mitigation in April / May 2022 (including vegetation removal and installation of GCN / reptile fencing);
- mitigation works associated with vegetation removal in April 2023;
- any sett closure between 1 July and 30 November 2023; and,
- the removal of in spring 2024.

3.3.45 In addition to the above, where chain-link mesh is installed as a precautionary measure (*Figure 8*) and / or as part of a licence application, these will be checked every month to ensure these are fulfilling their purpose and that badgers have not dug beneath them. If the mesh or fencing is damaged, ecological advice will be followed which is likely to include immediate repairs by the ecologist or under ecological supervision unless an active badger hole is found.

3.3.46 Under the current proposal and works schedule, will require a working area to be established. To create this working area, vegetation will need to be cleared in April 2023 this vegetation is situated above part of the main badger sett. To avoid adverse impacts on badgers and the sett during vegetation removal, works will need to be carried out in accordance with a precautionary works method statement and under the supervision of an experienced ecologist.

3.3.47 The working area , is likely to result in damage to part of the sett. Updated surveys of the sett in December 2021 (RSK, 2022b) recorded seven currently inactive holes within 10 m. Most of the other holes associated with the main sett were beyond 15 m many of which were

disused although several were partially used and some were in current use. The low levels of activity during this recent visit suggest that relatively few badgers are in residence. The seven disused holes nearest [redacted] are highly unlikely to be joined underground to those further away, although it is clear that all the holes in the area are part of a single main sett complex (i.e. the same group of badgers is using them all). Based on these survey results, the holes nearest [redacted] could currently be closed under precautionary measures without the need for a protected species mitigation license. This would prevent them from being re-occupied prior to works starting on site.

3.3.48 However, access to this land is scheduled for April 2023 which provides ample time for the hole's [redacted] to become active again. Should this happen, then they may need to be closed under licence. Beyond the seven entrance holes nearest the pylon, the next nearest holes are *c.*15-20 m away. As it stands, there are ample opportunities for any badgers excluded during this process to find alternative natural setts nearby, including the remaining holes in the main sett complex, a nearby annex sett and various outlying holes which have been shown by bait-marking and field signs to belong to the same group. Proposals for any sett closure will be confirmed following engagement with Natural England through the protected species mitigation licensing process. Discussions with Natural England in 2022 through their Discretionary Advice Service (DAS) prior to a licence application will confirm that the mitigation proposed is acceptable.

3.3.49 The following will likely be included within the licence application for any required sett closure, which will need to be undertaken between 1 July and 30 November 2023 (inclusive):

- Installation of one-way gates and chain-link mesh to exclude animals from part of the sett;
- Demonstration of badger exclusion (*i.e.* 21 days at the gated sett without any signs of badger activity);
- Destruction of this part of the sett (Natural England may seek to oversee these works).
- Licence return to Natural England.

3.3.50 It will be necessary for an experienced ecologist to provide a watching brief during the works in this location to ensure that these holes and the remainder of the main sett complex remain undisturbed by site activities.

Precautionary measures

3.3.51 The following measures will be detailed in a PWMS to minimise disturbance to badgers during vegetation removal:

- identification of any exclusion areas around setts where no works can take place;
- measures to minimise disturbance during the works, which will include using only low-ground-pressure vehicles when in close proximity to a sett and maintaining a safe distance when using machinery near setts;
- provisions to ensure badgers cannot become trapped during works and can continue to move throughout their territory;

- provision of an experienced ecologist to supervise and advise on the works, including installation of security fencing and great crested newt fencing;
- the installation of chain-link mesh within National Grid's proposed working areas, to reduce the ability of badgers to create additional holes and further extend the sett within areas that are to be disturbed by construction works; and
- monitoring of disused holes and rabbit burrows and any additional holes identified during vegetation clearance, using trail cameras to monitor for any badger activity. Where the holes are considered to be unused and an experienced badger ecologist has assessed that they are not connected to the main sett, then (if necessary) they will be closed under the PWMS and the supervision of the experienced ecologist. If the holes are active and closure is necessary, then a licence application to Natural England and mitigation plan will be required.

4.0 HABITAT ENHANCEMENT AND CREATION

4.1 On-site enhancements

Receptor area

4.1.1 To the north of the site (outside the site boundary), woodland, scrub and watercourses offer good quality habitat for GCNs and reptiles, including grass snakes. Mitigation has been designed such that the fencing sits away from this northern edge to allow for enhancements to be made for the benefit of accommodating captured animals (*Figure 10*). The receptor area will be located near to a known GCN breeding pond and will provide a buffer between it and the site. This area will provide basking opportunities for reptiles away from the shaded woodland and also maintain connectivity to the wider landscape into which translocated GCNs and reptiles will be able to naturally disperse.

4.1.2 Hibernacula and log piles will be created to provide suitable refuge for any translocated GCNs or reptiles (details on the creation of these features is provided below). These will also eventually provide some hibernating habitat for dormice and additional foraging habitat for bats and other wildlife.

4.1.3 The surrounding neutral grassland will be left to grow naturally (as opposed to being horse-grazed or used as an access route), which will enhance the area for foraging and hibernating GCN and reptiles as well as other protected species recorded along the northern edge of the site. However, annual strimming of no less than 300mm above ground level will be undertaken to prevent the area from becoming dominated by scrub.

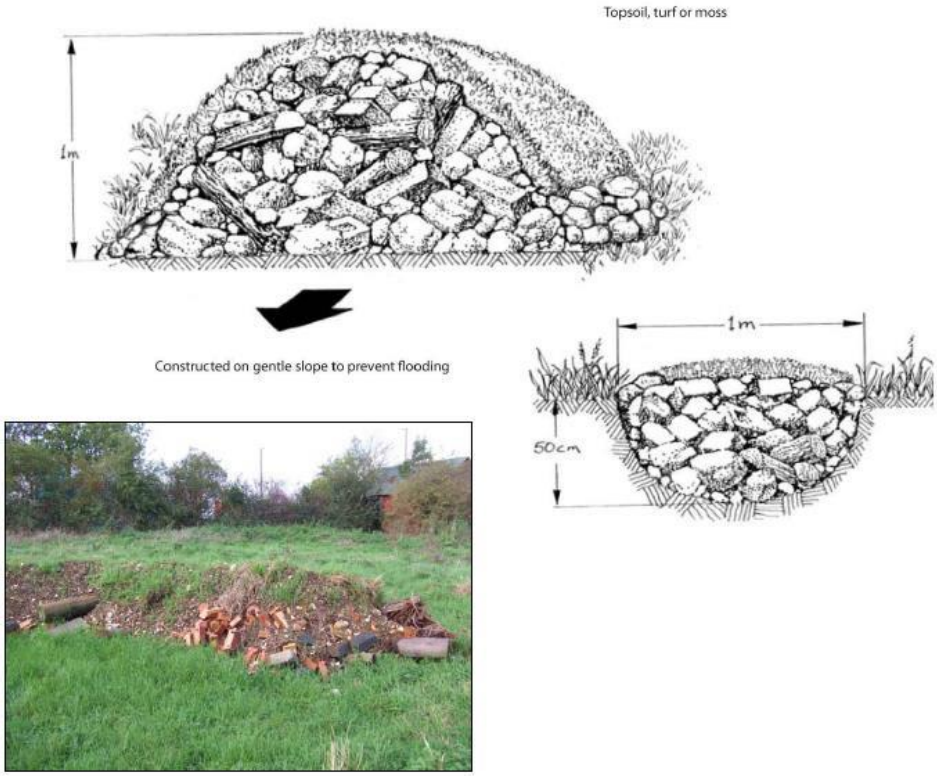
Hibernacula

4.1.4 At least one hibernaculum will be created within the receptor site to provide suitable habitat for shelter and hibernation by GCNs and reptiles. The design of the hibernacula will follow the specifications below:

- It will be at least c.2 m long, by c.1 m wide and c.1 m high.
- The body will be filled with cut logs, brash, rocks *etc.*, to provide numerous crevices. Materials that will decompose will not be placed beneath heavy components such as rocks and logs to avoid the risk of collapse. Wood chippings or loose topsoil can be incorporated to pack some of the larger cavities.
- Access points will be left around the edges of the hibernacula. These are best created by ensuring that timber or stones protrude from the edge, creating crevices that allow animals to get deep inside.
- The bulk of the structure will be sited within an excavated depression *c*.50 cm deep, with the spoil from the excavation used to loosely fill and cover the hibernacula, and turfs laid over the top.
- The rapid establishment of vegetation cover is important to keep the structure together. If this cannot be achieved by use of turf, then seeding with a suitable seed mix may be required.

4.1.5 An example is shown in *Plate 1*.

Plate 1. Example hibernacula (from English Nature, 2016)



Log piles

4.1.6 At least two log piles will be placed in sunny locations. The central core of the feature will be compacted and formed from material of varying sizes, including larger logs and smaller branches. The outer layers of the pile will be laid loosely on top of the compacted core. An example is shown in *Plate 2*.

Plate 2. Example log piles

Hedgerow planting

4.1.7 A small section of hedgerow along the western edge of the site will be removed to widen the access route into the site from Eastbourne Road; the visual landscaping proposals include extensive post-construction hedgerow planting to compensate for this.

4.1.8 The detailed specifications of the tree and hedgerow planting (Drawing reference: P622537_05_02) are still being developed (as of December 2021); however, it is likely that the planting will be raised on an earth bund created from stripped topsoil, to increase the height of the hedgerow such that it will act as a visual screen for the substation. It will comprise of native species such as:

- Hazel;
- Hawthorn;
- Honeysuckle (*Lonicera periclymenum*);
- Oak (*Quercus* sp.);
- Blackthorn (*Prunus spinosa*);
- Field maple;
- Holly (*Ilex aquifolum*);
- Crab Apple (*Malus*);
- Birch (*Betula*); and,
- Hornbeam (*Carpinus* sp.).

4.1.9 Once the specification has been finalised, this EMMS will be updated accordingly.

4.2 Off-site compensation

4.2.1 The off-site land proposed for biodiversity enhancement is located to the east of the development site (*Figure 10*). It was selected to ensure the habitats lost to the development were compensated locally. It comprises agricultural land of low quality but is well-connected to the northern edge of the development via natural features including outgrown hedgerows and a stream.

4.2.2 Various habitat boxes for birds and bats will be erected within the retained and enhanced woodland within the off-site land to increase nesting opportunities. Descriptions on the type of boxes and suitable locations is provided below and the management of these boxes is outlined in *Section 5*.

4.2.3 In addition, dormouse nest boxes will also be installed to provide additional nesting opportunities for dormice while suitable habitats are cleared temporarily. They will also provide a suitable and safe place to relocate any dormouse found during vegetation removal. Information on to the locations and number of boxes to be installed is provided below. The management and monitoring of these (in accordance with the EPSML) is outlined in *Section 5*.

Habitat enhancement

4.2.4 The habitat enhancements outlined below will benefit protected species and compensate for habitats lost to the development, including those suitable for GCNs, reptiles, hazel dormice, foraging bats and foraging badgers. An indicative plan of the enhancements is given in *Figure 10*. They will comprise the following:

- scrub creation;
- wildflower meadow creation;
- woodland enhancements; and
- hedgerow enhancements.

4.2.5 Written agreement with the landowner and inclusion of the land in National Grid's compulsory purchase order (CPO) documents will ensure that it is secured for delivering the proposed enhancements. It will also facilitate the continued management of this site.

4.2.6 Appropriate long-term management of habitats will ensure they reach the quality and condition targets set out in the GCN and dormouse EPSML applications, and achieve biodiversity net gain. Monitoring of habitat condition will also be undertaken (see *Section 6*) and will prompt updates to this document if management needs to be adapted.

Scrub planting

4.2.7 Tree and shrub planting (*c.*1.48 ha) will increase species diversity, create a habitat mosaic, encourage invertebrates, and improve foraging resources for various protected and otherwise noteworthy species recorded in the area, including foraging bats. Tree and shrub planting will consist of fruiting and flowering species such as:

- Hazel;
- Elder (*Sambucus nigra*);
- Hawthorn;
- Honeysuckle;
- Oak (*Quercus* sp.);
- Blackthorn;
- Sycamore (*Acer pseudoplatanus*);
- Alder; and,
- Hornbeam.

4.2.8 Fruit trees will also be considered as they enter senescence or 'veteranise' much earlier than most tree species. This means that they start to decay at a younger age, leading to the development of cavities and other features that could provide roosting sites for bats, as well as other wildlife benefits (e.g. saproxylic invertebrates). The natural veteranisation of fruit trees means they develop features that could support roosting bats earlier than some of the species listed above (Harper *et al.,* 2020), Species to consider include are domestic apple (*Malus domestica*), cultivated varieties of Cherry (*Prunus avium*) and plum (*Prunus* spp).

4.2.9 Initial management of this planting will be required during its establishment, such as watering, replacing dead plants, and managing impacts from animals such as deer.

4.2.10 Deer are abundant in the area, including fallow deer (*Dama dama*), and their browsing could inhibit establishment, flowering and fruiting of the new shrubs and trees therefore, all plants will be protected by deer fencing. Using deer fencing rather than individual tree guards will help the scrub establish and limit the use of undegradable plastic and waste.

Wildflower meadow creation

4.2.11 Based on soil sampling results (RSK, 2021), nutrient levels in the off-site compensation land are currently too high for the successful establishment of a species-rich wildflower meadow and initial management will be needed to reduce these levels.

4.2.12 Ongoing discussions will determine if sub-soil from the development site can be translocated to the off-site compensation land. Following the outcome of these discussions, one of the two following measures will be applied to lower the nutrient levels within the fields:

A. topsoil will be scraped and re-landscaped to create topographically variable habitats (some mounds for scrub planting). This will expose areas of subsoil that will be deeply rotavated so as to mix the remaining topsoil into the sub-soil, thus, by averaging out, lowering nutrient levels in the upper horizons. Then the land will be cropped, *e.g.* with cereals, or by repeatedly taking silage cuts from pasture with no additional fertiliser or manure input so that the nutrients, such as phosphate and nitrate become further depleted; or

B. potentially mixing nutrient-poor subsoil from the development footprint on to the mitigation land to aid in lowing the nutrient richness to acceptable levels. If nutrients remain too high, a crop will be sown with no fertiliser or manure input to aid in depleting nutrients.

4.2.13 Once the ground has been prepared and soils are confirmed to have an acceptably low level of nutrients, an appropriate meadow mix will be sown across *c.*5.8 ha in autumn 2023 in a manner that ensures an even spread. An appropriate sowing and management regime will be discussed with the specialist seed suppliers who have considerable expertise in establishing meadows with their particular mixes, and so the recommendations here may be modified depending on the precise specification agreed.

4.2.14 A lowland meadow mix comparable to MG5 *Cynosurus cristatus - Centaurea nigra* grassland will be sown. Suggested species and quantities to be included are listed in *Table 4, Appendix C.* A mainly grassy sward will be sown with forbs at a lower density than most seed-mixes contain. This will be followed by further sowing of forb seeds into the sward following scarifying, and by selective plug-planting into an established sward in later years as required. This will allow adjustments to the sward to be made in light of data from monitoring of the habitat establishment. Additional species to be sown in damper areas (*i.e.* inundated areas along the woodland edge and at the base of any soil landscaping), are also provided in *Table 4, Appendix C*. Grasses and forbs in these locations will be sown more thinly to accommodate these additional species.

4.2.15 Once sown, no cutting will take place within the first year (although selective weed control may perhaps become necessary). Depending on the growth of seeds sown in the first

year, and ground conditions as a result of landscaping, additional sowing of seeds and targeted plug planting may be required. Information on to the long-term management and monitoring of this habitat is detailed in *Section 5.*

Woodland enhancements

4.2.16 The central strip of woodland between the two arable fields within the off-site compensation land appears to have been unmanaged and there is evidence of damage and extensive browsing from the high numbers of deer in the area. The following measures will be carried out to enhance the woodland:

- Deer fencing (*c*.0.7 km) will be installed along the edges of the woodland to limit the number of deer accessing this site; however, the fencing must not prevent other wildlife such as badgers from moving across the landscape and, therefore, the fencing will include badger gates. The fencing will comprise durable mesh at a height of 1.8m above ground level, with a gage that is suitably small for preventing Muntjac deer from becoming trapped.
- Some limited coppicing and lopping of overhanging limbs can result in renewed understory by encouraging additional light into the woodland; it will be undertaken sensitively to minimise disturbance to wildlife, with only small patches or individual coppices amounting to *c.*50 m^3 in total being cut.
- All material generated from these works will be used to create log and brash piles to increase refuges within the woodland.

4.2.17 These works will be undertaken in late autumn (September to late November 2023) to avoid the breeding bird season, limit the risk of disturbing badgers in their setts and dormice with dependent young, and avoid the hibernation season for GCNs, reptiles and dormice. No trees with features that could support roosting bats will be removed.

4.2.18 As there is a badger sett within the woodland and the woodland is likely to support other protected species (namely, GCN, reptiles, dormice and bats), an updated walkover of the woodland will be undertaken to determine the exact vegetation to be managed. These works will be undertaken in accordance with a PWMS and supervised by an experienced ecologist. The positioning of badger gates within the deer fencing will also be determined and finalised following an updated walkover survey, so that they can be installed along existing mammal paths and runs.

Hedgerows

4.2.19 Ancient hedgerows that surround the perimeter of the arable fields on the off-site compensation land will be maintained throughout the above habitat enhancements. Measures to maintain these hedgerows are outlined in *Section 5.*

Habitat boxes

4.2.20 As the site lacks suitably-sized trees and since the development may cause disturbance to birds and bats once operational, all habitat boxes will be installed outside the development site boundary in locations linking to the site via hedgerows and woodland, to encourage use by species associated with the site (*Figure 9*).

Bird boxes

4.2.21 The installation of a variety of bird nest boxes will provide additional nesting opportunities for a range of bird species. These will target the species of conservation concern recorded during the surveys for breeding birds as well as other notable species that could potentially colonise the site.

4.2.22 The nest boxes will be erected within or along the edge of the strip of woodland on the off-site compensation land where disturbance from lighting and noise is minimal. Boxes will be positioned on the northern and eastern aspects of the trees, thus avoiding strong sunlight and the wettest winds.

4.2.23 In total, twelve bird boxes will be erected to provide nesting opportunities for a range of bird species, including two boxes specifically designed for barn owl; details pertaining to the design, location, position and number of the bird boxes is given in Table 1. Manufacturers are provided as an indication, and equivalent boxes from other sources may be used. Boxes will be made from durable material such as Woodstone.

Table 1. Species targeted, bird box design, location within off-site compensation land, position and number.

Species targeted	Suggested box design	Location	Position	Number
Barn owl	NHBS barn owl nest box	Along the eastern edge and western edge of the woodland	tree-mounted *c.3*-4 m off the ground facing north	2
Great spotted woodpecker	NHBS woodpecker box	Woodland	Tree-mounted *c*.4-6 m off the ground	1
Wren, robin, song thrush	Vivara pro Barcelona woodstone open nest box	Woodland	Tree-mounted *c*.1-6 m off the ground	3
House sparrow	Woodstone house sparrow nest box	Woodland	Tree-mounted *c*.4-6 m off the ground	1
Starling	3S Schwegler starling nest box	Woodland	Tree-mounted *c*.4-6 m off the ground	2
Various species	2M Schwegler nest box with 32mm hole	Woodland	Tree-mounted *c*.4-6 m off the ground	3

Bat boxes

4.2.24 At least seven bat boxes will be mounted onto trees in the central strip of woodland, c.4-6 m off the ground facing different directions to provide a variety of micro-habitats. They will provide additional roosting opportunities for various bat species. Larger boxes will be used that can also provide opportunities for maternity colonies and hibernating bats. Details pertaining to the design and number of the bat boxes is given in Table 2.

Manufacturers are provided as an indication, and equivalent boxes from other sources may be used; all designs will be 'self-cleaning'

Table 2. Suggested bat box design, purpose and number.

Suggested box design	Purpose	Number
1FS Schwegler large colony bat box	Can be used as a summer roost or nursery site. Attractive to noctule (*Nyctalus noctula*) and brown long-eared bat (*Plecotus auritus*)	2
1FW bat hibernation box	Suitable for hibernation in winter and colony summer roosting	1
1FF Schwegler bat box with built-in wooden rear panel	Can be used as a summer roost or nursery site suited to various species	2
2F Schwegler bat box (general purpose)	Can be used as summer roost	2

Dormouse nest boxes

4.2.25 A total of 25 dormouse nest boxes will be installed along an outgrown hedgerow running north to south, connected to the woodland along the northern boundary of the site and other areas of woodland to the north. The nest boxes will be installed in March-April 2023 ahead of planned works to clear an area of woodland around Tower 4VM069, prior to the partial closer of the main badger sett in July to November 2023 and the demolition of the tower including its footings in January 2024.

4.2.26 The dormouse boxes will be maintained and monitored as part of the EPSML. Details relating to these are provided in *Section 5*.

5.0 LONG-TERM MANAGEMENT AND MONITORING

5.1 Responsibilities

5.1.1 This long-term management and monitoring strategy will be secured by National Grid funding and will remain in place for 25-30 years in line with the BNG Defra Metric.

5.1.2 It will be the responsibility of National Grid or their appointed third party(ies) to ensure all mitigation is implemented as stated (not least, to ensure compliance with any licences and planning conditions in force) and, to ensure any remedial measures that are required for the success of the habitat creation are undertaken.

5.1.3 It is the responsibility of National Grid or their appointed contractor to ensure monitoring surveys (as detailed in *Section 5.3*) are carried out by suitably experienced ecologists using the methods set out in this EMMS and to comply with licensing. It will be the responsibility of the appointed ecological consultant to complete an assessment and report the outcomes of their findings, along with any recommendations that would be necessary for the success of the habitat creation to meet the conditions set out for biodiversity net gain. It will be the responsibility of National Grid or their appointed contractor to ensure that any recommendations pertaining to changes or updates to this EMMS are implemented.

5.1.4 It will be the responsibility of National Grid or their appointed contractor to ensure access to the land is maintained for on-going management provisions and monitoring surveys, as detailed in *Section 5.2 and 5.3*.

5.2 Management regimes

5.2.1 Long-term management will help enhanced and newly created habitats to reach any condition targets agreed for biodiversity net gain, and benefit species affected by the development. Management regimes are outlined in *Table 5, Appendix D* for the first five years after planting and sowing of seeds; these may be subject to changes depending on the findings of future botanical monitoring surveys. These management prescriptions will be outlined and agreed for the first five years and reviewed regularly. At least 12 months before the expiry of each five-year programme, a new programme for the following five successive years will be drafted and agreed.

On-site receptor area

5.2.2 In the absence of grassland management within the receptor area, the grassland is likely to become overgrown by coarse weeds and scrub. Therefore, annual strimming in September / October to a height of no less than 300mm above ground level is required to maintain this grassland for GCN and reptiles. This frequency will be reviewed after five years and, where rabbits or deer are naturally grazing this area or, where alternative measures are possible such as the use of livestock to graze the grassland, this EMMS will need to be updated accordingly.

Scrub maintenance

5.2.3 All newly planted trees and shrubs will need to be maintained for at least the first ten years to ensure successful establishment and growth. This will involve the following:

- Tree stakes and ties will be inspected and maintained if loose, broken or decayed, and removed when no longer required.
- Deer fencing will be inspected annually. Where damaged, it will be repaired or replaced to prevent deer from browsing.
- Shrubs that are naturally low-growing will be cut back at least every other year during the winter months (October – February) to encourage healthy, bushy growth, and to increase the number of flowers produced.
- Any other tree or shrub-pruning will be kept to a minimum (*e.g.* dangerous branches, not all dead wood). It will respect good arboricultural practice (*e.g.* not damaging the stem or bark, keeping wounds as small as possible, and cutting cleanly back to sound wood); and it will take place in winter outside the late winter to early spring sap-flow period.
- Winter pruning will also avoid the nesting bird period (March to August inclusive); and pruning later rather than earlier will prolong opportunities for birds to feed on fruits (and invertebrates).
- Any dead or dying plants will be replaced at the end of the growing season (*i.e.* from 1 November to 30 December) for the first five years following planting.
- To allow the establishment of new planting, the area will be kept clear of weeds by undertaking regular strimming around the plants, taking care not to damage them.

Wildflower meadow management

5.2.4 Management after the first year or until established (likely after three to five years) will consist of cutting (with removal of arisings) at certain times of year and light grazing at others (or scarification in default of grazing) to control any pioneer weeds and help maintain a balance between grasses and wildflower growth. The long-term management of the wildflower meadow will depend on the soil fertility and plant species growing, and it will need to be reviewed and adapted as the sward develops. Management requirements typically comprise traditional hay meadow practices such as annual hay cuts and grazing if the winter is relatively warm and dry.

5.2.5 No cutting of the targeted sward will take place in the first year after seed-sowing, except locally if there are dense stands of weeds. Tall growth may, however, be strimmed off and weeds such as docks and thistles may need pulling out by hand. Hay cuts will be undertaken twice a year, once in early July and again in September / October (Natural England, 2013), unless recommendations following annual monitoring surveys identify that changes in these management regimes are required to ensure the success of this habitat.

5.2.6 Should any areas of grassland fail to establish or become damaged, plug planting of targeted species in the first available autumn season will likely be required to infill these failed areas.

Woodland management

5.2.7 If any damage has occurred to the deer fencing, then this will need to be repaired to ensure the woodland is protected from excessive deer browsing.

5.2.8 While there are currently no other specific requirements for on-going management, annual botanical surveys to assess the condition of the woodland against any targets may identify the need to undertake additional coppicing and lopping of overhanging limbs to encourage additional light into the woodland and improve the ground flora. If this measure is required, it will be undertaken sensitively to minimise disturbance to wildlife, by only cutting small patches or individual coppices amounting to *c.*50 m^2 in total at any one time. The works will be undertaken in accordance with a PWMS and under the supervision of an experienced ecologist.

Hedgerow maintenance

5.2.9 Newly planted hedgerows on the site will be maintained for at least the first ten years, in a similar way to the newly planted scrub; this will involve:

- Deer fencing will be inspected annually. Where damaged, it will be repaired or replaced to prevent deer from browsing
- Pruning will be kept to a minimum (*e.g.* dangerous branches, not all dead wood). It will respect good arboricultural practice (*e.g.* not damaging the stem or bark, keeping wounds as small as possible, and cutting cleanly back to sound wood); and it will take place in winter outside the late winter to early spring sap-flow period.
- Winter pruning will also avoid the nesting bird period (March to August inclusive); and pruning later rather than earlier will prolong opportunities for birds to feed on fruits (and invertebrates).
- Any dead or dying plants will be replaced at the end of the growing season (*i.e.* from 1 November to 30 December).
- To allow the establishment of new planting, the area will be kept clear of weeds by undertaking annual strimming around the plants, taking care not to damage them. This will be done in September / October within the reptile and GCN active season whilst avoiding nesting birds and, the breeding and hibernating dormice periods.

5.2.10 Ancient hedgerows that surround the perimeter of the off-site compensation land will be maintained as a hedge by annual cutting of the field margins in September / October to height no less than 300mm above ground level. This will prevent any newly planted scrub from encroaching the hedgerows. It will also aid in preventing ground flora in the undergrowth of the hedgerows from becoming shaded out. In addition, these hedgerows will be proportionally cut annually on a three-year rotation (one side one year, the opposite side the next and the top the following year) to maintain their existing height and structure and provide food for wildlife. They will be cut in the winter period to avoid the nesting bird season and dormouse breeding period.

Wild Strawberry and Heath Speedwell management

5.2.11 Periodic watering (weather-dependent) of the transplanted plants will continue as necessary during the growing season in 2022, to facilitate their establishment.

5.2.12 Strimming in September / October throughout construction to a height of no less than 300mm above ground level is likely to be required to prevent surrounding vegetation from encroaching the transplants.

Habitat boxes maintenance

Bird boxes

5.2.13 Where it is necessary to clean, repair or replace damaged or broken bird boxes, this will be undertaken during October to January inclusive when birds are highly unlikely to be nesting in them. If nesting birds are found, cleaning/repairs must be postponed until the chicks have fledged. If broken or damaged, they will be replaced with boxes with the same or a similar design. Should additional information or advice for the ongoing maintenance and / or replacement of these boxes be required, this will be obtained from the manufacturer.

Bat boxes

5.2.14 Self-cleaning bat boxes generally require no maintenance (they have a tilted base to allow droppings to fall out). However, if broken or damaged, they will be replaced. Bat boxes will first be checked by a bat-licensed ecologist before removal to confirm there are no roosting bats present.

Dormouse nest boxes

5.2.15 The nest boxes will be regularly checked during monitoring surveys; they will be cleaned out at the end of each survey season or over the winter period by a dormouse-licensed ecologist. If broken or damaged, they will be replaced with the same or similar design.

5.3 Monitoring

5.3.1 To ensure habitat enhancement and creation are progressing towards the condition targets set out for biodiversity net gain and, to comply with licence agreements with Natural England, ecological monitoring surveys including, botanical, bat and hazel dormouse surveys have been proposed to meet four measurable objectives (*Table 3*).

Table 3. Measurable objectives, test and triggers for remedial actions

Objective A. To provide at least 10% biodiversity net gain through the enhancement of poor-quality agricultural land and the creation of ecological receptor sites	
Test	The Defra metric 3.0 will be used to score the enhanced habitats and to check the success of the management practices and condition of the habitats.

Triggers for remedial action	• Dead plants • Areas where certain species or pioneer weeds have taken over • Condition scores do not change (or are worse) after twelve months • Excessive browsing by deer
Objective B. To ensure at least 50% of the translocated Wild Strawberry and Heath Speedwell plants survive.	
Task	Checks for the success of these plants will be undertaken throughout construction.
Triggers for remedial action	Where plants are not thriving, the cause(s) of this will need to be determined (e.g. too dry or wet, damage from works, encroaching weeds) and addressed.
Objective C. To provide additional foraging resources for bats, as demonstrated by an increase in relative activity	
Test	Activity levels will be measured prior to construction to provide a baseline, and at specified intervals thereafter. Measurements will be made within the woodland immediately to the north of the development site (to demonstrate activity levels are unchanged or improved) and in the off-site compensation land (to demonstrate activity levels are improved).
Triggers for remedial action	If relative activity levels have not improved, determine reasons (changes to habitats, disturbance, weather patterns affecting bat species more widely). Address any issues within National Grid's control (e.g. habitat management or disturbance).
Objective D. To ensure no net loss in dormouse habitat, and secure improved habitat quality	
Test	Dormouse nest-box surveys show improved occupation rates over time and/or improved breeding success.
Triggers for remedial action	If occupation rates and/or breeding success have not improved, determine reasons (changes to habitats, weather patterns affecting dormice more widely). Address any issues within National Grid's control (e.g. habitat management). These could consist of in-fill planting where natural regeneration has failed or better deer protection of certain areas to encourage natural growth.

5.3.2 *Table 6, Appendix D* outlines the ecological surveys proposed (subject to any changes/additions required in licence agreements with Natural England).

Habitats

Objective A. To provide at least 10% biodiversity net gain through the enhancement of poor-quality agricultural land and the creation of receptor sites

5.3.3 The overall aim is to establish species-rich lowland meadow and mixed scrub in good ecological condition, and to maintain existing woodland in at least moderate condition. Botanical surveys will be undertaken to record the type and abundance of plant species growing and, to assess the success of the management practices and condition of the habitats.

5.3.4 Surveys of all habitats enhanced or newly created as part of the mitigation and compensation strategy will be undertaken in the months of May to July using UK Habitat Classification (UKHab) methods and quadrat sampling. The habitat surveys will assign Primary and Secondary Habitat Codes where appropriate and determine the condition rating of each habitat type in accordance with Defra's Biodiversity Metric 3.0: Technical supplement, with justifications given.

5.3.5 The surveys will be undertaken for the first three years, followed by surveys in the 5th, 7th, 10th, 15th, 20th, 25th and 30th year following creation. NVC surveys and fix-point photography will be undertaken from Year 5.

5.3.6 The survey findings will be outlined in a short annual report, especially in relation to habitat change. If it shows that the habitats are not achieving the condition assessment targets set out for biodiversity net gain, then the necessary changes to ecological management regimes based on the recommendations given in the annual report, will need to be adopted and embodied in updates to this EMMS document.

Objective B. To ensure at least 50% of translocated Wild Strawberry and Heath Speedwell plants survive.

5.3.7 Checks of these plants will be made in late June / May during construction to ensure at least half of these plants have successfully taken. Where plants are not thriving, the cause(s) of this will need to be determined (e.g. too dry or wet, damage from works, encroaching weeds) and addressed.

Bats

Objective C. To provide additional foraging resources for bats, as demonstrated by an increase in relative activity. A secondary objective is to test for the impacts of disturbance during construction only.

5.3.8 Relative bat activity will be measured using static bat detectors. Four detectors will be installed: two in the woodland to the north of the development site, and two within the off-site compensation land to record bat species and activity. Recordings will be made for a minimum of five consecutive nights, once per month in the active season (April to October). These surveys will be undertaken within the woodland during construction only (to monitor for the impacts of disturbance, compared to the baseline already collected)

and on the off-site mitigation land prior to habitat creation, then in the 3rd, 5th, 7th and 10th years following habitat creation.

5.3.9 The recordings will be analysed using appropriate software, which is likely to differ as time passes (efforts will be made to standardise across software types as far as possible). A report will outline the survey findings and this will be updated following each survey to allow comparison of levels of relative activity. The aim of the off-site monitoring is to demonstrate whether the mitigation and compensation measures provided within the off-site compensation land provide an improved foraging resource for bats, to offset the habitat losses associated with the development.

5.3.10 Where the results of these surveys conclude that bat activity levels are low or unchanged, the reasons for these will need to be determined such as changes to habitats, disturbance, weather patterns affecting bat species more widely etc. Any issues that are within National Grid's control (e.g. habitat management or disturbance) will trigger remedial action.

Hazel dormice

Objective D. To ensure no net loss in dormouse habitat, and secure improved habitat quality

5.3.11 The 25 nest boxes erected as part of the EPSML to provide additional nesting opportunities will be subject to monitoring surveys. The extent of these surveys will be confirmed by the licensing process with Natural England; however, these are likely to consist of up to three surveys in alternate months throughout the dormouse active season (April to October) on alternate years' for up to five to six years.

5.3.12 The purpose of these surveys is to demonstrate improved occupation rates overtime and / or increased breeding success for hazel dormice. If hazel dormice are not being recorded, the reasons for this must be determined. Issues within National Grid's control (e.g. habitat management) will trigger remedial actions. These could consist of in-fill planting where natural regeneration has failed or better deer protection of certain areas to encourage natural growth.

6.0 CONCLUSIONS

6.1.1 This EMMS prescribes mitigation, enhancement and management measures regarding protected and notable habitats and species in relation to the National Grid development at Little Horsted, East Sussex. These measures are summarised in *Table 4* below.

6.1.2 Ecological features identified as requiring specific mitigation, enhancement and management measures comprise:

- Habitats of Principal Importance (particularly hedgerows and woodland);
- notable plant species (specifically Wild Strawberry and Heath Speedwell);
- GCN;
- common reptile species;
- breeding bird species (potentially including barn owls);
- roosting, foraging and commuting bats;
- hazel dormice; and
- badgers.

6.1.3 For many of these ecological features it will be necessary to implement mitigation measures prior to and during construction; notably species translocations (for notable plants, GCN and reptiles), precautionary working methods (including ecological supervision under licence for GCN and hazel dormice), and (in relation to the removal of Tower 4VM069 and its foundations) the potential of a partial closure of a main badger sett.

6.1.4 For several of these species it will be necessary to obtain PSMLs, which will specify required mitigation and monitoring measures (namely GCN, hazel dormice and potentially (depending on the outcome of further surveys) badgers and roosting bats).

6.1.5 Further surveys are recommended in this document for roosting bats (in trees and buildings), barn owl and badger.

6.1.6 Habitat creation and enhancement measures are to be delivered on-site (notably a receptor area for GCN and reptiles) and off-site (notably the creation/enhancement of scrub, wildflower meadow and woodland habitats).

6.1.7 Created and enhanced habitats will be subject to long-term management and monitoring to ensure they continue to be fit for purpose and to maximise their value to the specific species addressed in this document, as well as wider biodiversity in general.

Table 4. Summary of mitigation measures, management and monitoring

Ecological feature	Mitigation/creation/enhancement measures	Management and monitoring (see *Appendix D* for details)
Priority and notable habitats	• Best practice construction methods to minimise habitat loss/disturbance (particularly regarding hedgerows and woodland). • Creation/enhancement of scrub, wildflower meadow, woodland and hedgerows.	• Long-term management of scrub, wildflower meadow, woodland and hedgerows. • Botanical monitoring surveys to ensure habitats reach their targeted condition.
Wild Strawberry and Heath Speedwell	• Transplanting from works areas into pre-determined receptor area.	• Transplanted populations to be assessed within botanical monitoring surveys.
Great crested newts	• Procurement of EPSML from Natural England. • Preparation of receptor area in readiness for translocation (including installation of herpetofauna fencing). • Minimum 30-day translocation of GCN to pre-determined receptor area. • Precautionary working methods during habitat clearance and construction (including sensitive timing of works, and ecological supervision during vegetation clearance and destructive search).	• Regular monitoring of herpetofauna fencing to ensure it continues to be fit for purpose (with repairs under ecological supervision as appropriate). • Long-term management of receptor area and suitable created habitat.
Common reptiles	• Preparation of receptor area in readiness for translocation (including installation of herpetofauna fencing). • Translocation of reptiles to pre-determined receptor area. • Precautionary working methods (including sensitive timing of works, and ecological supervision during vegetation clearance and destructive search).	• Regular monitoring of herpetofauna fencing to ensure it continues to be fit for purpose (with repairs under ecological supervision as appropriate). • Long-term management of receptor area and suitable created habitat.
Breeding birds	• Avoidance of suitable nesting habitat clearance during March-August inclusive where possible.	• Annual cleaning/repair/replacement of nest boxes. • Long-term sympathetic habitat management.

Ecological feature	Mitigation/creation/enhancement measures	Management and monitoring (see *Appendix D* for details)
	• Ecological supervision of suitable nesting habitat clearance during March-August inclusive where avoidance is unfeasible. • Pre-construction survey of barn east of site to determine any use by nesting barn owls. • Installation of nest boxes in retained/enhanced/created habitat.	
Roosting bats	• Update surveys of trees and buildings to identify any bat roosts that may be affected (with EPSMLs obtained from Natural England if needed). • Precautionary working methods to minimise significant disturbance of bats during construction. • Sensitive lighting design during construction and operation. • Installation of bat boxes in retained/enhanced/created habitat.	• Ongoing cleaning/repair/replacement of bat boxes. • Long-term sympathetic habitat management. • Any requirements detailed within subsequent EPSMLs (depending on outcome of update surveys of trees and buildings).
Commuting and foraging bats	• Precautionary working methods to minimise significant disturbance of bats during construction. • Sensitive lighting design during construction and operation. • Noise screening along the northern and eastern edges of the site.	• Long-term sympathetic habitat management.
Hazel dormice	• Procurement of EPSML from Natural England. • Installation of nest boxes in retained suitable habitat. • Precautionary working methods during habitat clearance and construction (including ecological supervision).	• Ongoing cleaning/repair/replacement of nest boxes. • Ongoing monitoring surveys (as stipulated within EPSML). • Long-term sympathetic management of woodland and hedgerows.
Badgers	• Regular surveys to identify badger activity (particularly any new sett locations within/near works areas). • Procurement of protected species licence from Natural England (if required) for the partial closure of the sett prior to the removal of Tower 4VM069 and its foundations.	• Long-term sympathetic habitat management • Any requirements detailed within subsequent PSMLs for monitoring

Ecological feature	Mitigation/creation/enhancement measures	Management and monitoring (see *Appendix D* for details)
	• Precautionary working methods to minimise potential disturbance during construction.	

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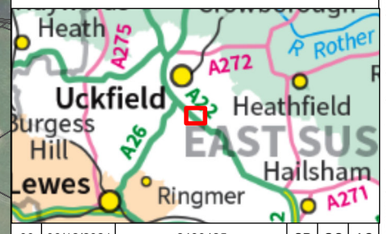
FIGURES

548500 549000 549500

118500 118000 117500

Legend:

Site boundary



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 1:
Site Location Map

0 60 120 180
Metres
SCALE: 1:5,000 @ A3

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118150 118100 118050 118000 117950 117900 117850 117800 117750

Eastbourne Road

A22

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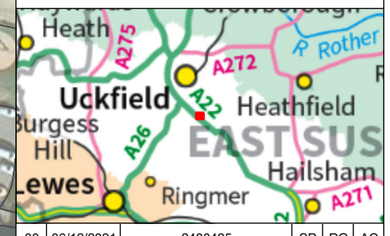
Legend:

Site boundary

UKHAB Habitats

- g3c - Other neutral grassland
- H2a - Hedgerow (priority habitat)
- h3h - Mixed scrub
- u1c - Artificial unvegetated, unsealed surface
- w1h - Other woodland; mixed
- w1h6 - Other woodland; mixed; mainly conifer



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 2:

Baseline habitats of development site

0 10 20 30

Metres

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Eastbourne Road

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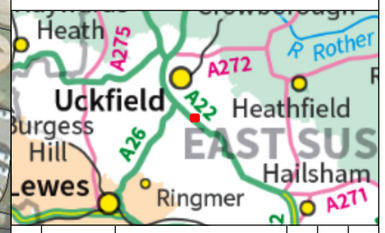
Legend:

Site boundary

Rare plants

Existing plants to be relocated

Translocation area



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 4:

Translocation of Rare Plants

0 10 20 30

Metres

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Eastbourne Road

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1

6

Legend:

Site boundary

500m buffer of site boundary

GCN Survey Results

GCN present - small population

GCN likely absent

Dry

No access

50m buffer of pond with GCN present

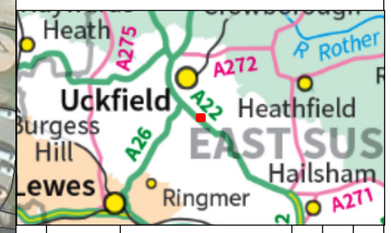
250m buffer of pond with GCN present

500m buffer of pond with GCN present

Capture and Exclusion

GCN exclusion fencing

Cattle grid



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 5:
Exclusion fencing locations within the redline boudary

0 10 20 30
Metres

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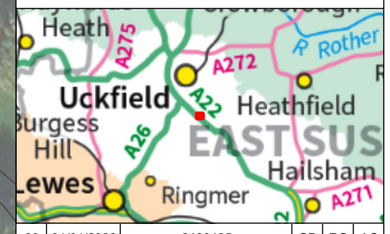
118050 118000 117950 117900 117850 117800 117750 117700

Eastbourne Road

A22

Legend:

- Site boundary
- GCN exclusion fencing
- National Grid compound GCN fencing



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Little Horsted Grid Substation

RSK biocensus
EXPERTS IN ECOLOGY

TITLE: Figure 6:
Exclusion fencing around National Grid Compound

0 10 20 30
Metres
SCALE: 1:1,500 @ A3

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Eastbourne Road

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Legend:

Site boundary

Impacts

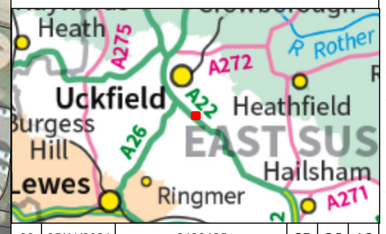
Permanent loss of optimal habitat in 2022

Temporary loss of optimal habitat in 2022

Permanent loss of sub-optimal habitat in 2022

Permanent loss of sub-optimal Hedgerow in 2022

Temporary loss of optimal habitat in 2023



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 7:
Suitable Dormouse Habitat To Be Cleared

0 10 20 30
Metres
SCALE: 1:1,500 @ A3

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118500 118400 118300 118200 118100 118000 117900 117800 117700 117600 117500

Eastbourne Road

Eastbourne Road

A22

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A22

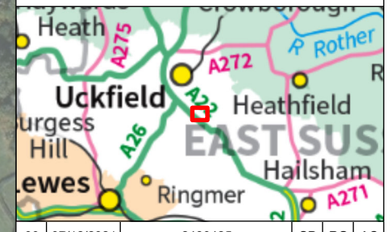
Sandhill Lane

Sandhill Lane

Sandhill La

Legend:

- Site boundary
- Off-site mitigation area
- Bat and bird boxes to be installed as directed by ecologist within enhanced woodland
- Location of 25 Dormouse boxes



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 9:

Habitat Box Locations

0 50 100 150

Metres

SCALE: 1:4,000 @ A3

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118500 118400 118300 118200 118100 118000 117900 117800 117700 117600 117500

Eastbourne Road

Eastbourne Road

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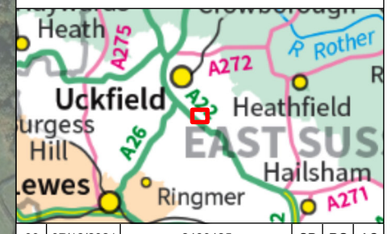
Sandhill Lane

Sandhill Lane

Sandhill La

Legend:

- Site boundary
- Off-site mitigation area
- Woodland enhancment
- Scrub planting
- Meadow enhancment
- Receptor site to be enhanced
- Hibernacula
- Log pile



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Little Horsted Grid Substation

RSK biocensus EXPERTS IN ECOLOGY

TITLE: Figure 10:

Habitat Creation

0 50 100 150

Metres

SCALE: 1:4,000 @ A3

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APPENDIX A – WILDLIFE LEGISLATION

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (Habitats Directive) 1992
https://www.legislation.gov.uk/eudr/1992/43

The Habitats Directive 1992 requires EU Member States to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of community interest, which are listed under Annex I, II, IV and/or V. Species listed under Annex IV are known as 'European Protected Species' (EPS) and have retained their protected status in UK domestic legislation post-Brexit.

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979
Accessible via: **https://jncc.gov.uk/our-work/the-convention-on-the-conservation-of-migratory-species-of-wild-animals/#convention-summary**

The Bonn Convention was adopted in 1979 and came into force in 1985. Contracting Parties work together to conserve migratory species and their habitats by providing strict protection for endangered migratory species (listed in Appendix I of the Convention), concluding multilateral agreements for the conservation and management of migratory species which require or would benefit from international cooperation (listed in Appendix II), and by undertaking cooperative research activities. The UK Government ratified the Bonn Convention in 1985. The current legally-binding Agreements under the Convention include EUROBATS[1].

The Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1979
https://www.coe.int/en/web/bern-convention

The principal aims of the Bern Convention 1979 are to ensure the conservation and protection of wild plant and animal species and their natural habitats (listed in Appendices I and II of the Convention), to increase cooperation between contracting parties, and to regulate the exploitation of those species (including migratory species) listed in Appendix III. To this end, the Bern Convention imposes legal obligations on contracting parties, protecting over 500 wild plant species and more than 1,000 wild animal species. The UK Government ratified the Bern Convention in 1982.

National Legislation

The following pieces of domestic legislation apply to biodiversity protection in the UK.

The Wildlife and Countryside Act (WCA) 1981
https://www.legislation.gov.uk/ukpga/1981/69

The Wildlife and Countryside Act 1981 (as amended) is the primary piece of legislation relating to nature conservation in the UK, though it has been adapted in different ways in the devolved

[1] More information available at https://jncc.gov.uk/our-work/agreement-on-the-conservation-of-populations-of-european-bats-eurobats

administrations. It was initially enacted to implement the Bern Convention, Bonn Convention and the Birds Directive (described above).

The act is supplemented by provisions in the Countryside and Rights of Way (CRoW) Act 2000 and the Natural Environment and Rural Communities (NERC) Act 2006. In addition to the Habitat Regulations (described below), the WCA provides protection for species listed in Schedules 1 (birds), 5 (other animals) and 8 (plants) of the Act. It also sets out, in other schedules, important and invasive species which are legally protected or require management.

All species of bird are protected under the WCA. The legislation makes it an offence to intentionally:

a) kill, injure or take any wild bird;
b) take, damage, or destroy the nest of any wild bird while that nest is in use or being built; or
c) take or destroy an egg of any wild bird.

Those species of birds listed on Schedule 1 of the WCA are afforded additional protection, which deems it an offence to intentionally or recklessly:

a) disturb any wild bird included in Schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or
b) disturb dependent young of such a bird.

Under Section 9 of the WCA, for animals listed on Schedule 5, it is an offence in England and Wales to intentionally or recklessly:

- kill, injure or take any wild animal listed on Schedule 5*;
- possess or control any live or dead those wild animals or anything derived from it*;
- damage or destroy any structure or place which wild animals listed on Schedule 5 uses for shelter or protection*;
- disturb any such animal while it is occupying a structure or place of shelter or protection;
- obstruct access to any structure or place used by any such animal for shelter or protection; and
- sell, offer or expose for sale, or have in their possession or transports for the purpose of sale, any live or dead wild animal listed on Schedule 5 or any part of, or anything derived from such an animal.

Asterisked clauses do not apply to European Protected Species (see 'Habitats Regulations' below). Species commonly found on development sites include widespread species of reptiles: common lizard (*Zootoca vivipara*); slow-worm (*Anguis fragilis*); grass snake (*Natrix helvetica*); and adder (*Vipera berus*). These four reptile species receive partial protection, which prevents the intentional or deliberate killing and injuring of reptiles or offering them for sale.

Section 14(2) states that it is an offence to plant or otherwise cause to grow any plant in the wild at a place outside its native range.

There is no provision within the Act for derogation licences to be issued for the purposes of development, although Section 10 provides a defence in cases that may be considered to be: *"the incidental result of a lawful operation and could not reasonably have been avoided"* if certain conditions are met.

Section 16(i) of the Act does make provision for derogation licences to be issued *"for the purposes of preserving public health or public … safety"*. For confirmation of this, it would be appropriate to consult Natural England.

The Conservation of Habitats and Species Regulations (Habitat Regulations) 2017
https://www.legislation.gov.uk/uksi/2017/1012

The Habitats Regulations 2017 consolidated the various amendments made to the 1994 Habitat Regulations, which were developed to implement the Birds Directive and Habitats Directive at a national level, though this consolidation only applies in England and Wales.

The Regulations (as amended) provide for the designation and protection of the national site network (formerly 'Natura 2000 sites'), the adaptation of planning and other controls for those sites, and the protection of EPS (listed on Schedules 2 and 5).

The 2017 Regulations (England and Wales, Reg. 43) deems it an offence to:

a) deliberately capture, injure or kill a wild animal of a EPS,
b) deliberately disturb wild animals of any such species,
c) deliberately take or destroy the eggs of such an animal, or
d) damage or destroy a breeding site or resting place of such an animal.

For the purposes of paragraph (b), disturbance of animals includes in particular any disturbance which is likely to:

a) impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate; or
b) to affect significantly the local distribution or abundance of the species to which they belong.

There are also restrictions on transport, possession and sale.

It is possible to obtain a derogation licence from Natural England to permit activities which would otherwise contravene the regulations above, including for development purposes, when certain conditions are met. Failure to satisfy the Regulations and obtain a licence where required could result in prosecution and lead to fines and possible imprisonment.

Currently (2021), all EPS are also listed on Schedule 5 of the WCA (outlined above), as it applies in England and Wales, though only some clauses of the WCA apply (Section 9 4(b), (c) and 5). EPS often encountered on development sites include GCN (*Triturus cristatus*), all species of bats and dormice (*Muscardinus avellanarius*).

Countryside and Rights of Way Act 2000
https://www.legislation.gov.uk/ukpga/2000/37

The Countryside and Rights of Way (CRoW) Act 2000 provides for public access on foot to certain land types, amends the law for public rights of way, increases protection for SSSIs, and strengthens wildlife enforcement legislation. It applies only in England and Wales.

The Natural Environment and Rural Communities (NERC) Act 2006
https://www.legislation.gov.uk/ukpga/2006/16

The Natural Environment and Rural Communities (NERC) Act 2006, Section 40 requires that any public body or statutory undertaker in England must have regard to the purpose of conservation of biological diversity in a manner that is consistent with the exercise of their normal functions.

This may include enhancing, restoring or protecting a population or a habitat. The intention is to help ensure that biodiversity becomes an integral consideration in the development of policies, and that decisions of public bodies work with the grain of nature and not against it.

As part of this duty, statutory undertakers must have regard to the list of habitats and species which are of principal importance for the purpose of maintaining and enhancing biodiversity. For England, the duty to compile such a list is captured under Section 41 of the NERC Act, which are accessible online via the National Archive[2].

The Hedgerows Regulations 1997
https://www.legislation.gov.uk/uksi/1997/1160/made

The Hedgerows Regulations 1997 provide protection for 'important' hedgerows for which replanting is not a substitute. The 'importance' of a hedgerow depends upon several archaeological, wildlife and landscape criteria (which are outlined in the Regulations). The regulations deem it an offence to remove an 'important hedgerow' without prior notification to the relevant local planning authority.

Protection of Badgers Act 1992
https://www.legislation.gov.uk/ukpga/1992/51

Badgers and their setts are protected under the Protection of Badgers Act 1992 (England, Wales and Scotland). The key part of this legislation in relation to the development are in Section 3, which deems it an offence to:

a) damage a badger sett or any part of it;
b) destroy a badger sett;
c) obstruct access to, or any entrance of, a badger sett;
d) disturb a badger when it is occupying a badger sett,
e) intend to do any of those things or be reckless as to whether those actions would have any of the consequences listed above.

Derogation licences may be obtained from Natural England**Error! Bookmark not defined.** under Section 1 0 of the Act for the purpose of development, to permit activities which would otherwise be unlawful.

Note: there are additional provisions relating to badgers under the WCA Section 11 (Prohibition of certain methods of killing or taking wild animals).

The Wild Mammals (Protection) Act 1996
https://www.legislation.gov.uk/ukpga/1996/3

All wild mammals are protected by The Wild Mammals (Protection) Act 1996 (as amended). This makes it an offence to mutilate, kick, beat, nail, or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal.

Invasive Alien Species (Enforcement and Permitting) Order 2019 (https://www.legislation.gov.uk/uksi/2019/527/contents/made)

The Invasive Alien Species (Enforcement and Permitting) Order applies principally in England and Wales and the UK's offshore marine area, but also controls imports and exports from the UK

2 https://webarchive.nationalarchives.gov.uk/ukgwa/20140712055944/http:/www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx

(including Scotland and Northern Ireland). It lists species of concern which cannot be imported, kept, bred/grown, transported, sold, used, allowed to reproduce, or released into the environment. This Order replaces some elements relating to invasive species in the Wildlife and Countryside Act 1981 (as amended).

National, regional and local policy and guidance of relevance

Planning policy relating to ecology and nature conservation is set out below.

National Planning Policy Framework 2019
Access via: https://www.gov.uk/government/publications/national-planning-policy-framework--2

The National Planning Policy Framework (NPPF) sets out the Government's planning policy in England at the national level. It does not contain specific policies for nationally significant infrastructure projects, which are determined in accordance with the decision-making framework in the Act and relevant National Policy Statements for major infrastructure, as well as any other matters that are relevant (which may include the NPPF). Section 15 (paragraphs 170-183) of the NPPF specifies the requirements for conserving and enhancing the natural environment through the planning and development process to minimise impacts on habitats and biodiversity.

Planning Practice Guidance 2019
Accessed via: https://www.gov.uk/government/collections/planning-practice-guidance

The Planning Practice Guidance 2019 is a web-resource to support the NPPF, including guidance for Environmental Impact Assessments (https://www.gov.uk/guidance/environmental-impact-assessment) and the Natural Environment (https://www.gov.uk/guidance/natural-environment). The guidance for the Natural Environment explains key issues in implementing the NPPF to protect and enhance the natural environment, including local requirements. The guidance outlines what evidence needs to be taken into account in preparing planning applications to identify and map local ecological networks. It also outlines how biodiversity can be taken into account in preparing a planning application.

Government's 25-Year Environment Plan 2018
Accessed via: https://www.gov.uk/government/publications/25-year-environment-plan

The Government's 25-Year Environment Plan 2018 sets out how the UK Government intends to improve the natural health of the UK through improving land, air and water quality, as well as setting out how the effects of climate change will be tackled. The plan promotes the creation or restoration of wildlife-rich habitat outside the protected site network and seeks to recover threatened, iconic or economically important species of animals, plants and fungi, and where possible to prevent human induced extinction or loss of known threatened species in England. The plan sets out a number of goals and corresponding policies that look at managing land sustainably, improving and enhancing landscapes and biodiversity for both marine and terrestrial environments, improving resource efficiency and reducing waste and pollution, whilst also examining the UK's contribution to improving the global environment.

Activity	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22
Programme as envisaged							
Contingency							
Site access for advanced ecological works (assumes March / April 2022 access to redline boundary with remaining areas including tower 69 and offsite contingency land available through CPO in April / May 2023)							
Pre-construction works (2022)							
Updated badger survey where access is permitted							
Reassessment of status of barn owl required							
Installation of 25 dormouse boxes (where land owner has agreed)							
Habitat creation on site for GCN / reptile translocation							
Chain-link northern edge of the site to prevent badgers digging close to the fence							
Translocation of rare plant species							
Installation of GCN fence and pitfall-trapping - 30 days trapping (1)							
Reptile trapping - in parallel with to GCN trapping							
Vegetation clearance woodland / dense scrub for dormice (within redline boundary) (3) Where nesting birds are found, a suitable buffer will need to remain until young have fledged							
Destructive search in grassland (GCN / reptiles) in parallel with topsoil strip (2)							
Baseline bat activity surveys on off-site mitigation / compensation land (Pending land owner agreement pre- CPO)							
Updated bat Surveys of trees and sheds (redline boundary)							
Tree-felling (if felling in May / June any tree to be removed must be inspected immediately prior to removal but where bats are present a licence will be required prior to removal)							
Bat licence application; shed and tree roosts (if applicable), potential Crockstead Farm			Application / NG Review	2 months determination period (contingency for NE queries			
Construction works (2023 - 2024) Access assumed April to June via CPO or landowner agreement							
Top soil strip within redline boundary under supervision (if required) (time to be confirmed)							
Updated badger survey where access is permitted							
Vegetation clearance around tower 69 (included in dormouse licence) and in PWMS							
Installation of chain-link fencing where no active badger holes are recorded immediately after veg clearance							
Access to NG compound unlikely to be agreed in advance of CPO, therefore works will need to be undertaken under a Precautionary Works Method Statement for GCN and reptiles							
Habitat creation offsite (compensation land on crock stead) assumed no access until earliest May-23							
Where holes near to tower 69 are found to be active, closure of these holes will be undertaken under PSML:							
Badger licence application (if required)							
Badger sett exclusion and monitoring (1st July to 30 November inclusive) (4)							
Destroy and / or chain-link over holes (only once badgers have been successfully excluded)							
Notes and Key							
(1) - requires 5 clear days (i.e. no GCN caught) before an area is declared free of GCN. (2) - includes removal of dead wood piles to undisturbed parts of the site (3) - some of this clearance will be undertaken during the installation of the GCN fence. This is included within the dormouse licence application. (4) Exclusion should not take the entirety of this period but, if not completed by end-Nov 2022, will need to be paused and re-started in July 2023. **NOTE: This programme does not include any EcoW that would be required during construction or for the OHL outside of the protected species licence applications and PWMSs.**							

Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23	Oct-23	Nov-23

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Application / NG Review 2 months determination period (contingency for NE queries)

Dec-23
Ongoing management with monitoring surveys

APPENDIX C – LOWLAND MEADOW GRASSLAND SPECIES MIXES

Table 5. Lowland meadow grassland species mix

Recommended lowland meadow mix (50:50 ratio) MG5 (ph5-7)	Mix (%)
Grasses	
Festuca rubra agg.	10
Agrostis capillaris	8
Anthoxanthum odoratum	4
Biza media	5
Carex flacca	8
Cynosurus cristatus	5
Phleum bertolonii	5
Trisetum flavescens	5
Bromus commutatus	3
Poa pratensis s.s.	3
Bromus hordeaceus	2
grasses %	60
Forbs	
Centaurea debauxii	4
Campanula rotundifolia	2
Rumex acetosa	2
Lotus corniculatus	4
Galium verum	3
Achillea millefolium	2
Leucanthemum vulgare	1
Pilosella officinarum	1
Pimpinella saxifraga	2
Plantago lanceolata	1
Prunella vulgaris	1
Ranunculus acris	2
Ranunculus bulbosus	2
Agrimonia eupatoria	1
Genista tinctoria	1
Hypochaeris radicata	1
Lathyrus pratensis	1
Scorzoneroides autumnalis	2
Stellaria graminea	1
Tragopogon pratensis	1
Trifolium pratense	1
Trifolium campestre	1
Veronica chamaedrys	1

Veronica officinalis	1
Vicia cracca	1
forbs %	40
Additional spp in damper areas	
Alopecurus pratensis	5
Cardamine pratensis	3
Filipendula ulmaria	3
Achillea ptarmica	3
Carex flacca	3
Carex leporina	2
Lathyrus pratensis	2
Lotus pedunculatus	2
Potentilla erecta	2
Ranunculus flammula	2
Silene flos-cuculi	2
Succisa pratensis	2
Agrostis stolonifera	2
Carex demissa	1
Thinner sowing of grasses and forbs in the lowland meadow MG5 mix to accommodate these species	35

APPENDIX D – FIRST 5 YEARS' MANAGEMENT AND MONITORING PROGRAMME

The management regimes and monitoring surveys set out in *Table 5* may be subject to changes following consultation with Natural England to agree the mitigation and monitoring set out within the protected species mitigation licences for the site.

Table 6. First 5 years' management and monitoring programme following habitat creation and enhancements

Ecological receptor	2024	2025	2026	2027	2028
Receptor area grassland management	Annual strimming of grassland no less than 300mm above ground level in September / October, taking care not to damage log piles and hibernacula.				
Wildflower meadow management	Scarify the ground lightly in autumn and re-seed or plug plant where plants have failed.	Selective plug planting where required once ground conditions are established. A summer cut may be appropriate but will depend on establishment of sward.		Hay cuts will be undertaken twice a year, once in late June to early July and again in September / October once the sward has established. This management and regularity of cuts will be confirmed by botanical surveys. Grazing may also be included if appropriate.	
Scrub management	Pruning to be carried out annually in autumn / winter to avoid nesting birds and provide extended foraging time for birds and insects. Late winter pruning is ideal for mature shrubs and trees. If damage has occurred to tree guards these will need to be repaired or replaced.				
Woodland management	If any damage has occurred to the deer fencing, then this will need to be repaired to ensure the woodland is protected from excessive deer browsing.				
Hedgerow maintenance	Grassland and weeds to be cut annually no less than 300mm above ground level in September / October. Pruning and hedgerow cutting to be carried out annually in autumn / winter to avoid nesting birds and provide extended foraging time for birds and insects. If damage has occurred to tree guards or fencing these will need to be repaired or replaced.				
Botanical monitoring surveys	UK Habitat and quadrat survey in late May / June			None	UK Habitat and quadrat survey plus NVC survey and fixed-point photography in late May / June

Ecological receptor	2024	2025	2026	2027	2028
Bat activity monitoring surveys	Static detector survey once per month on the construction site from April to October	None	Static detector survey once per month from April to October on the offsite mitigation land	None	Static detector survey once per month from April to October on the offsite mitigation land
Hazel dormice monitoring surveys	3 surveys in different months between April to October	None	3 surveys in different months between April to October	None	3 surveys in different months between April to October
Bat box maintenance	Where boxes are damaged, these will need to be checked by a bat-licensed ecologist and repaired or replaced under their supervision				
Bird box maintenance	Where boxes are damaged, these will be repaired or replaced. Cleaning in October.				