Sandleford Park & Sandleford Park West

Appendix F19: Combined Ecological Mitigation and Management Principles

Bloor Homes and Sandleford Farm Partnership

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Rev:	Date:	Updated by:	Verified by:	Description of changes:
1	December 2018	TC	BC	Updated to duplicate application 3a. To include updated survey results & additional information re springs / seepages, marshy grassland and woodland.
2	February 2019	TC	N/A	Updated as ES addendum to application 3a
3	December 2019	DW	DW	Updated to reflect Sandleford Park West Brick Kiln Copse Topic Paper.
4	January 2020	ET	DW	References updated.

Contents

Glossary

CEMMP	Combined Ecological Mitigation and Management Principles
CIEEM	Chartered Institute of Ecology & Environmental Management
ECoW	Ecological Clerk of Works
EMMP	Ecological Mitigation and Management Plan
EPSL	European Protected Species Licence
GCN	Great crested newt
GradCIEEM	Graduate Member of Chartered Institute of Ecology & Environmental Management
Hedgerow Regulations	Hedgerow Regulations 1997
HPI	Habitat of Principal Importance
JNCC	Join Nature Conservancy Council
LPA	Local Planning Authority
LWS	Local Wildlife Sites
MCIEEM	Member of Chartered Institute of Ecology & Environmental Management
NE	Natural England
NPPF	Revised National Planning Policy Framework
SPW	Sandleford Park West
TVERC	Thames Valley Ecological Records Centre

1.0 Introduction

1.1 Background

WYG was commissioned in December 2018 by Bloor Homes and the Sandleford Farm Partnership to produce a Combined (overarching) set of Ecological Mitigation and Management Principles (CEMMP) for the sites known as Sandleford Park and Sandleford Park West, Newbury. The plan was also prepared in consultation with Donnington New Homes who are the applicants for Sandleford Park West. The two sites together comprise the Sandleford Strategic Site Allocation, allocated by Policy CS3 of the of the West Berkshire Core Strategy (2006-2026).

The CEMMP details overarching principles of mitigation for the protected and notable habitats and species that may be impacted by the proposals across the Sandleford Strategic Site Allocation and the management of retained, enhanced and created habitats. This CEMMP will guide detailed EMMPs to be produced to inform each future reserved matters application. Future phase-specific EMMPs will be based on up to date survey information, and updated as management continues on site. This is likely to include a revision in year 5, with management prescriptions for a further 10 years, and reassessment at the end of this period.

This report has been prepared by Consultant Ecologist, Ben Cooke, GradCIEEM, and updated by Associate Ecologist Tamsin Clark MCIEEM.

1.2 Roles and Responsibilities

The phase-specific EMMPs will be distributed to all relevant personnel involved with the construction phase of the development including the developer and any contractors who may be working on the site. It will be the responsibility of the main contractor to distribute this document (where relevant) to all other (sub) contractors and visitors to the site as appropriate, who will in turn be bound by the terms therein.

It will be the responsibility of the ECoW (to be appointed by the developer) to provide advice to the construction teams during all phases of the scheme on all pertinent ecological issues and to check that the ecological protection and mitigation measures, as specified in this document, are implemented. Recommendations will be passed to the developer who will be responsible for ensuring implementation.

The ECoW will have specific responsibilities which will include:

- undertake as necessary any update surveys to inform any EPSL applications and mitigation for other species;
- Applying for EPSL as required;
- Provision of advice on the location of protected species e.g. reptiles, bats and badgers and the type and location of protection or mitigation required;
- To supervise and monitor the implementation and maintenance of protective or mitigation measures in accordance with legal requirements or the terms set out in this document;
- Liaison with the main contractor's site manager, NE and others relevant stakeholders as appropriate; and

- Monitoring of the created and retained habitats on site and within the off-site reptile receptor site.

Specific responsibilities of the client, in relation to the phase-specific EMMP will include:

- To adhere to the relevant provisions made within this document;
- To comply with the advice of the ECoW as appropriate;
- To ensure that this plan is distributed to all relevant parties; and
- To ensure that all persons working within the area covered by this Plan are briefed on relevant aspects. Once the initial tool box talk has taken place (prior to works commencing on the site), briefing notes will be left on site for future visitors/contractors.

Any revisions made to the phase-specific EMMP document, will be re-issued to the developer and the Local Planning Authority.

1.3 Tool Box Talks

Contractors working on the site will be given a general talk relating to all the biodiversity issues on the site and introducing the phase-specific EMMP. This will include providing a plan showing all of the ecological features to be retained on the site. These features will be protected against inadvertent damage during works by the erection of protective Heras fencing (or similar) prior to works on site commencing, under the supervision of the ECoW. The features that will be protected are: woodland, mature trees, hedgerows, retained grassland, waterbodies and buffer zones.

1.4 Baseline Survey Information

This CEMMP is based on the results of:

- Surveys, reports and the ES chapter produced by WYG (2018) regarding Sandleford Park.
- Surveys, reports and the ES chapter produced by Aspect Ecology (2018) regarding Sandleford Park West.

1.5 Plan Layout

- The CEMMP first summarises the ecological baseline for the site. This information is presented in Section 2.0.
- Section 3.0 outlines the mitigation and prescribes management for retained and created habitats within the Sandleford Strategic Site Allocation Site. Paragraph 170 of the *National Planning Policy Framework* (NPPF, 2018) states that: '*Planning policies and decisions should contribute to and enhance the natural and local environment by…. minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures'*. Enhancements are included within the masterplan, particularly within the Country Park area of the site. This commitment to biodiversity augmentation is a central facet of the Masterplan design.
- Section 4.0 outlines the mitigation prescriptions for the protected species identified on site.
- Sections 5.0 and 6.0 present information on scheduling management activities and monitoring of the features of the site respectively.

2.0 Ecological Baseline

2.1 Existing Habitats

Existing habitats present within Sandleford Park and Sandleford Park West include:

- Broadleaved Semi-natural Woodland
- Dense/ Scattered Scrub
- Broadleaved Scattered Trees
- Hedgerows
- Marshy Grassland
- Neutral Semi-improved Grassland
- Acidic semi-improved to Improved Grassland
- Tall Ruderal
- Standing Water
- Running Water
- Arable
- Amenity Grassland
- Allotment
- Amenity Planting
- Bare Ground
- Buildings

2.2 Key Habitats for Retention

2.2.1 Broadleaved Semi-natural Woodland

There are eight main woodland blocks on-site, which form a network of semi-natural broadleaved woodland habitats in proximity to each other and largely connected by hedgerows and wide grassy tracks and banks. The central core of woodlands is set in a confined valley system and within a mosaic of wet grassland and semi-improved acidic grassland.

All the woodlands are classified as LWS, and all are classified as ancient woodland, with the exception of Gorse Covert and Brick Kiln Copse.

2.2.2 Broadleaved Scattered Trees

There are a number of broadleaved scattered trees present within the site boundary, including some which are considered to be veteran trees due to their size and condition. These are located predominantly within the eastern half of the site along the access tracks traversing the site.

2.2.3 Dense/ Scattered Scrub

Areas of dense/ scattered scrub are present throughout the site boundary, with the stands consisting predominantly of bramble. Areas of scattered scrub are situated along the western extent of the site and the field margins of the compartments within the eastern extent of the site.

2.2.4 Hedgerows

There is an extensive network across the site which consists of a combination of species-poor, species-rich, intact and defunct hedgerows. Two hedgerows are considered likely to be '*important*'

under the Hedgerow Regulations. Hedgerows form important corridors connecting woodlands and other habitats over the site, and provide commuting routes for nocturnal animals such as bats.

2.2.5 Marshy Grassland

Much of the wet grassland habitats is located within the centre of the site, encompassing several fields partitioned by hedgerows and streams, the grassland is very wet and mire-like in places. Springs and base-rich flushes emerge into the valley where the mires reach their greatest extent and are found slightly upslope away from the stream and valley bottom. A smaller strip of wet grassland is located within a field compartment at the eastern extent of the site.

A small area of vegetation type M23 *Juncus effusus/acutiflorus* (rush species) - *Galium palustre* (marsh bedstraw) rush-pasture which forms part of the Purple Moor Grass and Rush Pastures HPI was noted within Sandleford Park (Appendix F22). The other marshy grassland types are generally regarded as a modified grassland types of lower botanical interest.

The meadows straddle the main stream which flows north-south towards the River Enborne and are encircled by the ancient woodland copse. Together the woodland and wet grassland form an important habitat and feature for this site.

2.2.6 Neutral Grassland

This habitat is predominantly confined to field compartments along the eastern boundary some of which are utilised by grazing cattle.

2.2.7 Acidic Grassland

Acidic grasslands are located in the well-drained elevated areas on-site and are semi-improved to improved, in character. Due to the modification and degradation as a result of intensive management, the grassland is not considered to meet the Lowland Acidic Grassland UK Priority Habitat type criteria.

2.2.8 Tall Ruderal

Tall ruderal habitat is present within the site boundary located throughout the site. The largest extent is located within the area surrounding the ponds at the north-eastern extent of the site, adjacent to Newtown Road.

2.2.9 Standing Water

Ten ponds are present on-site. Many have little emergent aquatic vegetation and are shaded by surrounding woodland habitat. Several of the waterbodies were found to be dry or almost completely devoid of water during 2017 surveys.

2.2.10 Running Water

The River Enborne at the site is recognised as a UK Priority Habitat by TVERC. Tributaries run southwards from the site, one through Brick Kiln Copse, and the others through valleys between the woodlands in Sandleford Park.

Some springs and seepages are present in the valleys and woodland areas of Sandleford Park, and are described in the water resources chapter (*Chapter 11*). They are considered to be fed from a combination of surface run off and infiltration to ground.

2.2.11 Arable

A significant proportion of Sandleford Park is utilised for the growing of arable crops. Previous surveys assessing the botanical species present on-site were conducted during the optimum period (April to September inclusive) and highlighted various arable plant species within the margins of the fields. The arable field margins not considered to qualify as UK Priority Habitats.

2.3 Species

Protected and notable species known to be present across the Sandleford Strategic Site Allocation are:

- Reptiles and amphibians: Reptiles present in areas of suitable habitat (low populations of slow worms, grass snakes and common lizards), e.g. field boundaries, rough grassland. Considered likely to be absent from the majority of SPW. Common toad present in northeast of site.
- Bats
    - Roosting: A number of tree roosts are known from Sandleford Park, which are proposed be retained under the proposals. Although two have been recommended for felling or pollarding for arboricultural reasons, this is outside the proposed works. SPW includes two building roosts and a number of trees with potential to support roosting bats.
    - Commuting and Foraging: Up to 13 species of bats have been found to be utilising the site as whole, in particular the woodland edges and tree lined site boundaries.
- Badgers, with active setts present in Sandleford Park, and currently inactive setts across the wider site.
- Dormice were confirmed to be present in Sandleford Park during 2014 surveys, but none were found in 2017, and none have been found in SPW.
- There is potential for hedgehog to utilise the suburban habitats present within SPW.
- Water vole and otter are known to be present along the River Enborne.
- A range of protected and notable bird species have been recorded across the site including barn owl, skylark
- The streams support aquatic invertebrates including golden-ringed dragonfly, as well as the bullhead fish.
- Terrestrial invertebrates: Red Data Book, nationally notable (picture-wined fly (*Orellia falcata*)) and nationally scare (*Pipiza lugubris*) insect species were recorded across a range of habitats (e.g. wetland and woodland) in Sandleford Park.

2.3.1 Invasive Plants

- Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens galndulifera*), Himalayan cotoneaster (*Cotoneaster simonsii*) and New Zealand pygmyweed (*Crassula helmsii*) have been recorded in Sandleford Park, and rhododendron and cotoneaster in SPW.

3.0 Habitats: Management and Mitigation

The proposed developments will retain some habitats, and create new habitats. The management / creation of habitats at the site will include the following:

- Broadleaved semi-natural Woodland
- Wet Woodland
- Mature Trees
- Hedgerows
- Marshy Grassland
- Neutral Grassland
- Acidic Grassland
- Waterbodies and Rivers
- Arable

3.1 Broadleaved semi-natural woodland

3.1.1 Pre and During Construction Mitigation

- All woodlands will be retained within Sandleford Park. SPW includes a series of SuDS features within Brick Kiln Copse (WYG, 2019).
- A buffer of at least 15 m will be retained between the development and all ancient woodland habitat. A 15 m buffer will be maintained from Brick Kiln Copse in SPW, aside from a small section to the north east. The buffer will be fenced using Heras style fencing in order to prevent impacts to this habitat, such as those arising from inappropriate storage of materials during the construction phase.
- The SuDS measures outlined in the Water Resources Chapter (*Chapter 11*) seek to avoid adverse impacts due to changes in water quality or quantity.
- Connections between woodlands, e.g. along hedgelines have been retained and enhanced wherever possible within the proposals.
- Removal of sycamore from Barns Copse and Brick Kiln Copse.
- Some removal of holly where appropriate within Barn Copse, Crook's Copse, Dirty Ground Copse, High Wood and Slockett's Copse.
- Dead wood retained in-situ where practicable and where not adjacent to public footpaths.
- Footpaths through the woodlands will largely follow existing tracks, which will be accurately mapped to inform future reserved matters applications.
- Sections of boardwalk will be installed as part of the footpath creation to cross areas of wet ground within the various woodland areas to prevent trampling of sensitive plant communities, in particular Dirty Ground Copse.
- If woodland indicator species are to be impacted by footpath creation, either the plant itself or the seed bank will be translocated to the areas of woodland which have been cleared of sycamore. Seedbank translocation (if required) will be scraped off during autumn and early winter to minimise damage to soil and plants.
- Himalayan balsam growing within Waterleaze Copse, and Himalayan cotoneaster in Slockett's Copse will require removal, the recommended methodology of which is detailed under in Section 3.10 below.

3.1.2 Post-construction Management

- The woodlands may require post and rail fencing in some areas, although this detail will be agreed with the Local Planning Authority as necessary.
- Interpretation boards will be installed and maintained to provide wildlife information.

3.1.3 Post-construction Monitoring

- Monitoring of existing bluebell populations will take place annually in the spring (April to early May) to assess whether Spanish bluebells or hybrids between Spanish and native bluebells are becoming established.

3.2 Wet Woodland

Waterleaze Copse

3.2.1 Pre and During Construction Mitigation

- The wet woodland will be retained, in its entirety within the final development and footpaths will be diverted away from it to prevent trampling of sensitive plant communities and nesting birds.

3.2.2 Post-construction Management

- Avoid the use of fertilisers in proximity to the wet woodland.
- Non-intervention policy will be enacted for the wet woodland.
- Monitor Himalyan balsam.
- The wet woodland may require fencing (and fencing maintenance) to prevent members of the public from entering, trampling and disturbing the flora and fauna of this habitat, although this detail will be agreed with the LPA as necessary.
- An interpretation board will be installed and maintained.
- Public excluded.
- Mature trees allowed to senesce and decay naturally where possible.
- Stands of umbelliferous plant species (such as hogweed and cow parsley) will be retained as these provide valuable nectar and pollen resources for wood-dwelling invertebrates such as beetles.

3.2.3 Post-construction Monitoring

- Monitoring Himalyan balsam

Brick Kiln Copse

3.2.4 Pre and During Construction Mitigation

- Paths through Brick Kiln Copse will form part of the green infrastructure network on SPW, with paths through wet areas will be raised boardwalks (routes are shown in WYG 2019).
- Public access to be allowed but restricted in some areas of the woodland to the defined path routes.
- Wet areas to function and be managed as part of the SUDS scheme, but development to maintain the current greenfield run-off rate to maintain the existing hydrology of the woodland.

3.2.5 Post-construction Management

- Woodland management plan to form part of the relevant phase-specific EMMP for SPW, with management proposals formulated from ecological, arboricultural and hydrological advice.

3.3 Broadleaved Scattered Trees - Mature Trees

3.3.1 Pre and During Construction Management

- The majority of the mature trees (including those considered to be veteran or notable) will be retained on-site within the Country Park along with a suitable buffer and protected by Heras style fencing.
- Six trees have been found to have the potential to support nesting barn owls, and a number of trees identified as bat roosts, or potential roosts. Recommendations for these trees have been provided in Section 4.2 and 4.8.
- An ecologist will be consulted for all necessary pruning works required for health and safety reasons. If features offering potential to support roosting bats or nesting barn owls will be impacted by pruning works, further surveys will be completed and necessary mitigation will be implemented.

3.3.2 Post Construction and Management of the Trees

- Should new tree planting fail, it will be replaced during the next suitable planting period for that species. This will be undertaken in the dormant season (November to March inclusive) annually for five years post construction.

3.4 Hedgerows

3.4.1 Pre and During Construction Management of Existing Hedgerows

- Hedgerows will be retained within the site, wherever possible, together with a 3m buffer.
- Retained hedgerows which have gaps present will be infilled with native hedgerow species.
- Herbaceous vegetation will be encouraged to grow up around the base of the planted shrubs and hedges.

3.4.2 Post Construction Creation and Management of New Hedgerows

- New hedgerow planting will comprise planting of native species.
- Post construction, the existing hedgerows will be maintained and enhanced
- Cutting every two years between November and February.

3.4.3 Principal Actions to Maintain and Manage Hedgerows

- Prevent colonisation of invasive exotics (e.g. butterfly bush) by removing saplings.
- Plants which have failed to establish will be replaced during the dormant season (November to March).

3.5 Marshy Grassland

3.5.1 Pre and During Construction Mitigation and Management

- Appropriate pollution prevention control methods will be employed throughout the development process so as to avoid pollution entering the marshy grassland.
- When the bridge construction works are undertaken, appropriate methods will be employed to avoid and reduce siltation or runoff. This can be partly achieved by making sure that excavated material is not stored adjacent to the watercourses themselves.

3.5.2 Post Construction Management

- Detailed management of the marshy grassland will be provided in the phase-specific Country Park EMMP. However, it is likely to include either haycropping in late September to 150mm in height or grazing, to be agreed with the LPA.

3.5.3 Post Construction Monitoring

- Once a year in July, the marshy grassland will be monitored against baseline information.

3.6 Neutral Grassland

3.6.1 During Construction Mitigation Principles for Wildlife Area (Sandleford Park Only)

- Retained grassland in the woodland buffers will be protected through the erection of Heras fencing as detailed in section 3.1.1 above.
- The south-eastern part of the site which is currently arable will be established as tall grassland which will be managed for reptiles, barn owl, bat, badger and invertebrates.
- The ground will be subjected to a light scarification for the top six inches of soil with grassland laid on a fine tilth. These areas will be planted with a grass seed mix dominated by fine-leaved grass species such as fescues (*Festuca*) and bents (*Agrostis*).
- The ground will be prepared between November and March with seeding taking place in the spring.
- The establishment of the meadow will be monitored for bird predation and competitive weeds, which will be spot sprayed where necessary or hand pulled. This will be undertaken every two months during the main growing period April to September for two years post sowing.
- Paths will be fenced on either side and will discourage members of the public from entering parts of the wildlife area that are of highest ecological value.
- Fences will be erected along south-eastern and south-western boundaries of site to prevent trespassing into existing adjoining properties.

3.6.2 Post Construction Grassland Management

- Detailed management of the grasslands will be provided in the phase-specific EMMPs.
- Meadow and Wild Flower Habitat (SPW) - Wildflower meadow mix will be sown (e.g. Emorsgate EM3 special general purpose meadow mixture) in areas designed to maximise ecological benefits, incorporating features such as scalloped edges. Management will include annual mowing in late September.

- Long Grass Swards - Areas of retained grassland adjacent to tree lines and hedgerows will be left to reach a long sward, subject to low-intensity mowing (every 1-2 years) to allow a varied habitat structure.

3.7 Acid Grassland (Sandleford Park only)

3.7.1 Pre and During Construction Mitigation and Management

- Depending upon the location and reptile populations, either herras fencing or reptile exclusion fencing will be erected surrounding this habitat to prevent encroachment from construction traffic or material storage.

3.7.2 Post Construction Management

- Post construction management will comprise annual mowing at the same time as the marshy grassland.

3.8 Waterbodies and Rivers

3.8.1 Pre-construction and During Construction Mitigation Principles for Waterbodies

River Enborne

- See section 3.10.1 below regarding the removal of Himalayan balsam prior to construction.
- A single managed access point will be provided to the edge of the River Enborne.

On-site Waterbodies

- The removal of Himalayan balsalm and New Zealand pygmyweed from waterbodies within Waterleaze Copse is outlined in section 3.10.1.
- Appropriate pollution prevention control methods will be employed throughout the development process to avoid pollution and avoid / reduce siltation and runoff.
- Silt will be removed from selected sections of the stream beds to provide deeper water areas, and refuge habitats in times of low water level for aquatic invertebrates.
- Bank reinstatement to the same height and profile and allowed to vegetate naturally.
- For Sandleford Park, surface water management proposals outlined in the Water Resources Chapter (*Chapter 11*) will minimise the hydrological impacts to existing springs and streams as well as mitigating the effects on groundwater recharge.

3.8.2 Post Construction Management

- Detailed design stages will outline planting and management of SuDS features to enhance the area of biodiversity, for example, the creation of sinuous, gently sloping, margins.
- See section 3.10.1 below regarding monitoring of Himalayan balsalm and other invasive species post development.

3.9 Arable (Sandleford Park only)

3.9.1 Pre-Construction and During Construction Mitigation Principles for Arable Habitat

- Detail regarding the creation of skylark plots will be provided within the Country Park EMMP, but they will include the translocation of arable soil and spread of notable arable plant seeds collected from the developable areas (green pigweed, green field speedwell and subspecies of fool's-parsley).

3.9.2 Post Construction Management

- Current arable management of these areas to resume to include ploughing over winter.

3.10 Invasive Plants

3.10.1 Pre-Construction and During Construction Mitigation Principles for Invasive Plants

- Removal of Himalyan balsalm within Waterleaze Copse by hand pulling, commencing in mid-April and continuing through the growing season.
- Prior to construction commencing, the removal of Himalayan cotoneaster will take place in Slockett's Copse. The plant, if small enough can be removed by hand pulling, or can be excavated by hand and disposed of as waste for incineration.
- Japanese knotweed along the eastern boundary will require removal by specialist Japanese knotweed contractors.
- New Zealand pygmyweed removal from Pond 1 (the northernmost pond within Waterleaze Copse) with advice from invasive weed specialists.
- Rhododendron and cotoneaster in SPW will be subject to a control strategy comprising a method statement to avoid contamination during works.

3.10.2 Post Construction Management

- Monitoring to check that these invasive species have been successfully removed from the site. This will comprise a spot check on an annual basis every year for five years post development. If invasive species continue to be present, additional treatment will be required, and this period of monitoring will need to be extended.

4.0 Protected Species Mitigation

4.1 Reptiles & Amphibians

- GCN have not been recorded on the site, although common toads were also noted.
- As a precaution, all site clearance staff will be made aware of the low risk of finding GCN during works.
- Phase-specific reptile mitigation will be provided within the detailed EMMP for each phase.
- The majority of suitable reptile habitat will be retained but mitigation and enhancement is also proposed.
- Reptile hibernacula will be installed.

4.1.1 Post-construction Management

- Areas of the Country Park will be managed sensitively for reptiles in the long term through cutting the grass to a height of no less than 6 inches during the late summer / early autumn (September).

4.1.2 Post-construction Monitoring

- Monitoring of the populations within the receptor site may be required.

4.2 Bat Activity

4.2.1 Pre-construction Mitigation:

- The majority of hedgerows and all woodlands will be retained and protected within the development.
- Infill planting of gaps within the existing hedgerows will enhance the remaining hedgerows.
- A diverse collection of native tree and shrub planting will be incorporated into the landscaping scheme.
- The south-eastern area of the site will be managed as tall grassland which will support a variety of invertebrate species, which will in turn benefit foraging bats.

4.2.2 Construction Phase Mitigation: Best Practice

- Ecological buffers will be retained between development areas and woodland / hedgerow areas that will be retained or created.
- Construction activity in the vicinity of hedgerows and woodland will stop half an hour before sunset.

4.2.3 Post-construction Mitigation: Reducing the Risk of Traffic Collisions

- The central valley and the Country Park will be enhanced for bats.
- Valley crossings have been designed with ecological input.
- Where roads bisect bat foraging / commuting habitat, trees will be planted / allowed to grow tall on each side of the road at the point where the road bisects the hedgerows to provide 'hop-overs'.

4.2.4 Post-construction Mitigation: Lighting

- The lighting across the development footprint has been sensitively designed with consideration for bats.
- Permanent lighting on site will be minimised in proximity to the following habitats:
    - woodlands (including edges and woodland buffers);
    - hedgerows;
    - mature trees;
    - boundary vegetation;
    - new roost sites (e.g. bat boxes installed as part of the scheme)

4.2.5 Post-construction: Enhancement

- Grassland management in Country Park
- The existing pond in Waterleaze Copse to be re-profiled to create shallow margins, which will encourage a range of aquatic plant species, which will in turn support a greater diversity of aquatic invertebrates and bats which feed on insects over the pond. Combined with scrub clearance around the pond.
- In-fill hedgerow planting.

4.2.6 Post-construction: Monitoring

No monitoring is currently proposed in relation to foraging and commuting bats.

4.3 Bat Roosts

4.3.1 Buildings

- Two buildings supporting bat roosts are proposed to be removed within SPW, and, as such a licence from NE will be required, with all mitigation and timings to be agreed with NE. As compensation, bat boxes will be installed on trees and / or new buildings within SPW.

4.3.2 Trees

- There are a number of confirmed bat roosts in trees, as well as a number of other trees with potential to support roosting bats. The majority have been retained within the final proposals. Where roosts will be impacted by felling or pollarding, a licence will be required from NE, with all mitigation and timings to be agreed with NE.

4.3.3 Pre-construction Mitigation for Roosting Bats

- Pre-works emergence/return surveys or climbed inspection will be required of those trees and buildings with potential to support roosting bats.
- 'Soft-felling' methods will be used for all trees with any potential to support roosting bats.
- Works in proximity to retained trees and buildings to cease 30 minutes before dusk.

4.3.4 Post-construction Mitigation: Artificial Roost Provision

Additional measures to enhance the site for bats include the provision of artificial bat boxes in suitable habitat across the site.

4.3.5 Post-construction Monitoring

Where artificial roosts are required as mitigation for roost loss under licence, any monitoring requirements will be stipulated by NE. The remainder of the bat boxes are being installed as an enhancement, and will not require monitoring.

4.4 Badger

4.4.1 Pre-construction Mitigation

- Pre-commencement badger survey one month prior to development commencing.
- Public access guided away from known badger setts.

4.4.2 Construction Phase Mitigation: General Procedures During Works

- As part of the toolbox talk prior to works commencing, best practice methods will be implemented on the site to avoid impacts to commuting and foraging badgers.

4.4.3 Post Construction Mitigation & Enhancement: Badger Foraging Areas

- Retention of foraging habitat within Country Park.
- Lighting design to reduce impacts on woodland, hedgerows and badger foraging areas wherever possible.

4.4.4 Post-construction Monitoring

- At present it is not considered that a badger development licence will be required as none of the existing sets lie within 30 metres of the proposed works and therefore no monitoring is required. However, if following the pre-commencement surveys sett closure is required, monitoring of badgers at the site is likely to be required as part of the licence, during and post construction.

4.5 Hedgehog

- There is potential for hedgehogs to make use of existing residential gardens in SPW, and to make use of future created gardens across the wider site. As such, ground level 'cut outs' in garden fences are proposed to be included within the detailed designs, allowing small mammals to move freely around the site.

4.6 Hazel Dormice (Sandleford Park only)

4.6.1 Pre-construction Mitigation

- All woodlands and most hedgerows retained with a buffer, to be protected during the construction phase by erecting Heras fencing.
- New hedgerow planting and infill planting.
- Where the hedgerows are required to be bisected for roads and footpaths, taller trees will be planted either side of the breaches to create a vegetated arch to maintain connectivity for dormice.
- 20 dormouse boxes will be erected within retained habitat.
- Prior to clearance or construction works commencing, a toolbox talk will be given to all contractors.

4.6.2 Construction Phase Mitigation

- Vegetation clearance works of suitable dormouse habitat will be undertaken in two-stages to avoid the main dormouse hibernation and breeding seasons, and the peak nesting bird season.
- Winter vegetation clearance to 300mm, following hand search by ECoW.
- Stump and root removal between May and October, following hand search by ECoW.

4.6.3 Summary of Post-construction Enhancements for Hazel Dormouse

- Retained and created hedgerows, scrub and woodland habitat within the site will be managed in the long term to enhance fruit / seed production and minimise disturbance to hazel dormice.
- Pruning of hedgerows and control of scrub encroachment will be carried out over winter when dormice are hibernating at ground level.
- The hedgerows will be cut once every two years to encourage the production of food such as berries.
- The management of the woodland present on site will involve periodic winter (November – February) removal and coppicing of the trees in Barns Copse and Brick Kiln Copse where sycamore will be selectively removed over a five-year period in order to reduce the competitiveness of this non-native tree. The sycamore is of low ecological value, by felling it will increase light to the lower canopies and increase biodiversity of the ground flora.

4.6.4 Post-construction Monitoring

- Dormouse boxes will be monitored by a licensed dormouse surveyor twice a year (May and October) for up to five years after completion of the scheme (or creation of new habitats).

4.7 Breeding Birds

4.7.1 Pre-construction Mitigation

- Retained and created hedgerows, scrub and woodland habitat.
- No footpaths will extend through Crook's Copse and this wood will remain as a no-access area allowing sensitive woodland breeding birds, such as woodcock to breed.

4.7.2 Construction Phase Mitigation

- Vegetation removal (to 300mm) to take place between November and February; or, with a proceeding nesting bird check.
- During the construction phase, retained habitats within the site including the woodlands and retained hedgerows and tree lines will be protected.
- Landscaping and planting within residential gardens of proposed dwellings will provide additional nesting opportunities for a range of passerine bird species.
- Infill hedgerow planting.

4.7.3 Post-construction Mitigation & Enhancements

- The pond located within Waterleaze Copse will be retained and enhanced for moorhen and mallard. features including ponds and swales will be created to provide habitat for wetland bird species.

- Additional enhancements for nesting birds will include skylark plots, nest boxes for species such as starlings, house sparrows and owls.

4.7.4 Post-construction Monitoring

- Bird boxes will be installed as an enhancement, so monitoring of bird boxes is not required.

4.8 Barn Owl

4.8.1 Pre-construction Mitigation

- Pre-commencement nesting barn owl survey.
- Six trees on site are considered to have the potential to house roosting barn owls. A 30m buffer zone of no construction will be incorporated around each tree where there will be no construction during the March to September breeding season.

4.8.2 Construction Phase Mitigation

- All known nest sites and potential nest sites retained (albeit, one will be within an area of land safeguarded for the expansion of Park House School, so may be impacted in the future).
- Ecologist consultation regarding any felling or pollarding of retained trees with barn owl potential within Sandleford Park.
- Nesting barn owls are protected from disturbance, so no construction works to be carried out within approximately 100m of a barn owl nest site during the nesting period (March to September inclusive). If nests are identified, a buffer zone will be set up inside which no construction work may be undertaken until the young have fledged and cease to return to the nest. To avoid this constraint, it is recommended that construction works are not commenced during the bird nesting season. If disturbing works are already underway when the nesting season starts, and birds choose to nest nearby, then it may be assumed that the disturbance is not detrimental to them, but works should not encroach upon the nest site.

4.8.3 Post-construction Mitigation and Enhancement

- Barn owl nest boxes will be installed on the edge of retained woodlands.
- Footpaths across the site will be clearly marked, and a 30m buffer will be maintained between known barn owl roosts and any footpaths.
- The Country Park will be managed to maximise barn owl foraging habitat which will encourage tall grassland to maximise foraging which will be tussocky with a thatch beneath. The grassland will be cut once a year in late September to 6 inches only.

4.8.4 Post-construction Monitoring

- No monitoring of barn owls is proposed.

4.9 Aquatic Invertebrates & Bullhead Fish

4.9.1 Pre-construction Mitigation Measures

- Best practice measures will be included in the site management proposals to minimise the risk to local biodiversity:

- Construction will be avoided within 8m of streams to minimise the potential for pollutants entering the stream, other than in the area of road bridges.
- Spill kits will be made available and used immediately should a pollution incident occur.
- All relevant Pollution Prevention Guidelines (PPGs) will be adhered to.
- During the construction of the crossing over the stream, siltation to the stream to be kept to an absolute minimum.
- Best management practices such as temporary sediment traps, silt fences and diversion trenches are all means to reduce runoff pollution and sedimentation that may be used where appropriate.

4.9.2 Post-construction Mitigation and Enhancement Measures

- Following construction, the stream banks will be returned to their original height and shape (profile) and allowed to re-vegetate naturally from the surrounding area.
- Grazing of areas, if agreed with the LPA, to maintain cattle trodden sections of the stream.
- Removal of some understory trees along the stream banks to allow light onto the stream. Vegetation removal should be avoided in areas along the River Enborne.
- Some careful removal of silt from the stream bed.

4.9.3 Post-construction Monitoring

- No monitoring is recommended.

4.10 Notable Terrestrial Invertebrates (Sandleford Park only)

4.10.1 Pre-construction Mitigation Measures:

- Notable invertebrates were recorded in Sandleford Park, within and adjacent to the woodlands or within the marshy grassland. Detailed habitat retention and creation proposals are given in Section 4.9.1. of the Sandleford Park EMMP (Appendix F18).
- Retention of woodland and wetland habitat.
- Translocation / seed collection of goat's–beard plants (food plant of the Nationally Scarce picture–winged fly *Orellia falcate*).

4.10.2 Post-construction Mitigation and Enhancements Measures:

- All woodland within the site will be retained as part of the development proposals.
- Suitable management of the Country Park.
- Lighting will be directed away from woodland habitat and hence impacts to moths are not anticipated.
- Placement of invertebrate 'hotels' in areas of new planting, new wetland habitats, and within retained woodland.

4.10.3 Post-construction Monitoring of Invertebrates (All)

- No monitoring is recommended for invertebrates at the site.

5.0 Management Activity

Table 3: Annual Management Summary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 5 onwards
Grassland habitat to be grazed or cut once a year in late September to a height of 15cm						
Grazing to be considered for certain areas of the park (TBC with LPA)						
Plough arable weed areas / skylark plots overwinter						
Replacement of any failed trees / shrubs (November – March)						
Scrub management and seedling removal of opportunistic tree species (October)						
Hedgerow cutting (September) every other year						
Tall grassland along hedgerow buffers to be mown every other year to 15cm.						

6.0 Monitoring

Table 4: Monitoring summary

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 10	Year 15
Monitoring of reptile population within receptor site (October)							
Monitoring of dormouse population (twice a year)							
Monitoring of any bat boxes provided as mitigation for roost loss	As agreed with NE during licensing process.						
Monitoring to confirm absence of invasive species							
Monitoring of the existing bluebell populations (April to early May)							
Monitor the establishment of the orchard for 15 years							
Meadow habitat – monitored once a year in July							

An annual monitoring summary will be compiled and will include suggestions and justification for proposed modifications for monitoring if necessary.

At the end of the 15-year period, a reassessment of the management plan will be made.

7.0 References

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