Loddon Garden Village

Technical Appendix 11.16: Ecological Mitigation and Enhancement Strategy

Prepared on behalf of

University of Reading

Final Report

10 September 2025

23/42-22D

Loddon Garden Village

Technical Appendix 11.16: Ecological Mitigation and Enhancement Strategy

Report Release Sheet

Draft/Final:	Final Report
Issue Number:	23/42-22D
Date:	10 September 2025
Client:	University of Reading Whiteknights Campus Reading RG6 6UR
Main Author(s):	Katie Cammack BSc (Hons) MSc MCIEEM
Contributors/Surveyors:	Jodie Southgate BA (Hons) MSc MCIEEM Katherine Luckhurst BSc (Hons) MSc Katrina Diedericks BSc (Hons) Natalie Compton BSc (Hons) MCIEEM
Report Prepared for Issue by:	[redacted] …… Katie Cammack BSc (Hons) MSc MCIEEM
Report Approved for Issue by:	[redacted] …… Alison Hogan BSc (Hons) MSc MCIEEM

Ecological Planning & Research Ltd

The Barn, Micheldever Station, Winchester, Hampshire SO21 3AR

t. 01962 794720 **e.** info@epr.uk.com **w.** www.epr.uk.com

Company registration number: 8592380

Loddon Garden Village

Technical Appendix 11.16: Ecological Mitigation and Enhancement Strategy

Contents

1. INTRODUCTION 1
   - Scope 1
   - Development Description 1
   - Relevant Legislation and Policy 1

2. ENVIRONMENTAL AND ECOLOGICAL CONTEXT 4
   - Environmental Context 4
   - Designated Sites 4
   - Habitats and Vegetation 5
   - Fauna 7

3. ECOLOGICAL MITIGATION MEASURES - SITE CLEARANCE AND CONSTRUCTION PHASE 10
   - Introduction 10
   - Broad Mitigation Measures 10
   - Mitigation of Loss of Rushy Mead Local Wildlife Site 12
   - Mitigation of Habitat Degradation to the River Loddon 12
   - Mitigation of Loss of Coastal Floodplain Grazing Marsh 12
   - Mitigation of Loss of Hedgerows and Treelines 13
   - Mitigation of Loss of Woodland 13
   - Mitigation of Damage/Destruction to Flora of Conservation Interest 13
   - Mitigation of Loss of Trees 14
   - Mitigation of Harm to White-clawed Crayfish 14
   - Mitigation of Harm to Great Crested Newt 15
   - Mitigation of Harm to Breeding Birds 16
   - Mitigation of Loss of Foraging/Nesting Habitats for Birds 17
   - Mitigation of Harm to Bats 17
   - [redacted] 20
   - Mitigation of Harm to Reptiles 20

4. ECOLOGICAL MITIGATION MEASURES – OPERATIONAL PHASE 22
   - Introduction 22
   - Mitigation of Recreational Pressure on Designated Sites 22
   - Mitigation of Recreational Pressure on on-Site Habitats and Designated Sites 22
   - Mitigation of Increase in Artificial Lighting 23
   - Mitigation of Loss of Foraging Habitats 23

Mitigation of Disturbance to Freshwater Fish 24
Mitigation of Harm to Herptiles 24
Additional Mitigation Measures 24

5. PROPOSED DEVELOPMENT ENHANCEMENT STRATEGY 25

Introduction 25
Habitats and Landscaping 25
Invertebrates 25
Amphibians 25
Birds 26
Bats 26
Reptiles 27
[redacted] 27

6. ECOVALLEY ENCHANCEMENT STRATEGY 29

Introduction 29
Local Wildlife Sites & Existing Habitats 30
Loddon Floodplain 31
River Loddon 32
Habitat Creation 32
White-clawed Crayfish 33
Amphibians 33
Birds 33
Bats 33
Hazel Dormice 34
Reptiles 34
Water Vole 35
Otter 35
Wildlife Boxes 35
Monitoring 36

7. FUTURE PROOFING 37

Climate Change 37
Eurasian Beaver 37

8. REFERENCES 38

MAPS

Map 11.16.1 Important Ecological Features: Habitats

Loddon Garden Village

Technical Appendix 11.16: Ecological Mitigation and Enhancement Strategy

1. INTRODUCTION

Scope

1.1 This Ecological Mitigation and Enhancement Strategy (EMES) provides an overarching strategy for the delivery of ecological mitigation and enhancement measures for the proposed Loddon Garden Village (LGV).

1.2 Based on the outline principles included within this EMES, each phase of the development will provide a detailed Ecological Mitigation and Enhancement Plan (EMEP) to be submitted as part of each Reserved Matters Application. Each EMEP will build upon the principles included within this document to provide a detailed scheme for the delivery of ecological mitigation and enhancement measures for the relevant phase.

1.3 The following EMES expands upon mitigation and enhancement measures outlined in ES Chapter 11: Ecology and its associated Technical Appendices.

Development Description

1.4 The Site is a large area of land to the west of Wokingham, between the villages of Shinfield, Arborfield and Sindlesham. It is located outside of the Green Belt and is largely made up of agricultural land and grasslands, with pockets of woodland and the River Loddon running through the centre of the Site.

1.5 The description of development for the application is as follows:

"Application for the phased development of a new community at Loddon Garden Village, comprising, in outline:

- *up to 2,800 residential units to include up to 100 custom and self-build plots;*
- *2 primary schools (up to 3 forms of entry) to include early years provision and 1 secondary school (up to 12 forms of entry);*
- *one District Centre, to incorporate up to 11,000m2 of Class E (Commercial, business and Service, to include a food store of around 2,500m2), and Class F (Local Community and Learning);*
- *one Local Centre; to incorporate up to 2,400m2 of Class E;*
- *a Sports Hub to include sports pitches and pavilion space;*
- *up to 4,250m2 of further Class E, Class F, and sui generis development to include commercial, health care and public house;*
- *comprehensive green infrastructure including a Country Park, landscaping and public open space, and ecological enhancement measures;*

- *20 gypsy and traveller pitches;*
- *comprehensive drainage and flood alleviation measures to include Sustainable Urban Drainage Systems (SUDS) and engineering measures within Loddon Valley for the River Loddon;*
- *internal road network including spine road with pedestrian and cycle connections and associated supporting infrastructure;*
- *new and modified public rights of way;*
- *associated utilities, infrastructure, and engineering works, including the undergrounding of overhead lines;*
- *Ground reprofiling to accommodate infrastructure, flood alleviation and development parcels;*
- *Up to 0.5ha of land adjoining St Bartholomew's church for use as cemetery;*
- *Electricity substation (up to 1.5ha).*

All matters reserved other than access, incorporating:

- *a new pedestrian, cycle and vehicular access to Lower Earley Way via a new 4th arm to the Meldreth Way roundabout;*
- *a new pedestrian, cycle and vehicular bridge over the M4;*
- *a new pedestrian, cycle and vehicular bridge over the River Loddon;*
- *a new vehicular access to the A327 Reading Road, via a new arm to the Observer Way roundabout;*
- *a new pedestrian, cycle and vehicular access to Thames Valley Science Park;*
- *an initial phase of internal roads with associated drainage, landscape and engineering works and ground reprofiling, between the A327 and the south eastern boundary of the site.*

Application includes full permission for the change of use of 40.4 hectares of agricultural land to Suitable Alternative Natural Greenspace (SANG), 18.35 hectares of SANG link, and provision of Biodiversity Net Gain measures, the demolition and clearance of 20,809 m2 of buildings and structures at the Centre for Dairy Research (CEDAR) and at Hall Farm, the demolition of 3 existing dwellings on Carter's Hill Lane, and the retention of specified buildings at Hall Farm."

Relevant Legislation and Policy

1.6 Key legislation relating to the protection of wildlife and nature conservation include which have been considered as part of this strategy include:

- The Environment Act (2021):
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Wildlife and Countryside Act 1981 (as amended);

- The Natural Environment and Rural Communities (NERC) Act 206 (as amended);
- The Protection of Badgers Act 1992;
- The Salmon and Freshwater Fisheries Act 1975;
- Eels (England and Wales) Regulations 2009 (as amended); and
- The Water Environment Regulations 2017.

1.7 Further details of relevant nature conservation legislation and policy can be found in **Technical Appendix 11.1**.

2. ENVIRONMENTAL AND ECOLOGICAL CONTEXT

2.1 The below section provides an overview of the environmental and ecological context for the Site, upon which the mitigation and enhancement strategy has been based. Further details relating to methodologies and results can be found in the relevant Technical Appendices of Chapter 11 of the Environmental Statement.

Environmental Context

2.2 The Site is a large area of land to the west of Wokingham, between the villages of Shinfield, Arborfield and Sindlesham. It is located outside of the Green Belt and is largely made up of agricultural land and grasslands, with pockets of woodland and the River Loddon running through the centre of the Site.

2.3 The Site straddles a section of the Loddon valley and its floodplain, which runs diagonally across the Site from south-west to north-east. The majority of the lower-lying floodplain areas are to the west of the river, with the land gently rising towards the north-western boundaries of the Site. The eastern bank of the river is notably steeper, with the majority of the eastern half of the Site sitting on a low plateau above the floodplain

2.4 The bedrock geology is London Clay, with superficial alluvial deposits (clay, silt sand and gravel) on the floodplain, and a mixture of more freely-draining 'brickearth' (clay, silt and sand) and 'river terrace' (sand and gravel) on higher ground to the east and north-west. Localised areas of brickearth and river terrace deposits are also present on the floodplain itself, providing 'islands' of drier ground. Soils are generally neutral to weakly acidic.

Landscape/Ecological History

2.5 Historic maps and records from the mid-1700s to late 1800s indicate that the floodplain habitats to the west of the Loddon were generally a network of irregularly-shaped meadows, permanent pastures and small areas of rough marshland or scrub, bordered by a series of ditches, hedgerows and occasional green lanes. Many of these ditches and boundaries are still present today. Very little woodland was present in this landscape.

2.6 The north-western slope above the floodplain was historically a series of enclosed recti-linear fields, likely used for arable or grazing associated with Upperwood Farm and Marsh Farm (the latter no longer present).

2.7 The plateau east of the Loddon can be divided into three main historic land uses: parkland and scattered trees associated with the former Arborfield Hall; land used for growing arable crops, and old lanes or droveways with some woodland plantations alongside the river; and part of the historic Sindlesham Common which would have typically been rough grazing land.

Designated Sites

2.8 Five Local Wildlife Sites (LWS) are located within the Site. These are:

- St Johns Copse LWS – *Lowland mixed deciduous woodland listed on the Provisional Ancient Woodland Inventory*

- Hall Farm Woodland Triangle LWS – *broadleaf wet woodland, with mixed plantation woodland and a discrete pocked of swamp.*
- Rushey Mead LWS – *Lowland mixed deciduous woodland and wet woodland.*
- River Loddon LWS – *Diverse river system supporting protected and notable species.*
- Loaders Copse LWS - *Lowland mixed deciduous woodland listed on the Provisional Ancient Woodland Inventory*

Habitats and Vegetation

2.9 A wide variety of habitat types are found at the Site including cereal crops, agricultural grasslands, semi-improved neutral grasslands, scrub, rush pasture, reedbeds, swamps, wet and dry woodland, ditches, hedgerows, tree lines, veteran trees, urban land, standing water, streams and the River Loddon itself.

2.10 Several habitats mapped on Natural England's Priority Habitat Inventory (PHI) are present within the Site, mainly to the west of the Loddon and north of the M4. These include areas of Lowland Mixed Deciduous Woodland, Coastal and Floodplain Grazing Marsh, "Good Quality Semi-Improved Grassland", a small area of Traditional Orchard within the Hall Farm complex.

Coastal Floodplain Grazing Marsh

2.11 A large proportion of the Site, largely to the west of the River Loddon and small areas to the east, are classified as Coastal and Floodplain Grazing Marsh (CFGM) or Floodplain Wetland Mosaic (FWM).

2.12 The CFGM areas of the Site cover the majority of the habitats within the Loddon floodplain, and comprise a mixture of Modified Grassland, various types of Other Neutral Grassland, Other Standing Water (i.e. ditches and ponds), Other Wetland (swamps and tall wetland forbs), and Purple Moor-grass and Rush Pasture.

Grasslands

2.13 The Site supports a variety of grasslands, from species-poor modified grasslands to rank ungrazed grasslands and wet grasslands associated with seasonal floodwaters.

2.14 The main areas of other neutral grassland are located west of the Loddon. The majority are mostly located on localised gravel terrace deposits south of the M4 and form a mosaic with the more extensive areas of modified grassland on the floodplain. These grasslands have developed more diversity than their floodplain counterparts, likely due to being better-drained and therefore less nutrient-rich.

2.15 The modified grasslands are split between high-input and low-input permanent pastures. The high-input areas are managed for maximum productivity and are regularly sprayed off and re-sown. It is also likely that they are treated with fertiliser and/or herbicide.

2.16 The low-input pastures are grazed at a lower intensity and are not artificially fertilised, but their uniformity and lack of forbs indicate that they have been sown and treated with a broad-leaved herbicide in the past.

Wetlands

2.17 Two areas of the S41 Priority habitat Purple Moor-grass and Rush Pasture are present within the Site. Both are relatively poor examples of this habitat type, lacking many of the typical indicator species.

2.18 Two small parcels of reedbed dominated by Common Reed *Phragmites australis* are present within the floodplain areas of the Site. One forms part of the wet woodland/swamp/ditch complex to the west of the Loddon, and the other comprises two separate small stands of Common Reed that have colonised an old ditch to the east of the river.

Woodlands

2.19 Several strips and fragments of wet woodland are present on the Loddon floodplain, dominated by a combination of Alder *Alnus glutinosa*, Crack Willow *Salix x fragilis* and Goat Willow *Salix caprea*. The wet woodlands have either developed naturally over abandoned floodplain meadows or have spread out from lines of riparian trees and scrub.

2.20 Lowland Mixed Deciduous Woodland is a S41 Priority Habitat covering a range of woodland types, from species-rich ancient semi-natural woodlands with a varied structure, to more recent secondary woodlands that have developed as a result of natural succession on abandoned grasslands or arable land. The areas of lowland mixed deciduous woodland at the Site are typically dominated either Oak *Quercus robur* or Ash *Fraxinus excelsior* in the canopy over an understorey of Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre*, Elm *Ulmus procera* and/or Hazel *Corylus avellana*. Some are listed on the Provisional Ancient Woodland Inventory.

Hedgerows and Treelines

2.21 The majority of the hedgerows mark field boundaries and lanes, many of which are present on historic maps from the late 1800s. These range from species-poor roadside hedgerows (typically Hawthorn *Crataegus monogyna*) to species-rich native hedgerows with trees, sometimes associated with banks or ditches.

Floodplains Ditches and Modified Watercourses

2.22 Three main categories of ditches are present within the Site: ditches associated with hedgerows and/or lines of trees; natural watercourses issuing from springs or flushes that have been straightened and/or diverted to function as ditches; and man-made floodplain ditches designed to carry water off the floodplain.

River Loddon

2.23 The River Loddon runs through the Site, entering at the south and running north where it exits under the M4 motorway bridge. The stretch of the River Loddon within the Site boundary provides a dynamic and varied river system, with differing habitat conditions influenced by channel morphology, riparian structure and adjacent land use.

2.24 As well as providing an important ecosystem in itself, the River Loddon has the potential to support a host of protected and/or notable species including Water Vole, Otter *Lutra lutra*, White-clawed Crayfish *Austropotamobius pallipes* and freshwater fish.

Veteran Trees

2.25 A total of 188 veteran trees are within the Site and 135 Other Trees of Ecological Interest. All 188 veteran trees are referrable to the description of veteran trees in the BGRR, and of these 17 are referrable to the description in the NPPF.

Fauna

Invertebrates

2.26 A total of 852 species of invertebrate were recorded across the Site, which included 25 species with a conservation designation. The pockets of floodplain fen supported a diverse assemblage with nationally scarce taxa including the sedge feeding leafhopper *Cicadula flori*. Yellow Loosestrife *Lysimachia vulgaris* was host to the Loosestrife Bee *Macropis europaea* and the flea beetle *Lythraria salicariae*. The ray spider *Theridiosoma gemmosum* and the beautiful and very local *Araneus marmoreus var pyramidatus* were frequent in the sedge beds. Comfrey Symphytum officinale supported the scarce flea beetle *Longitarsis symphyti* and the flowers were home to *Meligethes symphyti*; both recently discovered species in Britain.

2.27 Standing shaded water yielded the Carabid beetle *Bembidion octomaculatum* which may be the first for Berkshire of a species extinct in UK for over a century which his now spreading back: presumably from a new wave of immigration.

White-clawed Crayfish

2.28 A habitat assessment of Barkham Brook for White-clawed Crayfish found that the upper sections of the brook contained extensive root tangles trailing into the water and good water quality creating habitats of high suitability to support WCC. The suitability decreases downstream due to increased dense emergent vegetation and deep silty substrate.

2.29 An eDNA survey returned negative results for White-clawed Crayfish presence in both Barkham Brook and the River Loddon.

Freshwater Fish

2.30 Thirteen species of fish were found within the River Loddon during the course of the electrofishing surveys. These included the critically endangered European Eel *Anguilla anguilla*, Brown Trout *Salmo trutta* and Bullhead *Cottus gobio*. The freshwater fish assemblage within the on-Site stretch of the River Loddon is primarily composed of small-bodied species such as Minnow *Phoxinus phoxinus*, Perch *Perca fluviatilis*, and Roach *Rutilus rutilus*, all of which are adaptable to a variety of environmental conditions. Predatory species, including Pike *Esox lucius*, were recorded but in low numbers.

Great Crested Newt

2.31 No waterbodies on Site were found to support Great Crested Newt (GCN) *Triturus cristatus*, although Habitat Suitability Index (HSI) assessments did identify suitable waterbodies.

2.32 Anecdotal evidence suggests that GCN are present in off-Site waterbodies directly to the south of the Site. Terrestrial habitats within the immediate vicinity of these waterbodies largely comprise of arable crops which are considered to provide sub-optimal habitats for GCN. There

are discrete patches of optimal habitats in the immediate area, including dense scrub associated with the Arborfield Cut ditch, and woodland habitats to the east.

Breeding Birds

2.33 Across all surveys, a total of 94 species of bird were recorded, which included 27 species Amber-listed Birds of Conservation Concern (BoCC), 16 Red-listed BoCC and 12 Species of Principle Importance under the NERC Act (2006) (as amended).

2.34 Despite the extensive areas of agricultural land, farmland birds such as Linnet *Linaria cannabina*, Yellowhammer *Emberiza citronella* and Bullfinch *Pyrrhula pyrrhula* were recorded in relatively low numbers and inconsistently between years. Skylark *Alauda arvensis* populations were strong on the eastern side of the River Loddon where the majority of arable crops are located.

2.35 Along the River Loddon and its associated habitats a number of riparian species were recorded holding territories in all years, including Sedge Warbler *Acrocephalus schoenobaenus*, Reed Warbler *Acrocephalus scirpaceus*, Reed Bunting *Emberiza schoeniclus* and Cetti's Warbler *Cettia cetti*.

Wintering Birds

2.36 During the course of the wintering bird surveys, a total of 65 species were recorded across the Site. This included 24 species Amber-listed species of conservation concern, eight Red-listed species and nine Species of Principle Importance under the NERC Act (2006) (as amended).

2.37 The results of the survey show that the Site supports notable wintering bird assemblages along the River Loddon, where Wideon *Mareca penelope*, Shoveller *Spatula clypeata* and Gadwall *Anas strepera* were frequently recorded. Large numbers of geese were also observed with large flocks of Greylag Geese *Anser anser* and Canada Geese *Branta canadensis* recorded.

Bats

2.38 The Site supports a large assemblage of bats, comprising nine bat species or groups: Long-eared bat *Plecotis sp*; Common Pipistrelle *Pipistrellus pipistrellus*; Leisler's bat *Nyctalus leisleri*; Myotis species *Myotis sp*; Nathusius' Pipistrelle *Pipistrellus nathusii*; Noctule *Nyctalus noctula*; Serotine *Eptesicus serotinus*; Soprano Pipistrelle *Pipistrellus pygnaeus*; and Barbastelle *Barbastella barbastellus*. A variety of supporting habitats are present within the Site including areas of ancient woodland, other woodland and well connecting hedgerows around the arable fields. The River Loddon runs through the centre of the Site as well as areas of open grassland. These habitats provide a variety of foraging opportunities for bats and well as provide green linking corridors between areas of woodland for commuting and dispersal.

2.39 Hotspots of activity were centred around most of the woodlands within the Site with the hedgerows most utilised being those that provide linear connectivity between these woodland habitats. The River Loddon Corridor is also an important resource for the bat assemblage

2.40 All bat species are legally protected under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017 (as amended) from killing, injury, disturbance and damage/obstruction to their roosts.

Hazel Dormice

2.41 The Site contains a range of hedgerows, treelines, scrub and woodland pockets of varying suitability to support Hazel Dormice *Muscardinus avellanarius*. The majority of habitats on Site were assessed to have sub-optimal suitability to support Dormice, primarily including hedgerows which exhibited gaps or showed signs of regular management, or woodlands that lacks a widely dense understorey.

2.42 Habitats classified as having optimal suitability to support Dormice, including woodland, treelines and boundary hedgerows often contained fruit, nut and nectar producing species such as Hazel *Corylus avellana*, Blackthorn *Prunus spinosa* and Hawthorn *Crataegus monogyna*. Dormice use these species as important sources of food as well as for constructing their characteristic nests.

2.43 Hazel Dormice were not identified as being present on the Site during the course of surveys.

Water Vole

2.44 The network of ditches across the Site provides habitats of varying suitability to support Water Vole.

2.45 No surveys of the Site have recorded any evidence of Water Vole activity. No field signs, including latrines, feeding remains, burrows, or footprints were identified in any of the surveyed sections.

Otter

2.46 The River Loddon supports foraging and commuting habitats for Otter. Evidence from surveys suggests that whilst the river is occasionally used for these purposes, it does not at present support a permanent territory at this time.

2.47 Otter are legally protected under the Wildlife and Countryside Act 1981 (as amended) and the Habitats Regulations 2017 (as amended), from killing, injury, disturbance and damage or obstruction to their resting places.

Reptiles

2.48 Comprising of arable fields and grazed pasture, the majority of the Site which falls within the construction footprint does not provide suitable reptile habitat. This, combined with a lack of reptile records in the local area, means that reptile presence/likely absence surveys have not been undertaken at this stage.

2.49 It is however acknowledged that low populations of reptiles, including Grass Snake *Natrix helvetica* and Slow Worm *Anguis fragilis,* are likely to be present across suitable areas within the Site.

3. ECOLOGICAL MITIGATION MEASURES - SITE CLEARANCE AND CONSTRUCTION PHASE

Introduction

3.1 The following section sets out the overarching ecological mitigation principles that will be incorporated during the Site clearance and construction phases of the Proposed Development. A detailed EMEP will be prepared for each future phase of development, which will build upon the below principles as relevant and be secured by planning condition.

Broad Mitigation Measures

Construction Environmental Management Plan

3.2 As identified within the Ecological Impact Assessment (Chapter 11 of the ES), in the absence of mitigation a number of Important Ecological Features are at risk of direct impacts arising from construction on the Site, including dust generation, potential pollution incidents, artificial lighting and damage/harm arising from construction activities. Impacts arising as a direct result of construction and clearance activities will be mitigated through the implementation of a Construction Environmental Management Plan (CEMP) which will be implemented on a phase-by-phase basis.

3.3 The CEMP will prescribe measures to prevent and mitigate dust, noise, lighting and other forms of pollution. It will ensure compliance with regulatory requirements and good practice protocols relating to storage, transportation and disposal of chemicals, materials and waste.

3.4 Key measures to be included are summarised below:

- Dust control measures, such as dampening down or covering of loose materials, careful handling and storage of spoil heaps, regular monitoring of dust levels along boundaries and implementation of road cleaning and wheel washing procedures;
- All surface water drainage from impermeable areas and tarmac will pass through trapped gullies prior to being discharged into any watercourse. As appropriate, gullies will be appropriately protected, such as with terram or straw bales, and will be regularly inspected and replaced or cleaned as needed;
- Silt protection measures will be integrated. This will include the provision of high-quality geotextile silt fencing around the entirety of any boundary where there is a possibility of surface water running towards the River Loddon or one of its tributaries. The silt fencing will physically trap and prevent silt-contaminated water from leaving the construction area;
- There will be no discharge of foul or contaminated drainage or trade effluent from the Site into either groundwater or any surface water, whether directly or via soakaways. No pumped water will be discharged into the live drainage system without having been filtered through a silt interceptor;
- Storage compound locations will be located on impervious bases, at least 10m from any watercourse and surrounded by impervious bund walls;

- Working hours will be restricted to 08:00-18:00 Monday to Friday inclusive and 08:00-13:00 on Saturdays, which will minimise the need for artificial light; and
- Any temporary artificial lighting will be directed away from sensitive habitats, this, alongside lighting specifications, will be agreed in advance by a suitably qualified and experienced ecologist.

Drainage Strategy

3.5 Adverse effects on hydrology and water quality will be avoided and mitigated by the implementation of the detailed Drainage Strategy for each phase of the Proposed Development. The strategy will ensure that discharges from the Site will maintain or improve the current levels of water quality; prevent the migration of pollutants and sediments off-Site; and maintain the volume of discharge at current greenfield runoff rates.

Buffer Zones

3.6 All retained habitats identified as Important Ecological Features (IEFs), located within proximity of the Proposed Development, will be appropriately buffered during the construction phase to prevent damage. IEF habitats include Provisional Ancient Woodlands, habitats listed under Section 41 of the NERC Act 2006 (as amended) and watercourses. They are shown on **Map 11.16.1**.

3.7 Provisional Ancient Woodlands and IEF woodlands will be subject to a buffer zone of no less than 15m from the edge of the woodland to protect root systems and canopies.

3.8 Other habitats may be subject to lower buffer distances. These will be based upon the advice of a suitably qualified and experienced ecologist and will be determined by the sensitivity of the habitat and likely impacts arising from nearby construction works.

3.9 Buffer areas will be defined by temporary construction fencing, as prescribed within the CEMP and/or the Tree Protection Plan (where relevant) for each phase of the Proposed Development, within which no construction activity or storage of machinery will occur. Only permitted landscaping works will take place in buffer zones.

Tree Root Protection Zones

3.10 Rootzone compaction and accidental damage to retained trees and hedgerows will be avoided through the implementation of a Tree Protection Plan for each phase of the Proposed Development. The Tree Protection Plan will include prescriptions for the installation and maintenance of fencing to exclude construction from activity within root protection areas.

3.11 All Veteran Trees, whether identified via the NPPF or The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024, shall include a root protection zone, to be as expansive as possible. At a minimum, it should encompass whichever of the following is larger:

- A radius extending 15 times the diameter of the tree (as measured at 1.5m above ground level); or
- An area reaching five meters beyond the tree's outermost canopy.

Mitigation of Loss of Rushy Mead Local Wildlife Site

3.12 The creation of the new spine road will result in the loss of approximately 0.02ha of the recently adopted extension of Rushy Mead Local Wildlife Site (LWS).

3.13 Although included under the existing LWS designation of lowland mixed deciduous woodland and/or wet woodland the proposed extension area is currently comprised of grassland, mixed scrub and relatively recently developed woodland. The woodland is an 'other lowland mixed deciduous woodland' and does not support features of a wet woodland.

3.14 The loss of the proposed LWS extension area will be compensated through the creation of new woodlands immediately to the south of St Johns Copse LWS and provisional ancient woodland. The species assemblage will be based upon the current composition of St Johns Copse LWS to provide an extension to the current woodland, with the aim that the ground flora of the provisional ancient woodland will eventually colonise the newly created habitats. It is considered that the creation of an extension to St Johns Copse LWS will eventually provide more valuable habitats that those currently proposed for loss within the Rushy Mead LWS extension.

3.15 In the long-term St Johns Copse LWS and the newly created woodland will be managed under a conservation-led management regime to maintain and, where possible, improve its value to local biodiversity.

3.16 All trees to be removed will be kept on-Site in line with the mitigation measures set out below for the loss of trees.

Mitigation of Habitat Degradation to the River Loddon

3.17 The proposed River Loddon bridge crossing will result in the degradation of river habitats as a result of increased shading resulting from the new structure. Habitat degradation will be compensated through the enhancement of retained habitats to increase the extent of valuable aquatic habitats.

3.18 Enhancement measures will focus on the establishment of diverse marginal and aquatic vegetation, to increase the complexity of habitat structure. This will be achieved through selective vegetation thinning along the banks to increase light penetration to the channel. Increasing light penetration will allow vegetation already to present within the seed bank to establish in conditions which may otherwise have remained unsuitable. The establishment of vegetation will be monitored, and if considered necessary, additional plug planting or seeding may be introduced to further increase species diversity.

3.19 Given the change in structure and morphology of the River Loddon as it progresses through the Site, the proposed enhancement measures will be focussed on the northern-most section of the river where the characteristics of the river most closely match that of the bridge crossing. This will ensure that species which rely on these habitats and may have been displaced by the River Loddon bridge crossing benefit from the proposed enhancement measures.

Mitigation of Loss of Coastal Floodplain Grazing Marsh

3.20 The Proposed Development will result in the loss of approximately 8.72ha of land listed as Coastal Floodplain Grazing Marsh (CFGM) on the Priority Habitats Inventory.

3.21 To offset this loss, 46.65ha of existing land included as CFGM on the inventory will be enhanced to improve its current condition and increase the opportunities associated with the habitats. Habitat works will seek to reintroduce semi-natural habitats found within traditional CFGM, increasing habitat diversity and providing greater value to local biodiversity. Proposals will be informed by local conditions and survey results to provide habitats of the greatest benefit to the local landscape. The introduction of species-rich grasslands, wetlands and standing water will be complemented by the introduction of appropriate conservation-led management, such as grazing.

Mitigation of Loss of Hedgerows and Treelines

3.22 The hedgerows and treelines to be breached to create access for the Proposed Development will be managed to improve their existing value. Where required, gaps will be filled with native species, to improve connectivity and increase species diversity.

3.23 Hedgerows and treelines are currently bound by agricultural land, including grazed pasture and arable crops. New semi-natural planting will be included along the length of retained hedgerows and treelines to create green corridors, thereby increasing their value as linear features within the landscape. Such planting will include the provision of species-rich grasslands

3.24 In the longer-term, more appropriate management practices will be implemented. The hedgerows will be subject to traditional management practices such as hedge laying with rotational cutting to provide a diversity of habitats.

Mitigation of Loss of Woodland

3.25 To facilitate the spine road, the Proposed Development will result in the loss of approximately 0.11ha of other lowland mixed deciduous woodland.

3.26 To compensate for the loss of woodland habitats, 0.72ha of new other lowland mixed deciduous woodland will be planted within the Country Park or Proposed Development. The new woodland will comprise of species found locally, and relevant to the local hydrological conditions. Understorey planting will increase the complexity of the woodland and provide additional resources for local biodiversity.

3.27 The new woodland will be managed under a conservation-led management regime to maximise its value to local biodiversity.

3.28 All trees to be removed will be kept on Site as deadwood in line with the mitigation measures set out below for the loss of trees.

Mitigation of Damage/Destruction to Flora of Conservation Interest

3.29 To prevent damage to flora of conservation interest which lies within, or close to, the development footprint, a Working Method Statement (WMS) will be devised and implemented during the construction phase.

3.30 The WMS will include the following measures;

- The Proposed Development construction footprint will be marked out on the ground where it is located within close proximity of known flora of conservation interest, as set out in **Technical Appendix 11.5**.
- A suitably experienced botanist will undertake a survey to determine whether flora of conservation interest is located within an area whereby it is at risk of damage or loss.
- Where the flora is located a reasonable distance from construction but at risk of accidental damage, suitable protection measures, such as the installation of Heras fencing will be installed to protect the flora.
- Where the flora is likely to be lost as a result of construction, the botanist will identify a suitable receptor location and the specimen will be translocated under the supervision of a suitable qualified ecologist.

Mitigation of Loss of Trees

3.31 Three veteran trees identified as such under The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024 are currently proposed to be lost in order to accommodate Site infrastructure. Additional mature trees, which are not veteran, are identified to be removed to facilitate access to the Site.

3.32 To compensate for the loss of these trees, they will be replaced on a one-to-one basis with standard trees of a suitable species (ideally like-for-like where feasible), in a suitable location within the Country Park, or suitable semi-natural habitats around the Proposed Development. Suitable locations will be chosen based on the species of the tree and its specific requirements (e.g. soil types, ground water levels etc).

3.33 Dead and decaying plant material are vital components of a properly functioning ecosystem and play a key role in sustaining biodiversity, soil fertility and energy flows. A wide range of plant and animal species depend on deadwood habitats, or as a food source, particularly invertebrate species. Furthermore, decomposing trees slowly release carbon back into the soil preventing the sudden release of carbon which other means of disposal may cause. Therefore, all felled trees will be retained on-Site to provide deadwood habitats.

3.34 Where a tree is felled, the resulting logs will be relocated to suitable habitats in as large a section as it possible. Suitable locations may be within the Country Park or within semi-natural habitats around the Proposed Development. The deadwood will be utilised in a variety of ways to maximize ecological value. This will include the vertical installation of logs to provide standing deadwood habitats, whilst others may be partially buried to create decaying wood which will be of benefit to species such as Stag Beetle *Lucanus cervus.*

Mitigation of Harm to White-clawed Crayfish

3.35 The spread of invasive Signal Crayfish *Pacifastacus leniusculus* presents a significant threat to White-clawed Crayfish survival, due to competition, predation, and the transmission of ‘Crayfish Plague’. The River Loddon is known to support a substantial population of Signal Crayfish, whilst White-clawed Crayfish inhabit the upper stretches of Barkham Brook.

3.36 To protect the White-clawed Crayfish population and prevent the spread of Crayfish Plague, biosecurity measures will be implemented, such as ‘Check, Clean, Dry’ protocols, for all

equipment used in the watercourses. These measures will be secured through the CEMP for relevant phases.

Mitigation of Harm to Great Crested Newt

3.37 In the absence of mitigation, vegetation clearance and earthworks may result in harm to Great Crested Newt occupying on-site habitats during their terrestrial phase.

3.38 Any works to be completed within suitable terrestrial habitats will be conducted under either a Working Method Statement a European Protected Species Licence (EPSL) or under Wokingham Borough Council's District Licence. Whether a licence is necessary and proportional depends on the projected risk of harm to GCN and will be determined on a phase-by-phase basis with reference to the respective clearance areas from the GCN breeding ponds and the suitability of the affected and intervening habitats. As a general principle, an appropriate licence will likely be required to legitimise works undertaken within 500m of breeding ponds.

3.39 Potential hibernation habitats will not be uprooted, disturbed or tracked over between the months of November and February inclusive (this may vary year-on-year according to weather conditions).

Clearance under WMS

3.40 Clearance undertaken under a WMS will take place during the active GCN season between March and August inclusive on suitable terrestrial habitats beyond 500m from known GCN populations. Works will be subject to suitable precautions including toolbox talks, phased vegetation clearance, ecological supervision and fingertip searches of features considered suitable to shelter GCN. In the event GCN are encountered, works will stop and an appropriate licence will be obtained.

Clearance under EPSL

3.41 An EPSL will be obtained for works to take place on suitable terrestrial habitats within 500m of waterbodies supporting GCN. At this time, it is understood one or more of Waterbodies 14, 15 or 16 support GCN. Full population assessment survey data will be required to inform an EPSL application. In the event sufficient survey data cannot be obtained, the Proposed Development will sign up to the District Licence as outlined below.

3.42 Where clearance is to be undertaken under an EPSL, it will be preceded by a capture and exclusion exercise. Herptile exclusion fencing will be installed around the works area to be cleared in order to intercept GCN, with the fence route to be determined at each phase of the Proposed Development.

3.43 Refugia and potentially pitfall traps would be installed on the inner side of the exclusion fence, approximately every 10m, and a line of construction fencing (such as Heras fencing) will be installed to the inside of the refugia (leaving a sufficient access gap for fence maintenance) to prevent accidental damage to the herptile fencing from machinery.

3.44 Refugia will be checked by an appropriately licensed ecologist, daily for a minimum of 30-day period, under suitable weather conditions and during the active GCN season (typically March to October inclusive), continuing until five clear days are achieved, in line with the Great Crested Newt Mitigation Guidelines (NE, 2001). The number of trapping days will be informed by the

GCN population size within impacted ponds. Any GCN caught will be moved to a suitably well-established on-Site receptor area, to be determined at each phase of development.

3.45 Fingertip searches of debris piles in advance of mechanical clearance will be carried out between March and October inclusive by a licenced ecologist, with any GCN moved to the appropriate receptor area as above.

3.46 Phased vegetation clearance may also be undertaken to expedite capture or to persuasively clear areas of more marginally suitable habitats for GCN. This will involve strimming the vegetation down to around 10-15cm in height for at least 48 hours prior to the commencement of any instruction groundworks or vegetation clearance, thus encouraging any GCN to disperse out of the area. This can be undertaken at any time of year, subject to nesting bird checks described below.

3.47 The exclusion fencing and traps will be regularly checked and maintained to ensure that they remain fit for purpose. Vegetation on either side of the fence will be strimmed regularly during the growing season. The fencing will remain in place under the end of the construction/habitat creation works in question and will be removed between the months of March and October to avoid any GCN that may be hibernating along the fence line.

3.48 Following the completion of the translocation the ground/topsoil will be cleared. Any areas still considered as potentially containing GCN will be sensitively cleared under the supervision of a licenced ecologist, between the months of March and October inclusive.

Clearance under District Licencing

3.49 In the event sufficient survey data cannot be obtained to assess the GCN population of the ponds, the Proposed Development will sign up to District Licencing scheme run by NatureSpace Partnership on behalf of Wokingham Borough Council.

3.50 Once successfully signed up to the scheme, the District Licence will allow licensable works to be undertaken across the Site in line with their Best Practice Principles.

3.51 Given that small parts of the Proposed Development fall within the GCN high-risk impact zones, on-Site mitigation may be required as part of the licence and this will be advised by NatureSpace during the course of the application.

Mitigation of Harm to Breeding Birds

3.52 In the absence of mitigation, the clearance of scrub, woodland, hedgerow, arable vegetation and buildings may result in harm to nesting birds, and the destruction of nests, eggs and chicks.

3.53 To minimise the risk of harm to breeding birds, vegetation clearance will take place outside of the breeding bird season (March – mid-September inclusive). Where this is not possible, vegetation clearance or building demolition will be preceded by a nesting bird check to be undertaken by a suitably experienced ecologist, no more than 24 hours prior to the commencement of works.

3.54 Should a nest be identified, it will be cordoned off with a suitable buffer (distance of which will be species dependant) until such a time that the ecologist has confirmed confirm that it is no longer active.

Mitigation of Loss of Foraging/Nesting Habitats for Birds

Skylark Mitigation

3.55 A total of 14 Skylark territories are proposed to be lost to facilitate the Proposed Development, as well as 10 Skylark plots which are currently delivered on the Site as part of historic mitigation strategies for development within Shinfield.

3.56 To mitigate the loss of Skylark territories on-Site, additional Skylark plots will be provided within local farmland to increase the carrying capacity of Skylark locally.

3.57 Skylark plots will be provided at a rate of two plots for every territory lost, plus the 10 committed plots. Based on the maximum recorded number of territories, this therefore equates to 38 Skylark plots to be provided.

3.58 Initially, given the phased nature of the Proposed Development, the Skylark plots will be provided on winter sown cereals within the Site. As the Proposed Development progresses, and less arable land is available, the plots will be provided on farmland owned by the Applicant within close proximity of the Proposed Development.

3.59 Skylark plots will be provided at a density of 2 plots per ha, requiring a minimum of 19ha, within winter-sown cereals. Plots will be positioned at least 50m from boundary features, such as hedgerows and fencing, to reduce the risk of predation. The plots will be created by turning off the drill during sowing, or by treating the selected plot with herbicide prior to the breeding season.

Farmland Winter Bird Mitigation

3.60 The loss of winter stubble will result in the loss of foraging opportunities for flocks of wintering farmland birds, including Skylark, Meadow Pipit and Linnet.

3.61 The presence of winter stubble within the Site is not a persistent feature and may vary between years depending upon the current farming regime. Therefore, there is not a definitive quantity of winter stubble which will be lost as a result of the Proposed Development and therefore can be equally mitigated.

3.62 It is therefore proposed that the Applicant will commit to providing at least one field of winter stubble within their farming practices to provide a sustainable winter foraging resource for wintering farmland birds. The field which provides the stubble may change between years.

3.63 The remnants of a harvested crop, such as a spring-grown cereal crop will be left in the field and not treated with post-harvest herbicides. Where possible, stubble of varying heights will be provided to benefit a range of bird species.

Mitigation of Harm to Bats

Loss of Building Roosts

3.64 Current proposals include the demolition or renovation of a number of buildings which have previously been confirmed to support roosting bats. Confirmed bat roosts which will be impacted as a result of the Proposed Development are:

- B15 – Brown Long-eared bat, roost type to be confirmed;
- B17 – Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared day roost;
- B22 - Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared day roost;
- B24 – Soprano Pipistrelle and Brown Long-eared day roost;
- B26 – Common Pipistrelle day roost;
- B27 – Soprano Pipistrelle day roost and Brown Long-eared maternity roost;
- B35 – Pipistrelle species and Soprano Pipistrelle day roost; and
- B35a – Common Pipistrelle and Soprano Pipistrelle day roost.

3.65 Any works to a building supporting a confirmed roost which is to be lost or disturbed as a result of planned works will be undertaken under an EPSL from Natural England. The licence application will include a detailed mitigation strategy, developed in accordance with best practice guidance, that will be adopted to avoid detrimental impacts on bats. Although full details of the mitigation strategy will be agreed with Natural England through the licensing process, the principal elements will include:

- Sensitive timing of works (bats are most vulnerable during the maternity season and the hibernation period);
- A pre demolition/felling emergence survey;
- A pre demolition/felling inspection;
- The supervised soft strip of building features; and
- Provision of appropriate new roosting features in/on new buildings or on retained boundary trees (for example, bat boxes, recessed bat bricks, external wall mounted boxes, tree mounted boxes or pole mounted boxes).

3.66 Where a structure is not confirmed as an active roost but nevertheless retains suitable features to support roosting bats, works may be carried out under ecological supervision and a precautionary WMS which may include all or some of the measures identified above. The extent of ecological supervision will be based on Bat Conservation Trust (BCT) Guidelines and will depend on the suitability of the feature and the anticipated level of risk.

Provision of new roosting features

3.67 When providing new roosting features as mitigation for the loss of a bat roost, the bat mitigation guidelines state that 'The ideal scenario is to provide the same roost in the same place, like-for-like, with only temporary functional loss, and with any enhancements that can reasonably be provided'.

3.68 Opportunities to incorporate existing roosts in the final design, e.g. through refurbishment and repurposing, will be prioritised over the destruction of an existing roost and provision of a new roost as compensation.

3.69 B15, B17, B22, B24 and B27 are known to support populations of Brown Long-eared bats, including a maternity roost. This species are roof void dwelling species and thus provision of new roosting features will require a roof void of suitable dimensions either as a stand-alone

purpose-built bat structure or within a roof void above a building known as a bat loft. Bat boxes are generally not considered suitable roosting compensation for this species because of large, uncluttered flight space they require.

3.70 Certain specifications are required when designing a bat structure/bat loft which will be considered in the design process. The specifications will be dependent on the existing roost and replicating the internal conditions which may be subject to further surveys but principal elements that may need to be considered at the design stage are:

- Solar gain;
- Roof void heights and volume (ideally an apex height of 2.8m and length and width of 5m or more);
- Roof access; and
- Materials.

3.71 Where possible, replacement roosts should be ready for use by bats well in advance (i.e. installed as per all requirements) before the existing roost is destroyed. Bats will not be left without a roost in the season when that roost would be expected to be in use and as such temporary bat boxes may be required for the duration of the demolition/renovation works.

3.72 Bat boxes may also form part of the mitigation strategy for loss of smaller day roosts for crevice dwelling species such as Common Pipistrelle. These will be closely cited to the original bat roost location and provision for integrated bat boxes in new buildings will be prioritised, as well as tree mounted bat boxes, as these offer greater longevity.

Loss of Tree Roosts

3.73 A total of 378 individual trees and 34 groups of trees were found to be suitable to support roosting bats.

3.74 A total of 26 trees which are considered to have suitability to support roosting bats have been identified for removal. These trees will be subject to further survey over the summer/autumn of 2025, with results to be submitted within an addendum to Technical Appendix 11.12.

3.75 Where trees are confirmed to be lost, additional survey works will be undertaken in line with best practice guidelines to determine whether roosting bats are present, and the requirement for an EPSL. As with buildings, any tree supporting a confirmed roost which is likely to be felled or disturbed as a result of planned works will need to be subject to a EPSL from Natural England with similar measures to those detailed above.

3.76 If full retention of the tree is not possible, measures should be incorporated to partially retain the tree, and the bat roosting feature in situ. Where this is not possible the Bat Roost Feature could be removed and relocated to nearby trees at a similar height and orientation.

3.77 If this is not possible the loss of roosts will need to be compensated for. This can be achieved through man-made arboreal features such as dead wood and hazard beams or through veteranisation (eg lifting bark, creation of woodpecker holes and stem cracks or bat boxes within the trunk) or through artificial tree mounted bat boxes of suitable size and type for the target species.

3.78 Tree-roosting bats move roost frequently and so trees where no roost has been recorded but nevertheless retains suitable bat roosting features may need to be surveyed or inspected by a suitability licenced bat ecologist prior to felling in order to confirm continued absence of roosting bats. In such cases felling will be carried out under ecological supervision and a non-licensed method statement. Nesting birds may also use some of the features therefore it is recommended that removal is undertaken outside of the nesting bird season (March- August inclusive).

[redacted]

[redacted]

[redacted]

[redacted]

Mitigation of Harm to Reptiles

3.83 In the absence of mitigation, vegetation clearance and earthworks may result in harm to reptiles occupying suitable on-Site habitats.

3.84 Should a forthcoming phase contain substantial areas of suitable reptile habitats, a reptile survey should be undertaken to confirm presence or likely absence and to inform a suitable mitigation strategy. Should sufficient populations be identified, the mitigation strategy should include a translocation exercise to a pre-identified reptile receptor site, which has established reptile habitats and will not be disturbed as part of future development phases.

3.85 For areas where reptile habitats are present but limited (for example minor field margins or verges), works should be undertaken under the provisions of a WMS, which will include the following:

- Phased vegetation clearance will take place which will include a first cut to approximately 15cm above ground to avoid potential direct harm to reptiles, then after a period of 1 week, during which reptiles will be able to disperse, a second cut to ground level will be conducted.
- A suitably experienced ecologist will hand-search any potential natural/artificial refuges prior to vegetation clearance. If any refugia needs to be dismantled using an excavator, then this will be supervised by the ecologist. If reptiles are found during this task, then they will be relocated to a suitable pre-identified receptor area.
- Any works to suitable reptile habitats will take place during the active reptile period (April to September inclusive) and during weather conditions suitable for promoting reptile movement.
- Once the phased clearance has been completed, a destructive search will be carried out on areas remaining areas of suitable reptile habitat. This will require a suitably experienced ecologist supervising the removal of the top layer of soil using an excavator. Areas within the RPA of retained trees will need to follow detailed recommendations from a suitable qualified arboricultural consultant to ensure tree roots close to the surface are not damaged.
- Only once the ecologist is satisfied that all potential reptile habitat has been removed, then remedial/construction works can commence.
- If habitats cannot be kept unsuitable for reptiles for the duration of the construction works, temporary reptile fencing should be erected for the duration of the construction works.

3.86 Potential hibernation habitat will not be uprooted, disturbed or tracked over between November and February (inclusive), although this may vary year-on-year dependent upon weather conditions.

4. ECOLOGICAL MITIGATION MEASURES – OPERATIONAL PHASE

Introduction

4.1 The following section sets out the overarching ecological mitigation principles that will be implemented during the operational phase of the Proposed Development. A detailed EMEP will be prepared for each future phase of development, which will build upon the below principles as relevant.

Mitigation of Recreational Pressure on Designated Sites

4.2 In the absence of mitigation, the proposed development is likely to result in an increase in recreational pressure on the Thames Basin Heaths SPA.

4.3 As set out in **Technical Appendix 11.17: Information for Habitats Regulations Assessment** and **11.18: Suitable Alternative Natural Greenspace Delivery Plan**, the impacts associated with recreational pressure will be avoided through the provision of 40.27ha of SANG, in addition to a contribution to the Strategic Access Management and Monitoring (SAMM) project, in accordance with the requirements of the local strategic mitigation framework.

4.4 The proposed SANG has been designed to meet the 'Essential' criteria of Natural England's Guidelines for the Creation of SANG (2021), as well as most of the 'Desirable' criteria.

4.5 Whilst functional as a stand-alone site, the new SANG to be delivered will form part of a wider suite of well-connected local SANGs, creating an extensive area of accessible open greenspace. This will provide new and existing residents with a variety of options for their recreational activities, including longer walking routes and a variety of habitats to experience.

4.6 Although specifically designed to avoid impacts on the Thames Basin Heaths SPA, the proposed SANG will provide mitigation for all off-site Designated Sites by providing an easily accessible and attractive alternative option for recreational activities.

Mitigation of Recreational Pressure on on-Site Habitats and Designated Sites

4.7 In the absence of mitigation, the Proposed Development may result in an increase in recreational pressure upon areas of retained habitats and Local Wildlife Sites (LWS) within the Site.

4.8 Effects arising from increased recreational pressure will be avoided and mitigated through the provision of the SANG as outlined above. Furthermore, additional open greenspace will be available through the proposed Country Park which will increase recreational options for new and existing residents.

4.9 Access to sensitive habitats and LWS's within the Site and Country Park will be carefully managed. Where public access is permitted, footpaths will be clearly delineated to direct footfall away from potentially sensitive features. This will be supplemented by the provision of Information Boards, where required, to inform members of the public of the importance of features and discourage undesirable behaviours.

4.10 Where access to LWS and/or habitats is considered to be incompatible with preferred management, measures will be put in place to deter members of the public. Footpaths will be

directed away from these areas and fencing and/or planting will be used to prevent unauthorised access. Signage may be included to inform members of the public of the importance of habitats, educate and minimise the risk of unauthorised access.

Mitigation of Increase in Artificial Lighting

4.11 In the absence of mitigation, the introduction of artificial light sources could impact upon the local bat assemblage and other nocturnal wildlife. This may lead to the abandonment of roosts, changes to prey availability and foraging behaviour, disruption of commuting routes and reduction in fitness which may impact survival rates.

4.12 The effects of increased lighting will be mitigated by the application of control measures to be prescribed in a detailed Lighting Strategy for each phase of the Proposed Development. Lighting Strategies will be developed in accordance with the recommendations of Bat Conservation Trust Guidance Note 08/23 'Bats and Artificial Lighting at Night' and will broadly include which will include:

- Minimising lighting provision to the extent required for safety;
- Directing lighting downwards and away from wildlife habitats and boundary features, using cowls/baffles/shields as necessary to achieve full horizontal cut-off;
- Minimising the height of light columns and features to minimise light spill;
- Selecting luminaries with warmer (less disruptive) colour temperatures in preference to those towards the blue-white end of the colour spectrum;
- Selecting LEDs in view of their relatively sharp cut-off, lower intensity, colour rendition and dimming capability;
- Minimising lux levels, particularly in more sensitive areas; and
- Use of a timer or motion sensation controls where possible.

4.13 These principles will form the basis for a series of appropriately sensitive and ecologically informed detailed Lighting Strategies which will be tailored to the subsequent phase of the Proposed Development.

4.14 In addition to the above, appropriate lighting shall be installed within residential gardens which face onto natural greenspaces prior to first occupation, in keeping with the above recommendations, in a bid to reduce the impact of lighting that might otherwise be installed by new residents to meet this need.

Mitigation of Loss of Foraging Habitats

4.15 The Proposed Development largely occupies agricultural farmland of limited ecological value. However, species such as [redacted] bats and birds still utilise these habitats in some capacity for foraging.

4.16 'Natural green spaces' throughout the Proposed Development will incorporate semi-natural habitats which will be managed through conservation led management regimes to increase their value to local biodiversity. Native plant species only will be included within areas designated as 'natural green space'. Species-rich habitats will provide opportunities for invertebrates,

increasing their abundance and diversity throughout the Proposed Development. In turn, this will provide a foraging resource for bats, birds, small mammals and reptiles. The inclusion of native fruit and berry-bearing trees will further diversity foraging opportunities and seasonal availability.

4.17 In 'amenity green spaces' and 'parks and gardens', native plant species should be used where possible. Where ornamental species are to be included, these should be chosen based on their value to local invertebrates, with species included on the 'RHS Plants for Pollinators' given priority.

4.18 Species-rich short grasslands in amenity greenspaces will provide foraging habitats for [redacted] and probing species such as Starling, who will forage for Earthworms *Lumbricus terrestris.*

Mitigation of Disturbance to Freshwater Fish

4.19 In the absence of mitigation, increased levels of public access to the River Loddon may result in increase disturbance to the freshwater fish assemblage. This is most notable at the southern end of the Site, where habitats suitable for fish spawning are located.

4.20 As part of the SANG design, footpaths have been directed away from the River Loddon where the SANG abuts suitable spawning habitats. Furthermore, post and wire fencing with be installed along the perimeter of the SANG to prevent off-lead dogs accessing the river. Scrub planting, to include species suitable for the floodplain, will be installed behind the fence to screen the riverbank thereby deterring unauthorised access.

Mitigation of Harm to Herptiles

4.21 In the absence of mitigation, amphibians and reptiles may be vulnerable to harm arising from an increase in human activity associated with the Proposed Development, including introduction of traffic, increase in recreational use and ongoing management of greenspace.

Highways Measures

4.22 Gully pot entrapment and road mortality will be mitigated by the provision of recessed kerbs around gully pots, and wildlife tunnels or drop kerbs at potential crossing points.

Greenspace Management

4.23 Grass cutting within Natural Greenspace areas which comprise suitable reptile habitats will be undertaken on a two-phase basis, whereby an initial cut will be taken to reduce the extent of vegetative cover and encourage the dispersal of small animals.

Additional Mitigation Measures

4.24 The Proposed Development will reduce the permeability of the Site in the absence of mitigation. This will be most notable for small mammals such as Hedgehogs *Erinaceus europaeus* who travel up to 1 mile a night whilst foraging and are less easily navigate built environments.

4.25 Permeability will be maintained through the provision of ramps or gaps in retaining walls and 'hedgehog highways' in fence gravel boards.

5. PROPOSED DEVELOPMENT ENHANCEMENT STRATEGY

Introduction

5.1 The following section sets out the broad ecological enhancement principles to be included within developable areas of the Proposed Development in line with the aspirations of the NPPF, emerging local policy and the Berkshire Local Nature Recovery Strategy.

Habitats and Landscaping

5.2 As shown on the Illustrative Open Space Strategy, the Proposed Development will incorporate areas of open greenspace, to include 'Natural Green Spaces'. These areas will incorporate semi-natural habitats, such as species-rich grasslands, native scrub and woodland planting. Management will comprise a mix of conservation-led regimes to provide maximum benefits to local biodiversity whilst facilitating access for residents where appropriate. Planting in these areas will comprise entirely of native species, suitable to the local conditions. They will include fruit and berry-bearing species to provide foraging resources for local wildlife, and species of value to pollinators including native wildflowers and night flowering species such as Honeysuckle *Lonicera periclymenum.*

5.3 Where habitats of value exist within the Natural Green Spaces, they will be retained and enhanced under a suitable conservation-led management regime.

5.4 'Amenity Greenspaces' and 'Parks and Gardens' will primarily provide the function of amenity spaces for new residents. Opportunities for local biodiversity will be incorporated where possible. For example, species to be included within planting schedules will include species listed on the RHS Plants for Pollinators list.

Invertebrates

5.5 The Proposed Development will provide additional shelter opportunities for invertebrates through the provision of invertebrate boxes. A variety of boxes should be used, to cater for a range of species thus diversifying the urban invertebrate assemblage. These boxes will be located in public spaces (e.g. not residential gardens) and made of durable materials such as woodcrete.

5.6 Where feasible, residential buildings will have bee bricks incorporated into them, providing additional long-term refuges for solitary bees and other invertebrates.

5.7 Flowering native species, such as Crab Apple *Malus sylvestris*, Wild Cherry *Prunus avium* and Dog Rose *Rosa canina* will be included within the landscaping plans to provide additional foraging resources and 'Plants for Pollinators' will be included within ornamental mixes.

Amphibians

5.8 Opportunities to provide aquatic habitats for amphibians will be considered for individual development phases as they come forward. Permanent waterbodies should be delivered where reasonable and practical.

5.9 Where waterbodies are provided, they will include gently sloping, irregularly contoured sides and a series of marginal shelves, the depth of which will be varied in order to accommodate the

requirements of a broad range of marginal and submerged aquatic plant species. The maximum depth of ponds should be approximately 1m. Pond margins should be sown with native species wetland grass mixes, and marginal and aquatic native planting included to provide egg laying opportunities for species including Great Crested Newt.

5.10 Permanent waterbodies may include attenuation basins which form part of the wider drainage strategy where it does not interfere with their drainage and hydrological functions. Attenuation basins intended to provide enhancements for amphibians and other biodiversity should be 'naturalised' and not overly engineered.

5.11 Habitats to be included within Natural Greenspaces will increase the extent of suitable terrestrial habitats, including tussocky grasslands, scrub and woodland edges.

5.12 The inclusion of hibernacula within suitable locations with provide sites for hibernation and foraging resources.

Birds

5.13 Additional nesting opportunities for urban and garden birds will be incorporated into the Proposed Development to increase opportunities for the local bird assemblage. A proportion of new residential dwellings will include integrated bird boxes, including House Sparrow *Passer domesticus* terraces and general-purpose boxes for species such as Blue Tit *Cyanistes caeruleus* which thrive in residential environments.

5.14 Buildings of a sufficient height, which allow the boxes to be positioned at least 5m from the ground, will make provisions for Swift boxes to increase local nesting opportunities for the nationally declining species. These boxes must be located on open aspects which allow sufficient space for Swift to fly in and out of the box.

5.15 Additional foraging opportunities will be provided through the provision of native fruit and berry-bearing species within the landscaping plans. Such species could include Blackthorn, Wild Chery and Elder *Sambucus nigra*. By including a range of different species which provide fruit and berries at different times of the year foraging opportunities can be provided year-round, including for wintering species such as Redwing *Turdus iliacus*. The inclusion of Plants for Pollinators will increase invertebrate populations, providing food sources for chicks and insectivorous species.

Bats

5.16 Opportunities for bat species commonly associated with built environments, such as Common Pipistrelle and Soprano Pipistrelle will be incorporated into the Proposed Development.

5.17 A proportion of new residential dwellings will include integrated bat boxes, such as bat access tiles and enclosed boxes. Integrated bat boxes can be built directly into the brickwork or rendering of the building but there are also options to attach bat boxes to the outside of the building. The aim should be to provide a range of box types and sizes or varying materials to provide heterogeneity in roosting opportunities across the site. These boxes should be located on buildings which face out onto open greenspace or semi-natural habitats.

5.18 There are opportunities within the Proposed Development to incorporate bat lofts such as above car ports, to provide new roosting opportunities for bats. Such opportunities will be considered

for individual development phases as they come forward. Where possible bat lofts should be sited near to existing roosting locations and within close proximity to suitable commuting and foraging habitat such as woodlands and hedgerows. The lower portion of the building must be separate from the bat roof void which needs to have an apex height of 2.8m and a length and width of 5m or more.

5.19 The provision of native species within the landscaping plans will benefit the local invertebrate assemblage which in turn will benefit the local bat assemblage. Night-flowering species, such as native Honeysuckle, shall be included within the landscaping plans to provide an additional foraging resource for night-flying invertebrates such as moths. Greenspaces should include boundary habitats such as scrub and hedgerows that maintain canopy level connectivity for the bat assemblage and to ensure a linear links to habitats such as woodlands for dispersing bats.

Enhancing new bridges for bats

5.20 The are opportunities to provide new roosting opportunities within bridges, particularly the road bridge crossing the River Loddon. Bats will roost in holes, cracks and crevices between stonework and brickwork where mortar has eroded as well as voids and drainage pipes. Roosts will proactively be built into the River Loddon bridge crossing utilising these features to provide additional resource.

5.21 Rivers, particularly those with bankside vegetation, are a rich source of insect food for bats and form a well-connected network for bats commuting through the landscape. Bankside planting surrounding the bridge to improve connectivity and foraging habitats will also be considered as part of the bridge enhancements and should aim to create structurally diverse habitats.

Enhancing retained buildings for bats

5.22 There are opportunities afforded within the design to incorporate bat features into retained and refurbished buildings. Modifications to buildings can be made to provide roof voids for roosting bats as well as increase roosting opportunities for crevice dwelling species through the creation of gaps through missing mortar. Additional bat access can also be built into the modifications such as increased provision of bat access tiles or bat access tubes to aid bats in access cavity walls and internal roof voids.

Reptiles

5.23 Habitats within the Natural Greenspaces will incorporate opportunities for reptiles, such as tussocky grasslands and edge habitats. Scalloped edges will be incorporated into habitat management to increase the extent of edge and complexity of edge habitats.

5.24 Hibernacula and log piles will be positioned in suitable locations, in woodland and scrub edges, to provide additional cover and hibernation opportunities for reptiles. The creation of log piles will also increase the invertebrate assemblage which in turn will provide a food source for reptiles.

[redacted]

5.26 Fruit and berry-bearing species will provide further food sources which will be available at various times throughout the year.

6. ECOVALLEY ENCHANCEMENT STRATEGY

Introduction

6.1 EcoValley aims to deliver an ambitious restoration of agricultural land back into semi-natural habitats capable of supporting a range of protected species, whilst providing local residents with the opportunity to engage with nature.

6.2 EcoValley will provide a range of ecosystem services including: carbon storage; flood management; pollination; recreation; knowledge and learning; and physical health and mental wellbeing.

- Carbon Storage
    - New habitats to be provided, including new woodlands, wetlands and grassland will aid in the carbon storage capacity of the Site, reducing the impacts of emissions locally and contributing to tackling climate change.
- Flood Management
    - The floodplains within EcoValley serve an important purpose, storing floodwaters and ensuring less water makes its way downstream.
- Pollination
    - The diversification of habitats and flora will provide new and additional resources for local pollinators, increasing their diversity, abundance and overall contribution to local biological processes.
- Recreation
    - With the inclusion of more than 40ha of SANG, plus additional footpaths and cycle routes, EcoValley will provide a diverse landscape for new and existing residents to undertake recreational activities such as dog walking, running and bird watching.
- Knowledge and Learning
    - EcoValley will provide the University of Reading will an extensive area of land within which academic studies will take place to better understand the environment and local biodiversity contributing to global knowledge on topics such as acoustic monitoring.
- Physical Health and Mental Wellbeing
    - EcoValley will provide residents of Shinfield and Loddon Garden Village with easy access to nature, which has been demonstrated to improve mental health. The extensive recreational options give opportunities to improve health by increasing levels of physical activity.

6.3 The following section sets out the broad ecological enhancement principles to be included within EcoValley in line with the aspirations of the NPPF, emerging local policy the Berkshire Local Nature Recovery Strategy.

6.4 Enhancement measures to be included within EcoValley will largely focus on the improvement of habitats increasing the habitat heterogeneity across the Site, which by proxy will deliver

benefits to a range of protected and notable species as highlighted below, creating a resilient ecosystem for local biodiversity to thrive. These habitat improvements will be informed by protected species surveys (ensuring suitable habitats are being provided) and local ground conditions, including hydrology and soil sampling.

Local Wildlife Sites & Existing Habitats

6.5 Local Wildlife Sites and retained habitats identified as Important Ecological Features within Chapter 11 of the Environmental Statement will be incorporated into suitable conservation-led management regimes to improve their value to local biodiversity.

6.6 Suitable management measures will be identified through ecological surveys, and condition assessments undertaken as part of the Biodiversity Net Gain assessment. Broadly, such measures may include;

- Woodlands:
    - Veteranisation of trees;
    - Retention of standing dead wood;
    - Control of invasive species;
    - Infill planting of understorey and ground flora with native species of local provenance;
    - Implementation of rotational cutting/coppicing; and
    - Creation of open glades with wildflower rich grasslands.

- Hedgerows
    - Infilling planting with a diverse array species and ground flora with native species of local provenance.
    - Ongoing management to remove undesirable plants;
    - Hedgerow laying or coppicing as a means of infilling gaps.

- Grasslands
    - Implementation of conservation grazing regimes, or cutting/mowing as appropriate;
    - Control of scrub habitats;
    - Control of invasive/undesirable species
    - Diversification of grasslands through green hay or supplementary seeding.

6.7 Current management regimes are limited to those relating to farming practices, and therefore the implementation of informed management plans will benefit the habitats and the species which rely upon them.

Loddon Floodplain

6.8 Farmland within the Loddon Floodplains will be restored to semi-natural habitats commonly found in floodplain systems, including meadows and wetlands. This includes the majority of habitats currently included within the CFGM inventory.

6.9 A mosaic of mesotrophic grassland (MG) communities associated with damp or seasonally inundated grasslands are proposed throughout the Loddon Floodplain. The exact community to be established will be dependant upon local conditions, including soil hydrology, fertility and inundation rates, taking into consideration recommendations as set out in the "Floodplain Meadows – Beauty and Utility. A Technical Handbook" (Rothero *et al*, 2016).

6.10 The existing grasslands will be diversified through a combination of green hay, from suitable receptor sites such as Langley Mead or other identified suitable translocation sites. It is proposed that where possible grasslands will be grazed to maintain their biodiversity interest. An appropriate grazing regime will be set out within the relevant management plans, to include livestock type, stocking density, timing and length of grazing that will support herb-rich grasslands.

6.11 Scrapes and permanent waterbodies will be incorporated to provide additional aquatic habitats, increasing the diversity of vegetation and invertebrates which in turn will provide foraging opportunities for a range of species, including birds, bats and small mammals. Wetlands are an important habitat for invertebrates as many depend on water for various points in their life cycle. Plug planting may be used to further increase diversity of vegetation locally.

6.12 Alongside scrapes, localised areas of land will be raised to create islands, providing more diverse habitats during periods of inundation. Changes to topography within the floodplains will be undertaken in consultation with hydrologists to ensure the storage capacity of the floodplains is not altered.

Ditch Network

6.13 The Loddon Floodplain includes an extensive network of ditches which serve to move water through the landscape.

6.14 Suitable management measures will be implemented to improve their value to local biodiversity. Such measures may include:

- Diversification of bankside vegetation:
- Selective thinning to reduce overshading of the watercourse;
- Ongoing management to removal litter and silt from the watercourse;
- Increase watercourse complexity through the inclusion of features such as woody debris;
- Slow movement of water to reduce flows downstream (under advice of hydrologists)
- Planting of aquatic and marginal vegetation.

River Loddon

6.15 As part of the long-term management of the River Loddon and its riparian habitats, opportunities will be incorporated with a focus on reducing habitat degradation and improving ecological connectivity.

6.16 Measures to control sediment and erosion will be investigated to improve water quality and increase the extent of valuable habitats. In areas of undercutting, the banks may be reinforced with natural willow staking (or similar) to prevent further sedimentation whilst allowing natural processed to continue.

6.17 The placement of large woody debris may be strategically placed (with consideration of potential impacts to flooding) to increase localised velocity, which may help to redistribute sediment and prevent excessive accumulation in deep pools. Such debris would also provide micro-habitats for juvenile fish to shelter.

6.18 Graded gravel substrates may be introduced in areas prone to fine sediment accumulation to improve spawning conditions for Bullhead and Brown trout, while also enhancing flow diversity. Using coarse gravel and cobbles that are resistant to displacement will ensure long-term substrate improvement.

6.19 To improve habitat connectivity consideration will be given to any potential improvements that could be made to the existing weir and culvert systems, ensuring migration routes remain available. Gravel and sediment deposition areas along the river margin could be expanded with engineered riffles, or reprofiled margins to restore connectivity.

6.20 Opportunities to reconnect historic watercourses back to the River Loddon will be investigated, in conjunction with advice from hydrologists.

Habitat Creation

6.21 Outside of the Loddon Floodplain, further habitat creation will be undertaken on existing farmland to increase habitat diversity.

6.22 Species-rich grasslands suitable to local conditions will be created, through the use of green hay and/or supplementary seeding, increasing floral diversity providing resources for pollinators and local invertebrates.

6.23 The inclusion of tree planting throughout grasslands will diversify these areas, providing microhabitats and contributing to local carbon storage. New areas of woodland planting will further contribute to local ecosystem services, and increase the extent of habitats for woodland specialists, such as Barbastelle bat. The species to be included in tree planting will comprise of species found locally in the landscape, to include Oak, Field Maple and Wild Service Tree. Additionally, fruit and berry-bearing species such as Cherry and Hawthorn will be included to provide additional foraging resources for local biodiversity.

6.24 An on-Site tree nursery is proposed to include a proportion of trees with local genotypes within tree planting. Acorns and seeds will be collected and from local woodlands, such as St Johns Copse, and planted in the arable land to the south of the copse which is proposed for woodland creation. Once established at ‘whip’ stage, a proportion of these plants would then be relocated to other areas of EcoValley to reduce the need to source plants from off-site.

6.25 In addition to the above, areas of native scrub will be incorporated to provide nesting and sheltering opportunities for birds, and to provide valuable ecotones for invertebrates and reptiles.

White-clawed Crayfish

6.26 During the enhancement of the ditch network, opportunities to implement measures for White-clawed Crayfish will be included.

6.27 Such measures will consider the creation of gravel beds, which provide key refuge and breeding sites. The management of fine sediment deposition will be critical to prevent smothering of these substrates.

6.28 Maintaining some shaded sections of watercourses through riparian planting will help regulate water temperature and maintain high oxygen levels, both of which are critical for crayfish survival.

Amphibians

6.29 The inclusion of ponds and scrapes will provide the local amphibian assemblage with aquatic habitats, whilst the inclusion of tussocky grasslands, scrub and woodland will provide habitats for the terrestrial life phases.

6.30 Measures to benefit the local invertebrate population will increase food supplied for amphibians, whilst the inclusion of hibernacula will provide hibernation habitats.

Birds

6.31 The proposed habitat creation and enhancement measures will increase the abundance and diversity of the local invertebrate population, providing breeding birds with resources for feeding chicks. Furthermore it will increase the extent of wetlands and woodlands within the Site, thereby benefiting species which rely on these habitats, such as Cetti's Warbler, Reed Bunting and Nightingale.

6.32 The diversification of habitats within the River Loddon floodplains will benefit overwintering wildfowl by creating more diverse foraging resources. Species such as Wigeon forage on vegetation including grasses and aquatic plants, whilst Shoveller feed on small aquatic invertebrates. Therefore, the diversification of vegetation, and thereby invertebrates, will benefit wildfowl known to inhabit the Loddon floodplains during the winter.

Bats

6.33 The local bat assemblage will benefit from the habitat creation and enhancement works as outlined above, through the anticipated increase in invertebrates which will substantially increase foraging resources available on the Site.

6.34 New woodlands planting and woodland enhancements will benefit gleaning species such as Long-eared bats, whilst the creation of wetlands will increase opportunities for water specialists such as Daubenton's.

Veteranisation of trees

6.35 Opportunities to provide additional tree roosting features within mature trees will be incorporated as part of wider habitat management works within woodlands and for individual trees. Veteranisation is not appropriate on trees where bat roosts have already been confirmed or where potential bat roost features already exist.

6.36 Veteranisation techniques mimic the effects of the natural tree ageing process and decay through creation of 'woodpecker' holes, hazard beams and splits. Some features are designed to provide instant roosting features whereas others are designed to develop over time. Veteranisation will take place in conjunction with advice from a suitably-experienced arborist who understands tree physiology and can create features which are very close to natural features.

Standing dead trees

6.37 Sanding deadwood offers a valuable resource for a range of wildlife including saproxylic invertebrates as well as roosting bats. Retaining standing deadwood and making them stable, for example through removing weighty branches, should be included within the management provisions for the development.

Hazel Dormice

6.38 Although currently likely absent from the Site, enhancements of habitats for Hazel Dormice will improve the suitability of the Site for Dormice in the event that move into the area.

6.39 Connectivity will be a key factor in improving habitat suitability, which can be achieved through the management and improvement of hedgerows as outlined up. The planting and enhancing of retained hedgerows should include native tree, shrub and woody climber species known to be of value to Dormice for foraging or nest building (e.g.Oak *Quercus robur*, Hazel, Honeysuckle, Field Maple *Acer campestre).* Enhancement works will be targeted in those areas identified as sub-optimal or negligible to support Hazel Dormice during the habitat assessment (**Technical Appendix 11.13**).

Reptiles

6.40 All opportunities to provide ecological enhancements to improve the conservation status of reptiles within the local area will be sought.

6.41 The transitional interface between grassland and scrub/woodland is of particular value as a habitat feature for reptiles. The creation of scallops along the woodland edge provides valuable reptile habitat, as well as creating micro-climates of value to local invertebrate populations, which in themselves may act as a foraging resource for the reptile population. Ongoing management for these areas will seek to maintain the transitional interface in a graded, non-linear condition in order to maximise the complexity and extent of edge habitat.

6.42 The inclusion of a reptile hibernaculum and log piles positioned around EcoValley will provide additional cover, basking and hibernation opportunities for reptiles. Log piles will also benefit the local invertebrate assemblage which in turn will provide a food source for reptiles.

6.43 Any habitat management which results in vegetation cuttings should be added to a 'compost heap' in undisturbed locations. Grass Snake lay their eggs in vegetation heaps, and this will therefore providing additional egg laying opportunities for the local Grass Snake population.

Water Vole

6.44 Seasonal flooding is a major factor affecting Water vole habitat stability along this stretch of the River Loddon. The creation of off-channel refuge areas, such as wetland margins, reedbeds, and backwater ponds, would provide safe retreat areas during flood events.

6.45 To improve habitat suitability for Water Vole, buffer strips of native riparian vegetation will be established to provide shelter, foraging resources, and bank stability. Encouraging the growth of key food plant species, such as Reed Canary Grass *Phalaris arundinacea*, Branched bur-reed, and Purple Loosestrife, will help maintain a consistent food supply throughout the year.

Otter

6.46 The enhancement of existing riparian woodland cover will seek to provide terrestrial habitat for Otter, including suitable 'couch' locations in areas located away from recreational spaces (such as at the southern end of the River Loddon).

6.47 Improvement to the River Loddon, which aim to increase habitat complexity will encourage fish populations, which form the primary food source for Otter.

6.48 The creation of new wetland areas and enhancements to the local ditch network will provide Otters with access to prey-rich foraging grounds and enabling natural population dispersal across the landscape.

Wildlife Boxes

6.49 Whilst the overall aim of EcoValley will be to provide semi-natural habitats of value to local biodiversity, the inclusion of wildlife boxes will increase opportunities for local wildlife, including birds, bats and invertebrates.

6.50 A variety of bat boxes will be installed onto retained trees throughout EcoValley to increase roosting opportunities for the local bat assemblage. This will include large colony and hibernation boxes and boxes aimed at species known to be present within the local landscape such as Noctule and Myotis.

6.51 Bird boxes will be installed onto retained trees throughout EcoValley to increase nesting opportunities for the local bird assemblage. Boxes will include a variety of designs that cater to species known to be present on the Site, and in the local are such as Spotted Flycatcher *Muscicapa striata*. Furthermore, bird of prey boxes, including Kestrel and Barn Owl will be installed in suitable locations.

6.52 The inclusion of Dormice nest boxes within suitable woodland habitats, such as St Johns Copse, will not only provide opportunities for Dormice, but will also allow monitoring surveys to be undertaken to determine whether Dormice move into the landscape.

6.53 EcoValley will provide opportunities for research into wildlife boxes, to help improve their uptake and suitability for local biodiversity. Such research could include studies on positioning, habitat preference and looking at innovative or novel designs.

Invertebrate Habitats

6.54 Invertebrate boxes, and 'bug hotels' will be located within EcoValley to provide sheltering and egg laying opportunities for invertebrates. Opportunities for invertebrates will be incorporated into site furniture through the use of gabion features which will create cracks and crevices

Wildlife Tower

6.55 A wildlife tower is proposed to be delivered within EcoValley where it will provide opportunities for a range of species. The tower will be a bespoke design, but may incorporate features for bats, birds (including owls) and invertebrates. The structure will be of a predominantly brick or stone construction to ensure longevity, with features built into the design.

Monitoring

6.56 As part of the ongoing enhancement strategy at EcoValley, monitoring is proposed to assess the success of the outlined enhancement measures. Monitoring will include botanical surveys and condition assessments to ensure newly created and enhanced habitats are meeting their targets. Details of suitable monitoring regimes will be set out in the associated Habitat Management and Monitoring Plan, or equivalent management plan.

6.57 In addition, protected species surveys may be undertaken to understand changes in local assemblages and distribution which can be used to inform future management measures.

7. FUTURE PROOFING

7.1 The long-term aspirations for EcoValley are to provide a resilient ecosystem which affords local biodiversity with space to thrive, and local residents with access to nature.

Climate Change

7.2 Planting will consider future conditions to ensure longevity. For example, land within the floodplain which is anticipated to undergo more extended periods of inundation as a result of climate change will include species such as Alder, which are better adapted to these wet conditions. Similarly, within dry areas of the Site, such as development area, species which are more drought tolerant will be included, such as Dogwood and Hazel, to cope with longer drier summers.

7.3 New habitats to be created will aid in carbon capture. Floodplains and woodlands are some of the highest carbon storing habitats in the UK (Gregg *et al*, 2021). Their restoration and creation within the Country Park will therefore aid in local carbon capture and storage over and above the current capabilities of the existing habitats.

Eurasian Beaver

7.4 Although currently limited in their geographical range, following reintroduction programmes across the country it is envisaged that there may be a time when the River Loddon could support a population of Eurasian Beaver *Castor fiber*.

7.5 Preferred habitats for Beaver include watercourses surrounded by wetlands habitats and woodlands. Opportunities to include features which may provide suitable Beaver habitats in the future will therefore be considered during the detailed design of habitats on the Loddon Floodplain.

7.6 With an average territory size of approximately 3km, the River Loddon and the surrounding semi-natural habitats of EcoValley and Langley Mead could therefore potentially support Beaver in the future with appropriate habitat creation and ongoing management.

7.7 Unlike their North American counterparts, Eurasian Beaver do not form large dams over main rivers of sufficient depth, instead damming smaller watercourses and ditches. Therefore Beaver will not alter the flood dynamics of the River Loddon.

8. DELIVERY AND MANAGEMENT ARRANGEMENTS

Proposed Development

8.1 The delivery of mitigation and enhancement measures in respect of individual development parcels will fall to the associated developer.

8.2 The management responsibilities will fall to the developer of the relevant parcel but may be passed onto a management company following the initial implementation and establishment period.

EcoValley

8.3 The delivery of enhancement measures within EcoValley will be the responsibility of the University of Reading.

8.4 EcoValley will remain as a freehold of the University of Reading. The University intends to manage EcoValley themselves but may call upon assistance from external organisations as required.

9. REFERENCES

Rothero, E., Lake, S. and Gowing, D. (eds) (2016). Floodplain Meadows – Beauty and Utility. A Technical Handbook. Milton Keynes, Floodplain Meadows Partnership.

Royal Society for the Protection of Birds. N.D. Farming for wildlife: Scrape creation for wildlife. Available at: https://www.rspb.org.uk/globalassets/downloads/documents/farming-advice/scrapecreationforwildlife_tcm9-255102.pdf. [Accessed 09 May 2022].

MAP 11.16.1 Important Ecological Features: Habitats

KEY

Site boundary

Section 41 Priority Habitats

- Coastal and floodplain grazing marsh
- Purple moor grass and rush pastures
- Reedbeds
- Rivers (priority habitat)
- Wet woodland
- Lowland mixed deciduous woodland

Other IEFs

- Historic floodplain ditches
- Modified watercourses
- Historic hedgerows and lines of trees
- Provisional Ancient Woodland

SCALE: 1:11,000 at A3

0 100 200 300 400 500 Metres

N

EPR

CLIENT: University of Reading

PROJECT: Loddon Garden Village

DATE: 31 July 2025

Y:\Loddon Garden Village, Shinfield 2201\GIS\Planning Application\Technical Appendices\Habitats and Landscape\Map11.3.7_IEFs_P2342_3965_310725.aprx

P23/42