# Ecology Mitigation Strategy

DREW SMITH GROUP

paulbasham associates

Lucid Planning

kenn scaddan associates architects

ARBOR-CALL TREE SURGEONS

j lighting design

iJLA

RCP ARCHITECTURE & CIVIL ENGINEERING

## Land at Summer Lane
Pagham
## Reserved Matters Application
Planning Update

November 2019 Rev. A

ARUN DISTRICT COUNCIL P/23/20/DOC

**LAND AT SUMMER LANE, PAGHAM**
**ECOLOGY MITIGATION STRATEGY**

**NOVEMBER 2019**


| | | |
|---|---|---|
| **1.0** | **INTRODUCTION** | **1** |
| 1.1 | Background | 1 |
| 1.2 | Previous Survey Work | 1 |
| **2.0** | **DETAILS OF THE DEVELOPMENT** | **4** |
| 2.1 | Introduction | 4 |
| 2.2 | Biophysical Changes associated with the Development Scheme | 4 |
| **3.0** | **MITIGATION METHOD STATEMENT FOR VEGETATION & HABITATS** | **7** |
| 3.1 | Introduction | 7 |
| 3.2 | Potential Risks | 7 |
| 3.3 | Retained Vegetation – Protection Areas | 7 |
| 3.4 | Construction Areas | 8 |
| 3.5 | Habitat Creation | 8 |
| **4.0** | **MITIGATION METHOD STATEMENT FOR NESTING BIRDS** | **11** |
| 4.1 | Introduction | 11 |
| 4.2 | Potential Risks | 11 |
| 4.3 | Mitigation For Nesting Birds | 11 |
| **5.0** | **MITIGATION METHOD STATEMENT FOR BATS** | **13** |
| 5.1 | Introduction | 13 |
| 5.2 | Potential Risks | 13 |
| 5.3 | Foraging & Commuting | 13 |
| 5.4 | Provision of Bat Boxes | 13 |
| 5.5 | Lighting | 14 |
| **6.0** | **MITIGATION METHOD STATEMENT FOR WATER VOLE** | **15** |
| 6.1 | Introduction | 15 |
| 6.2 | Potential Risks | 15 |
| 6.3 | Works on Watercourses | 15 |
| 6.4 | Retained Habitat | 17 |
| 6.5 | Habitat Creation | 17 |
| **7.0** | **MITIGATION METHOD STATEMENT FOR OTHER MAMMALS** | **18** |
| 7.1 | Introduction | 18 |
| 7.2 | Potential Risks | 18 |
| 7.3 | Badgers | 18 |
| 7.4 | Foxes | 19 |

**8.0 MITIGATION METHOD STATEMENT FOR REPTILES 20**
8.1 Introduction 20
8.2 Potential Risks 20
8.3 Reptile Mitigation Strategy 20
8.4 Translocation Methodology 21
8.5 Retained & Created Habitats – Public Open Space 22

**9.0 INVERTEBRATE MITIGATION 23**
9.1 Introduction 23
9.2 Habitat Creation 23

**10.0 SUMMARY 23**

**11.0 REFERENCES 30**

*This statement has been prepared by Aluco Ecology Ltd on behalf of the applicant, Drew Smith.*

*It supports a Reserved Matters application connected to outline planning permission P/58/15/OUT seeking agreement to detailed site layout, scale, appearance and landscaping, along with internal access arrangements. Also seeking to address the terms of planning conditions 6, 8, 9, 12, 15, 18, 20, 24, 25 and 26 which all necessitate submissions as part of any reserved matters application.*

*The application seeks to secure approval for the outstanding matters (reserved matters) associated with outline planning permission P/ 58/15/OUT which secured approval of '90 dwellings with associated access and open space' on 30 September 2016. Access into the site was the only detailed matter considered at outline stage, leaving layout, scale, appearance and landscaping to be agreed.*

*The outline planning approval contained a number of planning conditions which require that particular detail be submitted at the reserved matters stage, accordingly this application also seeks to address the requirements of the relevant conditions, being 6, 8, 9, 12, 15, 18, 20, 24, 25 and 26.*

# LAND AT SUMMER LANE, PAGHAM
# ECOLOGY MITIGATION STRATEGY

**NOVEMBER 2019**

## 1.0 INTRODUCTION

### 1.1 Background

1.1.1 The site has Outline Planning Permission 'with some matters reserved for the erection of 90 No. dwellings and associated access & open space'. A detailed ecological assessment was provided with the Outline Application (see Aluco Ecology, 2015).

1.1.2 The planning permission contains a condition directly related to the site's ecology (as well as other areas which may affect ecology indirectly):

| | |
|---|---|
| 8 | Prior to the commencement of any site clearance or preparation works, a detailed ecological mitigation and enhancement scheme, including timing for implementation, shall be submitted to the Local Planning Authority for approval. The scheme shall be based on the mitigation and enhancement details set out in section 9 of the submitted Ecological Assessment dated April 2015. The scheme shall include provision for further badger survey work and sensitive hedgerow and vegetation removal. The development shall be carried out in accordance with the approved scheme and timetable.<br><br>Reason: To ensure adequate protection and enhancement of biodiversity interests in accordance with the provisions of the NPPF and policies GEN23 and GEN29 of the Arun District Local Plan (2003). |

1.1.3 A detailed scheme for the site has been developed, and this is reproduced at **Figure 1** below. This document provides mitigation method statements for ensuring biodiversity features are not affected through recommendations of suitable pre-construction and construction measures to be put in place on site, and providing mitigation and habitat creation for new habitats in public open space, providing necessary information for the planning condition.

### 1.2 Previous Survey Work

***Summary of Previous Survey***

1.2.1 A number of species are protected under legislation and policy; namely the Conservation of Habitats & Species Regulations 2010 in relation to the European protected species (eg bats, dormouse, great crested newts) and the Wildlife & Countryside Act 1981 (as amended) and Countryside & Rights of Way Act (CRoW) 2000 for protected species and the designation and protection of SSSIs (**Technical Appendix 1**). The Protection of Badgers Act 1992 gives protection to Badgers *Meles meles.*



ARUN DISTRICT COUNCIL P/23/20/DOC

1.2.2 Aluco Ecology has undertaken ecological survey work on the site (see Aluco Ecology 2015) for all protected species groups. The results have identified the following ecological features potentially affected by the works and construction area and are therefore covered in this mitigation statement:

- Vegetation and habitats, including habitats within the construction zone to be impacted, as well as retained woody vegetation, hedges and trees with associated ditches and grasslands, and watercourses. Extensive new habitats are proposed to be created on public open space on site;
- Nesting birds are present on site;
- A number of bat species have been recorded foraging and commuting around the site and local area;
- Badgers *Meles meles* are likely to be present in the wider area, but no direct evidence was noted on site, Fox *Vulpes vulpes* has been recorded;
- Evidence of Water Vole *Arvicola amphibius* has been noted on watercourse immediately west of the site, although evidence is localised and populations low;
- Populations of Reptiles (Slow Worm *Anguis fragilis*, Grass Snake *Natrix (n) helvetica*, and Common Lizard *Zootoca vivipara*) are recorded on site. The distribution of reptiles is provided at **Figure 2** below (re-produced from the original survey, Aluco Ecology, 2015).

***2018-2019 Walkover Survey Update***

1.2.3 Survey work has been updated in summer 2018 and spring 2019 to cover all species groups with walkover updates to inspect potential for changes in habitats, and detailed survey to survey guidelines for Badger and Water Vole.

1.2.4 The habitats on site are broadly similar to those from the previous survey work (Aluco Ecology, 2015). There has been a few small changes in management, including recent set aside of the arable and cessation of horse grazing in the paddock field (rabbit grazing is however keeping the main extent of the sward short). In addition, a section of the northern watercourse/ditch in the horse paddock and north eastern corner of the arable field adjacent to new housing development has been subject to re-profiling works over winter 2018/19. This work was not undertaken by Drew Smith.

1.2.5 Overall the habitats for ecology features outlined in the original assessment remain similar and these assessments remain valid.

***Badger & Water Vole Survey Update***

1.2.6 A survey visit in June 2018, September 2018 and two survey visits were undertaken in April 2019. These focused on update survey work for Badger and Water Vole (methodology for the surveys are provided in **Technical Appendix 2 & 3** respectively). The update survey has not recorded any positive evidence on site for either species.



ARUN DISTRICT COUNCIL P/23/20/DOC

1.2.7 Evidence of Water Vole was recorded west of the site, as per the previous survey work; with the wetter Reed *Phragmites australis* fringed watercourse remaining the only area adjacent to the site where Water Vole evidence has been recorded. The watercourse/ditch to be impacted along Summer Lane was examined in detail, with no evidence of use by Water Vole, and was dry during all surveys (early survey dates chosen to co-inside with highest water levels late winter/early spring). The watercourse/ditch that has recently been re-profiled at the north eastern end of the site has small amounts of water ponding in one stretch, but the ditch is currently isolated from the wider watercourse network, and was dry and heavily shaded with no aquatic/marginal vegetation on previous surveys.

1.2.8 Update photos of the site from 2018/2019 survey work are provided at **Technical Appendix 4.**



ARUN DISTRICT COUNCIL P/23/20/DOC

# 2.0 DETAILS OF DEVELOPMENT

## 2.1 Introduction

2.1.1 This method statement details mitigation for works relating to the Reserved Matters phases of the development. **Figure 1** shows the detailed Masterplan.

## 2.2 Biophysical Changes associated with the Development Scheme

***Pre-Construction Site Clearance***

2.2.1 Existing vegetation within the construction zone will be required to be removed and ground re-profiled within the development area.

***Construction***

2.2.2 The construction of the development has the potential to affect protected species and ecological features, some of which are afforded protection under the legislation and policy outlined in Section 1 above. The following sections provide details for each relevant protected species group, to ensure that pre-construction works follows best practice and protected species are taken into account.

2.2.3 A detailed Landscape Strategy, planting plan, and Landscape Management and Maintenance Plan has been prepared for the site (see IJLA, 2019). This provides for formal and informal habitat creation and landscaping both around the main development footprint and new public open space habitats south of the main development area. This has been informed by the ecology mitigation and prescriptions.

***Operation***

2.2.4 The retained public open space areas of the site are designed to fulfil a multi-purpose role of biodiversity gain, landscaping and public open space. Additional planting has been provided in the Landscape Management & Maintenance Plan (IJLA, 2019).



ARUN DISTRICT COUNCIL P/23/20/DOC

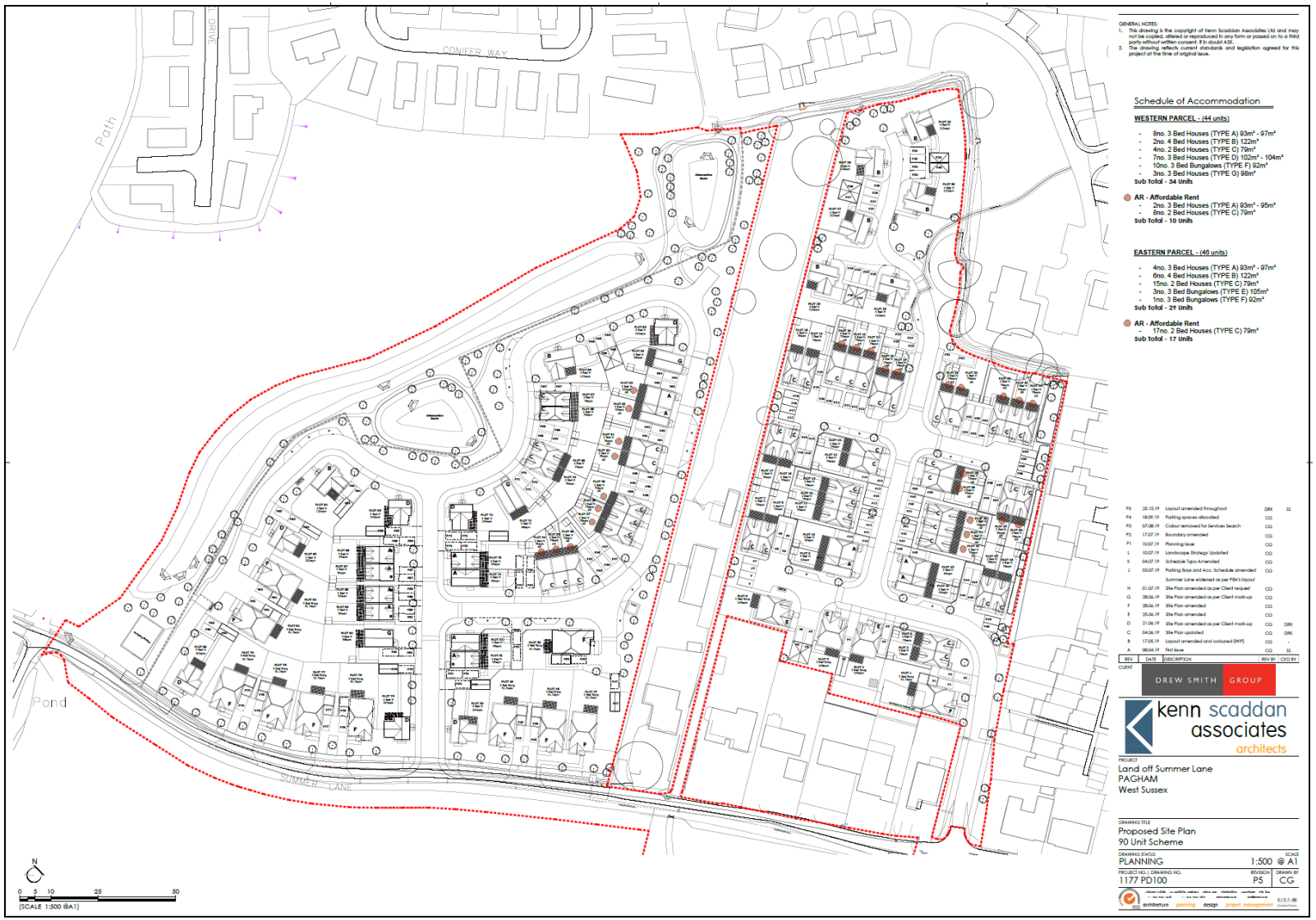
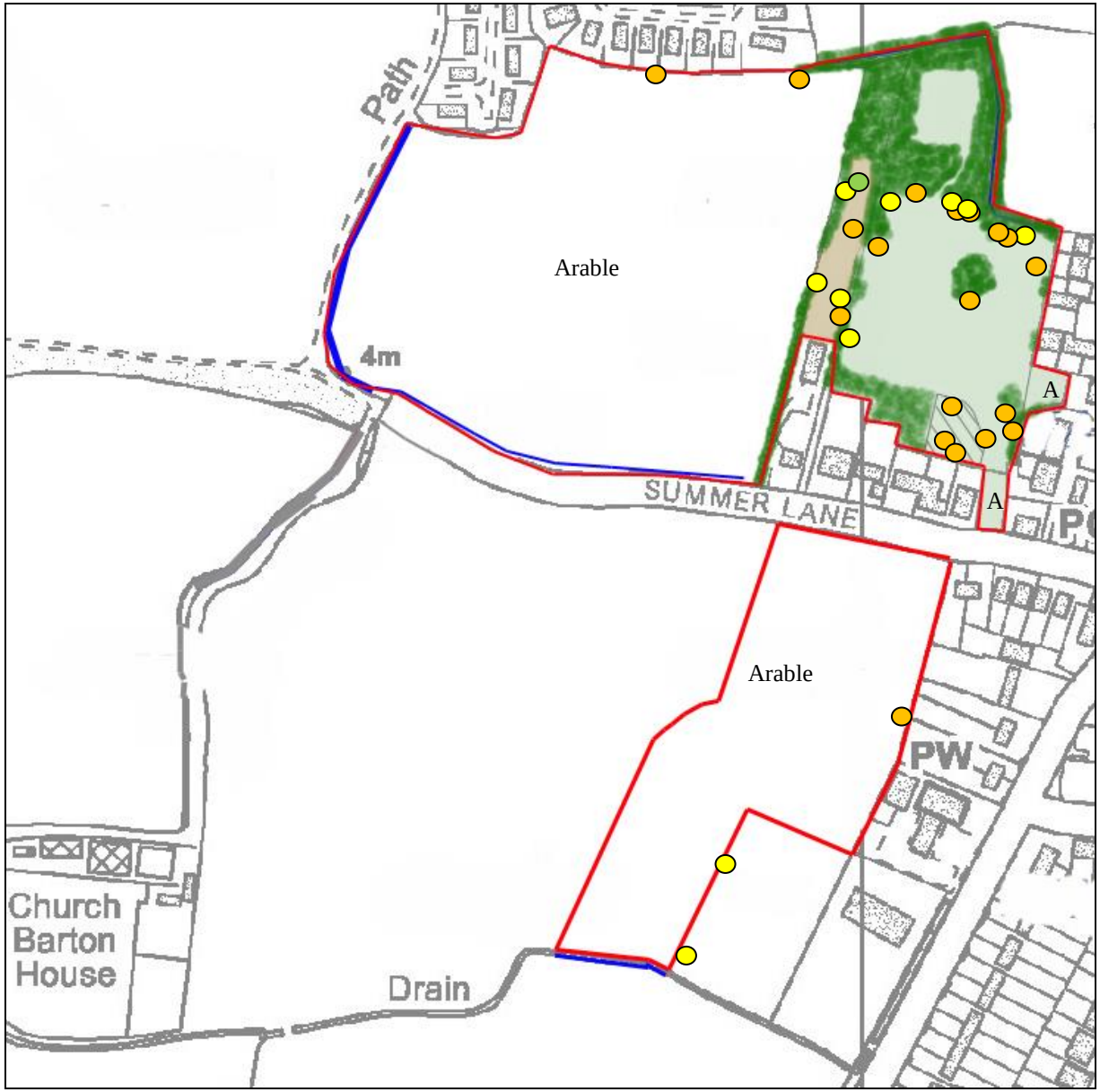



***Figure 1: Masterplan and Red Line Boundary (Kenn Scaddon Associates, 2019)***



ARUN DISTRICT COUNCIL P/23/20/DOC




**Key:**

- Slow Worm (1-2 ind. per dot)
- Common Lizard (1-2 ind. per dot)
- Grass Snake (ind. record)

ALUCO ECOLOGY LTD
www.alucoecology.co.uk
Registered in England No. 5598341

***Figure 2: Reptile Survey Results from Outline Application***



ARUN DISTRICT COUNCIL P/23/20/DOC

# 3.0 MITIGATION METHOD STATEMENT FOR HABITATS AND VEGETATION

## 3.1 Introduction

3.1.1 The following principals are set out below to ensure that these retained habitats are protected during construction. There is also a summary of the ecology features that have been built into new public open space habitats that are set out in detail in the landscape plans (see IJLA, 2019).

## 3.2 Potential Risks

3.2.1 The construction has the potential to provide the following risks to vegetation and habitats:

- Direct damage to any retained habitats, woody vegetation and hedgerows, and watercourses through construction activities such as tracking of machines and damage to habitat;
- Direct damage to habitats associated with retained hedges and trees, including rough grassland edges and ditches within hedgerows through construction activities such as tracking of machines and damage to habitat;
- Indirect pollution events on retained habitats through surface water run off pollution, siltation, dust and airborne pollution and littering.

3.2.2 The following sections below provide detailed mitigation for ensuring that the vegetation and habitats on site are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures and safe biodiversity protection zones.

## 3.3 Retained Vegetation – Protection Areas

***Hedgerow & Associated Boundary Features***

3.3.1 The retained boundary hedgerows/vegetation along parts of the arable field are to be retained as part of the scheme. These boundaries will be marked to the edge of the works area and protective fencing to relevant building standards will be erected at the edge of the works/retained habitat areas to ensure that habitats are retained in situ during construction. The grassland edge habitat at the base of these habitats is important to reptiles and will be retained in situ as part of the reptile mitigations strategy, and protected by the site fencing.

3.3.2 There should be no storage of materials, or equipment, or use of the retained hedge/boundary on the site by any construction activities.



ARUN DISTRICT COUNCIL P/23/20/DOC

***Indirect Pollution Potential***

3.3.3 Watercourses are present on site (around the northern boundary, along Summer Lane and at the southern boundary of the proposed public open space. Best practice pollution prevention guidelines are to be followed during the construction phase (see Gov.UK), and a Construction Environmental Management Plan (CEMP)is to be prepared.

## 3.4 Construction Area

3.4.1 The habitats over the construction area are to be removed according to protected species mitigation statements below. This includes:

- All woody vegetation within the construction zone,
- Arable grassland areas;
- The watercourse along Summer Lane and any further works to the northern boundary watercourse.

## 3.5 Habitat Creation

3.5.1 **Figure 1** shows the development masterplan, and detailed landscaping plans for the public open space south of the site are reproduced at **Figure 3**.

3.5.2 The on site open space is to include a new section of watercourse and re-profiling of the northern boundary ditch (this latter section of work has already been undertaken by the landowner). Recommendations are provided to enhance these features for wildlife and are built into the longer term management of the areas following construction. They include:

- Creation of the new Sustainable Urban Drainage (SUDS) features, including section of watercourse and ponds that are to be seeded with appropriate wild flower mixes (see IJLA, 2019);
- In order to allow some quicker establishment of locally native species, top soil from the sections of the usually dry watercourse along Summer Lane that is to be removed can be transferred to sections of the new ditch where appropriate;
- Management of the open space and watercourses in the longer term will need to have regard to potential for Water Vole presence. Where works have potential to impact on habitats that could be used by Water Vole, update Water Vole survey will be necessary and there is potential requirement for works to be covered under a Class Licence for Water Vole. This has been detailed in the SUDS Maintenance Plan (RCP, 2019), along with a reduced cutting regime;
- A section of this area outside of the SUDS basins is to be both retained and created uncut tall grassland habitat. This habitat will provide opportunities for reptiles, amphibians and other wildlife features such as birds, bats and invertebrates;



ARUN DISTRICT COUNCIL P/23/20/DOC

- The watercourse/ditch along Summer Lane is retained, but will be impacted directly during construction, and through operation by a number of crossing points for access, with the design consisting as a three sided-slab bridge. The remaining sections of ditch will be outside of private ownership, but given they are adjacent to front gardens it is likely that some management will occur by future residents on an ad hoc basis.
- Detailed plans for the SUDS landscaping and planting are provided at IJLA, (2019)

3.5.3 South of the main development is a new area of public open space. The open space has been designed to meet the dual aims of providing an informal landscaped recreational area for the local population, and providing new habitats for wildlife. In this regard the following features have been incorporated into the initial habitat creation and planting regime, and ongoing management plan (see IJLA, 2019 for details):

- New native species hedgerow habitats are proposed, along the northern and western edges of the public open space. This includes patches of native scrub and arms to the hedges to create new micro habitats and south facing edges of value to wildlife (including reptiles). The hedges will be placed on a small engineered bank/shallow ditch, again to provide microhabitats. Management of these habitats in the longer term will allow for a reduced cutting to provide a thick hedgerow resource of value to wildlife, with fruiting allowed during the winter period and late winter rotational management;
- New woodland coppice of Hazel *Corylus avellana* and Dogwood *Cornus sanguineus* are proposed within the open space areas to provide new habitats and a long term coppice management regime, which will also provide dead wood habitats in new log piles produced from coppicing;
- Tall uncut grassland habitats are proposed as edge habitat to woody/hedgerow creation. This habitat will be an uncut native species seeded grassland, whereby tussocky edges are allowed to develop with some woody infiltration from suckering woody species and bramble, to create a grassland edge habitat to the hedges and native species woody areas of scrub/woodland. This will be managed in the longer term through ensuring that tall grassland habitat is retained in extent through cutting of the woody encroachment;
- Hay meadow grassland will also be created through seeding of open areas with suitable wildflower mixes. Re-profiling to the soils to create banks on site will provide areas where the top soil is thinner, these areas will be the most suitable location for providing hay meadow grassland, as the thinner soils will allow wildflowers more chance to develop. Management in the longer term will be of a hay cut with cuttings removed;
- ‘Rough grassland’ habitat is also proposed, this is a regularly cut but not overly short amenity grassland habitat that will provide recreational space;



ARUN DISTRICT COUNCIL P/23/20/DOC

- Existing field edge habitats are to be retained and enhanced (see reptile mitigation below). These will be incorporated into the public open space habitats to be created in the longer term though management recommendations;
- The watercourse at the southern end of the public open space will be given a 5m buffer and managed as tall grassland habitat that will not be cut or tracked over by machinery. Where works are required to maintain function, they should have regard to potential for Water Vole presence, and include survey work.



ARUN DISTRICT COUNCIL P/23/20/DOC

# 4.0 MITIGATION METHOD STATEMENT FOR NESTING BIRDS

## 4.1 Introduction

4.1.1 All birds and their nests are protected from harm under Section 1 of the Wildlife and Countryside Act 1981 (as amended) (see **Technical Appendix 1**). A strategy is provided below to ensure that the construction of the proposed development does not affect any nesting birds.

## 4.2 Potential Risks

4.2.1 The construction of this phase of the development has the potential to provide the following risks to birds:

- Direct damage to retained trees and hedgerows that may be used as nesting bird habitat through construction activities such as tracking of machines and damage to habitat;
- Damage to habitats associated with retained hedges and trees, including rough grassland edges and ditches within hedgerows through construction activities such as tracking of machines and damage to habitat.

4.2.2 The following sections below provide detailed mitigation for ensuring that the nesting birds and habitats on site are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures.

## 4.3 Mitigation for Nesting Birds

***Timing & Vegetation Works***

4.3.1 All woody habitat not to be retained on site will be removed outside the nesting bird season (which is considered to be March-August inclusive). Vegetation clearance will be undertaken in the following way:

- Vegetation clearance will be undertaken with supervision from an ecologist if considered necessary or via an agreed method statement;
- In areas where reptiles may be present all vegetation will be cleared to just above ground level to remove nesting bird habitat but not disturb the ground;
- It is proposed to start works at the end of the nesting bird season in late summer/Autumn 2019;
- There is potential for ground nesting birds in the open former arable areas of the site. Measures should be undertaken to ensure that vegetation within the works area is not allowed to develop into suitable ground nesting bird habitat in the spring/summer. These should include regular cutting to ground level through this



ARUN DISTRICT COUNCIL P/23/20/DOC

period, or tilling of the ground to ensure it remains bare during the construction process. Pre-construction survey effort of any new works area may be required during the nesting bird season to check there are no ground nesting birds that may be impacted. Where ground nesting birds are present, a suitable buffer zone will be instated with no access to construction until nesting has been completed by the birds in question;

- It may be possible to sensitively undertake only small amounts of vegetation works during the nesting bird season where such vegetation is able to be checked by a suitably qualified ecologist to determine no nesting birds are impacted.

***Protection of Retained Habitats & Habitat Creation***

4.3.2 Measures outlined Section 3 in relation to retained habitats should ensure that the habitats outside the works area is protected via fencing to ensure that construction activities do not impact on the features.

4.3.3 New habitats (see **Figure 3 and IJLA, 2019**) will provide opportunities for bird species in the longer term, with new woody vegetation, grassland and watercourse to be provided in public open space.

***Bird Nest Boxes***

4.3.4 A total of 8 bird nest boxes will be provided within the scheme and locations are shown at the **Figure 3**. The boxes can include a mixture of types and some examples are provided in **Technical Appendix 6**:

- Schwegler Blue/Great Tit box;
- Swift box or brick;
- Schwegler House Martin;
- Schwegler House Sparrow.



ARUN DISTRICT COUNCIL P/23/20/DOC

# 5.0 MITIGATION METHOD STATEMENT FOR BATS

## 5.1 Introduction

5.1.1 A number of bat species have been recorded foraging and commuting on site (see Aluco Ecology, 2015).

## 5.2 Potential Risks

5.2.1 The construction of this phase of the development has the potential to provide the following risks to bats:

- Potential for indirect impacts on retained habitat used by foraging and commuting bats;
- Potential impacts from lighting on retained trees or off-site buildings with potential roost features, and foraging/commuting routes.

5.2.2 The following sections below provide detailed mitigation for ensuring that the bat populations and habitats on site are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures and safe biodiversity protection zones.

## 5.3 Foraging and Commuting

5.3.1 The design of the development allows for garden habitats and new watercourse habitats to develop to provide links through the site. This will be through the SUDS/watercourse habitat along the north and western boundary of the development, and retained hedgerow running north-south through the site, and retained watercourse/ditch along the northern boundary of the site.

5.3.2 The provision of new hedgerows, coppice and trees in the public open space to the south of the development will provide additional semi-natural habitats for commuting and foraging in the local area. Management prescriptions will ensure that relevant vegetation works (e.g. hedge maintenance and coppicing) are undertaken outside the nesting bird season.

## 5.4 Provision of Bat Boxes

5.4.1 A total of 8 bat roosting structures will be erected on site (see **Figure 3**), using Schwegler designs (examples frequently used are provided in **Technical Appendix 6**). Boxes/tiles and bricks should be located on site by an experienced ecologist to ensure that they are placed in suitable locations.



ARUN DISTRICT COUNCIL P/23/20/DOC

## 5.5 Lighting

5.5.1 Street lighting has potential to impact bat foraging and mitigation guidelines have been developed (see BCT 2018). Design and location of lighting within the new scheme considers the following:

- Identify key points in the landscape where artificial light at night disrupts spatial connectivity of dark areas, and reduce or remove lighting in these areas if possible. On the site this would include boundaries, particularly the north western boundary Hazel hedge that will need to be retained as a dark corridor. Location of bat boxes/roost features will also need to be in a dark zone;
- Maintain and create unlit 'dark corridors' between habitat patches where possible.
- Avoid use of, and remove where possible, lamps that waste light by emitting vertically or horizontally – ensure that lighting is designed with minimum spill and is downward facing and directional and that retained hedges and trees are not lit.
- Reduce as much as possible the intensities of light emitted from lamps
- Avoid use of white and blue light wherever possible. The broader the spectrum of light that a lamp produces the wider the range of organisms it is likely to affect.
- Avoid use of lamps that emit in the ultraviolet (UV) range. UV light is not seen by humans but many animals see UV and it may disrupt their natural behaviour.

5.5.2 A detailed lighting strategy has been prepared for the scheme (JLighting Design, 2019), with a plan showing the proposed location of street lighting and the impacts of that street lighting. This has consider the location of main bat commuting and foraging habitat around the scheme, with the aim of reducing and preventing light spill into these habitats. Regard has also been had to the location of Bat box mitigation and lighting.



ARUN DISTRICT COUNCIL P/23/20/DOC

# 6.0 MITIGATION METHOD STATEMENT FOR WATER VOLE

## 6.1 Introduction

6.1.1 Water Vole have been recorded in the watercourse immediately west of the site both in original survey work (see Aluco Ecology, 2015), and updated survey work in 2018 and spring 2019. This is connected to the drier watercourse along the northern edge of Summer Lane on site. Water Vole and their habitat are protected under the Wildlife & Countryside Act 1981 (as amended).

## 6.2 Potential Risks

6.2.1 The construction of this phase of the development has the potential to provide the following risks to Water Voles:

- Potential for direct impacts on watercourses impacted by the scheme during construction;
- Potential indirect impacts on retained watercourses from disturbance and pollution;
- Potential impacts on habitats of Water Vole through habitat management of retained and created habitats in the longer term operation of the site.

6.2.2 The following sections below provide detailed mitigation for ensuring that the Water Vole populations and habitats in the local area are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures and safe biodiversity protection zones.

## 6.3 Works on Watercourses

6.3.1 Two watercourses on site are to be impacted by the scheme. The one along the northern boundary, which is isolated and generally dry during historical survey work, with no previous evidence of use by Water Vole, has been re-profiled by the landowner. The development scheme provides a 3m buffer along the majority of this watercourse. The second, which is also usually dry, is along the northern edge of Summer Lane. This is to be retained, but will be directly impacted during construction with driveway/road accesses along its length (five including emergency access). A footpath is to be provided along the northern edge of Summer Lane. Detailed survey work, which was updated in 2018/2019 has not recorded use by Water Voles in the section of watercourse to be impacted. Water Vole have however been recorded in a linked section of watercourse along the western boundary of the arable field north of Summer Lane. This is where there is standing water into the summer period, and the ditch also has good growth of Common Reed *Phragmites australis*.



ARUN DISTRICT COUNCIL P/23/20/DOC

6.3.2 On-going/pre-works survey will inform the mitigation process depending upon the presence of Water Voles within and local to the works areas. At present the negative survey (to the recommended survey standard, see **Technical Appendix 3**) along the Summer Lane watercourse means that works can be undertaken without impacting Water Vole or their habitats and therefore outside of the licensing process. A methodology is however provided below, to ensure that the works are undertaken sensitively, given the presence of Water Voles in the wider landscape, and presence of other protected species such as reptiles:

- The works areas should be marked out and any retained habitat should be fenced from the construction areas;
- The works area should be searched for Water Vole burrows and any potential burrows marked;
- Prior to works, vegetation within the works area should be cut. This can be undertaken using hand tools or an arm mounted tractor flail (having regard to other protected species). Any arisings should be removed, any potential burrows recorded should be marked and checked that they aren't blocked;
- The strimmed area should be left intact for five days, and this should be followed by further survey update for any fresh Water Vole evidence;
- Where there is no evidence of Water Voles, a destructive search can be undertaken. Any potential burrows should be hand dug where possible, then the banks should be destructively searched to remove turf and topsoil to a depth beyond which any burrows would be present. In channel vegetation within 50cm of the toe of the bank should also be removed. The bankside should then be smoothed with eg a blade/ditching bucket and remove any spoil that may be present;
- A destructive search should take place as close to proposed works date as possible, within 5 days, but taking into account the seasonal timing of mitigation works (to take place outside winter season Nov-Feb). Where there is a delay the works area should be maintained as bare ground;
- Material from the destructive search will be stockpiled at the edge of the works area, to be used on habitat creation for the new watercourse along the western site boundary;
- No materials or machinery should be otherwise present within 3-5m of the watercourse;
- Where there is any evidence of Water Vole recorded during the process, the works will need to be undertaken under licence. Given the length of ditch impacted this may require a site licence with appropriate mitigation and timing of works put in place (see Dean et al, 2016);
- Where a site specific Water Vole Licence is preferred or necessary, the procedures above may be amended to comply with the provisions of that Licence.



ARUN DISTRICT COUNCIL P/23/20/DOC

6.3.3 Where updated survey records presence of Water Vole prior to works and the works are considered likely to have an impact on Water Vole or their habitat it is recommended that the pre-construction mitigation follows the following methodology (having regard to best practice methods – see Dean et al (2016) and Strachen et al (2011), under Licence (either Class Licence or a Site Licence).

## 6.4 Retained Habitat

6.4.1 Watercourses on the southern boundary of the public open space and off site watercourses are to be retained in situ. A 5m buffer is to be provided to ensure that these habitats are not impacted by any construction works. Long term management of on site habitats is set out further in Section 3 relating to retained vegetation.

## 6.5 Habitat Creation

6.5.1 New SUDS features are incorporated, along the western boundary of the built scheme. These habitats will be seeded with appropriate wildflower mixes during construction (see IJLA, 2019). A management statement has been prepared for the body that will oversee the management of these SUDS (see RCP, 2019). This includes a flow chart for when Water Vole survey will be necessary and there is potential requirement for management works to be covered under a Class Licence for Water Vole. It also contains advice on ongoing maintenance cutting of the SUDS with a reduced regime. Where Water Vole are present, management work will need to be tailored to ensure it does not impact on the habitats or individual Water Voles. Advice is set out in the Water Vole Conservation Handbook (Strachen et al, 2011) and in the Mitigation Handbook (Dean et al, 2016).



ARUN DISTRICT COUNCIL P/23/20/DOC

# 7.0 MITIGATION METHOD STATEMENTS FOR OTHER MAMMALS

## 7.1 Introduction

7.1.1 Survey work (see Aluco Ecology, 2015 and updated in spring 2019) has not recorded regular use of the site by Badger, but they may be present in the wider local area, so may occasionally use the site.

## 7.2 Potential Risks

7.2.1 The construction of this phase of the development has the potential to provide the following risks to terrestrial mammals:

- Direct damage to retained habitats that may be used by mammals;
- Damage to habitats associated with retained woody vegetation, including rough grassland edges and ditches within hedgerows through construction activities such as tracking of machines and damage to habitat;
- Potential Indirect Impacts through disturbance, and pollution events.

7.2.2 The following sections below provide mitigation for ensuring that the habitats of protected mammal species on site are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures and safe biodiversity protection zones.

## 7.3 Badgers

***Ongoing Site Monitoring***

7.3.1 Monitoring of all habitats on site will continue during 2019. A site walkover survey in late winter/early spring 2019 was able to undertake an update for Badger use of the site (see Section 1.3 above). Ongoing monitoring during the pre-construction and construction period will ensure that any changes in the activities of Badgers on site are taken into account during construction, and the mitigation strategy for the site updated as necessary.

***Minimising secondary impacts to Badgers***

7.3.2 It is expected that badgers may travel through the site during construction and therefore the following measures should be implemented to reduce the risk of secondary impacts to badgers:

- trenches in excess of one metre in depth should be covered or secured and a means of escape provided for any animal that does fall in (a suitable escape can be provided by wooden planks placed at a 45 degree angle);



ARUN DISTRICT COUNCIL P/23/20/DOC

- any temporarily exposed open pipe system should be capped in such a way as to prevent badgers gaining access;
- chemicals and fuels should be stored carefully and as far away from setts and badger paths as possible, and in accordance with the Code of Construction Practice; and
- any security lighting (if required) should be directed away from the sett protection zones.

7.3.3 To facilitate these measures, contractors and subcontractors should be made aware of the location of any setts and protection zones around any setts as part of environmental site induction courses. They should also be informed of the protection afforded to badgers under the Protection of Badgers Act 1992 and the need for confidentiality of the sett locations.

## 7.4 Foxes

7.4.1 Foxes are present in the local area. Where active Fox Earths are located then the following guidelines will apply relative to the development site: Fox earths within 20m of the development that may also be directly affected by construction activities will be closed and the animals encouraged to move to retained earths via the following strategy:

- Potential Fox Earths will be checked regularly for signs of use;
- Holes will be part, then fully soft blocked and monitored for a period of up to two weeks;
- Where monitoring and discouragement of use is applied successfully and no evidence of further use is made, the holes will be destructively searched;
- Where continued use is made, the installation of one way gates will be necessary with a further period of monitoring;
- Exclusion of Foxes from holes will only take place outside the breeding period (ie closure can occur during June – Jan depending upon local circumstances).



ARUN DISTRICT COUNCIL P/23/20/DOC

# 8.0 MITIGATION METHOD STATEMENT: REPTILES

## 8.1 Introduction

8.1.1 All reptiles are protected under the Wildlife & Countryside Act 1981 (as amended) (see Technical Appendices 1 & 2). The following strategy has been devised in order to follow best practice guidance (HGBI, 1998, Froglife, 1999).

8.1.2 Survey work has recorded low to locally moderate populations of reptiles, with Common Lizard, Slow Worm and Grass Snake all recorded on site, primarily around the edges of the horse paddock, but with lower numbers around the edges of arable fields. The main arable areas and grazed grasslands (until recently horses, but also still Rabbits) and very dense scrub contain no or very limited suitable reptile habitat, however reptiles may move through these areas.

## 8.2 Potential Risks

8.2.1 The construction of this phase of the development has the potential to provide the following risks to reptiles:

- Direct damage to reptiles through construction activities such as tracking of machines and damage to habitat;
- Damage to habitats associated with retained hedges and trees, including rough grassland edges and ditches within hedgerows through construction activities such as tracking of machines and damage to habitat;
- Potential Indirect Impacts on retained habitats.

8.2.2 The following sections below provide detailed mitigation for ensuring that reptiles on site are protected during the construction phase and that risks outlined above are addressed through the process to provide suitable avoidance, reduction and offsetting measures and safe biodiversity protection zones.

## 8.3 Reptile Mitigation Strategy

8.3.1 Reptiles are present within the construction zone. Therefore a reptile translocation strategy is required to ensure that the development does not harm reptiles. The following strategy was set out as part of the Outline Planning Permission, and is developed in detail here to ensure that reptiles are protected in the long term.

- The main aim is to retain reptile populations within the local area, and within retained habitat on the site, including public open space area;
- In the short term this will require a local translocation of reptiles from the construction area to retained areas;



ARUN DISTRICT COUNCIL P/23/20/DOC

- Retained areas will be enhanced through provision of new reptile habitat piles/hibernacula (examples of design to be followed can be found in Section 9 of the Reptile Habitat Management Handbook (Edgar et al, 2010)) and will be allowed to grow in extent through cessation of arable farming on site;
- The public open space will be designed to create new reptile habitats greater in extent than those lost. These include grasslands that are likely to take 2-3 years to become of value to populations of reptiles, therefore early implementation of landscaping within the public open space is recommended, with planting within the first autumn season. The public open space is show on landscape plans, and reproduced as **Figure 3**;
- Prior to construction commencing, phases of the construction zone will be subject to translocation and a destructive search to the methods set out below and in **Technical Appendix 6**, to ensure that reptiles are not harmed.

## 8.4 Translocation Methodology

8.4.1 The construction zone and receptor areas are highlighted in **Figure 4** below. The translocation of reptiles will be undertaken according to the following strategy:

- The areas of reptile habitat within the construction zone of the site will be sensitively strimmed to c10cm using hand tools, careful not to harm reptiles potentially present; Where trees and bushes are also to be removed, due regard will be given to the mitigation strategy for nesting birds;
- At present it is assumed that with appropriate timing and management of construction zones to ensure reptile habitats are removed and do not re-develop, reptile protective fencing is not considered to be effective/needed along retained boundary areas. This can however be reviewed during construction;
- Refugia will be placed along the construction works area and a translocation of reptiles will be made based on the methodology outlined in **Technical Appendix 6.** The translocation may take up to 30-60 visits in suitable conditions given populations present on site and can be phased depending upon results of the translocation process;
- Reptiles will be translocated to the retained habitat in public open space away from the construction zone (see **Figure 4**);
- Following 3-5 negative visits in suitable conditions a destructive search will be undertaken of the works area by a suitably qualified ecologist;
- Where necessary site Heras/reptile fencing will continue to provide protection of the retained habitat around the edge of the development area, from construction intrusion;
- Long term management proposals of all retained habitat are provided in a management plan (IJLA, 2019);
- the reptile strategy will be undertaken outside of the hibernation period and during April-October, depending upon weather conditions and other factors.



ARUN DISTRICT COUNCIL P/23/20/DOC

Where potential reptile habitat is contained within the works area outside this period, no construction works will be undertaken in this habitat during this period.

- The reptile strategy will be detailed to conform to any mitigation requirements for other protected species.

8.4.2 The methodology, summarised in **Figure 4**, will see a short term reduction in suitable reptile habitat, followed by a medium to long term increase in suitable habitat, based on suitable management of retained and created habitats. The strategy deals with the short term negative impact through the following measures:

- Enhancement of the retained field edge habitat to enhance its carrying capacity in the short term, through provision of artificial hibernacula spaced along the field;
- Early provision of open space planting, in the first available season for the southern open space (autumn 2019);
- Potential for phasing the reptile translocation, with translocation aiming to commence in late summer 2019 and continue into 2020 where necessary (see development phasing plan 1177 PD007 RevA, Kenn Scaddan Associates, 2019);
- An open ended release site, allowing for reptiles to redistribute locally within the landscape of ditches, banks and field edges, and thus when new habitats develop in the medium to longer term on the public open space, they can be colonised to ensure that the long term aim is to maintain and enhance existing reptile populations in the local area.

## 8.5 Retained & Created Habitats – Public Open Space

8.5.1 The provision of new habitats in the public open space is an important element of the reptile mitigation strategy. The habitats to be created and managed within the public open space are subject to a management & maintenance plan and detailed landscape planting plans. These are set out in (IJLA, 2019). A summary of the landscape planting plan for the Public Open Space south of the site is provided at **Figure 3**.

8.5.2 Ecological mitigation has been built into the landscaping, in order to provide native hedgerows, scrub, woody coppice and a series of grasslands from tall uncut grassland edge habitat that will be of suitability to reptiles, rough grasslands with regular mowing for informal recreation, and hay meadows sown with wildflower mixes to provide another habitat type. Some of these habitats are to be subject to ground re-profiling to provide new micro habitats such as banks, which hedges can sit atop. This will also provide new niches for wildlife including reptiles.



ARUN DISTRICT COUNCIL P/23/20/DOC

8.5.3 Management prescriptions for reptile edge tall uncut grassland and other habitats is designed to ensure that ongoing management of public open space has regard to reptiles present within the site.

## 9.0 INVERTEBRATE MITIGATION

### 9.1 Introduction

9.1.1 No legally protected invertebrates have been recorded during the survey work for the scheme. Opportunities exist to create new habitats in public open space for invertebrates and habitat creation and management measures for the open space include prescriptions that will provide habitats for invertebrate populations to develop and colonise on site.

### 9.2 Habitat Creation

9.2.1 Features to be built into the new habitats to be created on site include:

- Provision of new wetland features in the watercourse/SUDS to be created on site. The allowing of natural colonisation of vegetation from bare ground and provision of water into the summer period will provide new habitats for aquatic invertebrates;
- Provision of new banks and grassland, woody edge habitat in public open space will allow micro habitats to develop that will be of value to invertebrates, and provide nectar sources from wild flower grasslands;
- Reduced use of herbicides and pesticides in semi-natural open space habitats will allow further colonisation;
- In the longer term, habitat wood piles from the coppice to be provided in the open space will provide dead wood habitat for invertebrates.

## 10.0 SUMMARY

10.1 A detailed ecology mitigation strategy has been devised to ensure that biodiversity features recorded at Land at Summer Lane, Pagham are protected during construction of the approved scheme and that there are long term measures to maintain and enhance biodiversity in a built scheme and during operation. A timetable of works is provided at **Table 1** below.



ARUN DISTRICT COUNCIL P/23/20/DOC

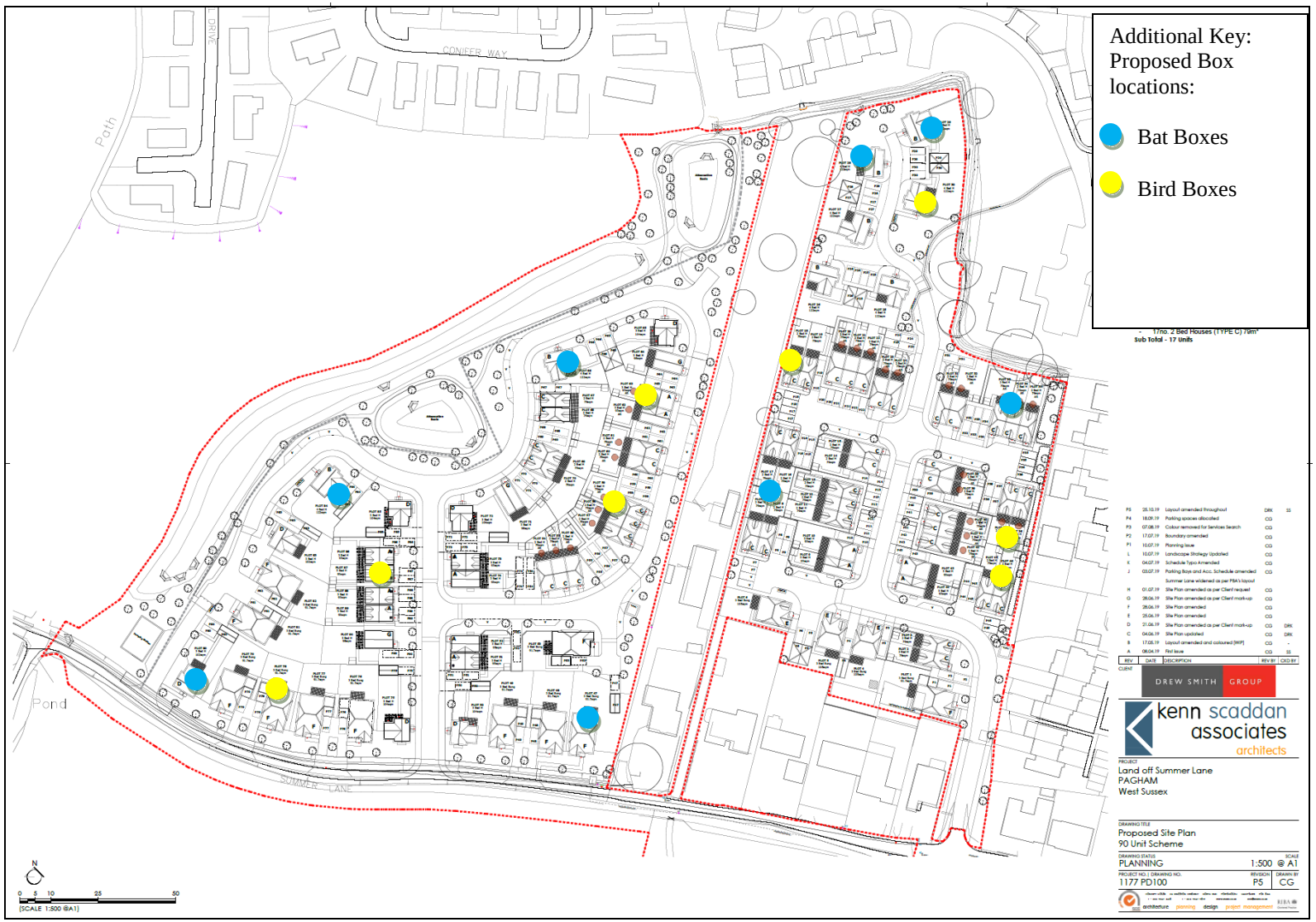



***Figure 3a: Masterplan with Bat and Bird Box Locations***

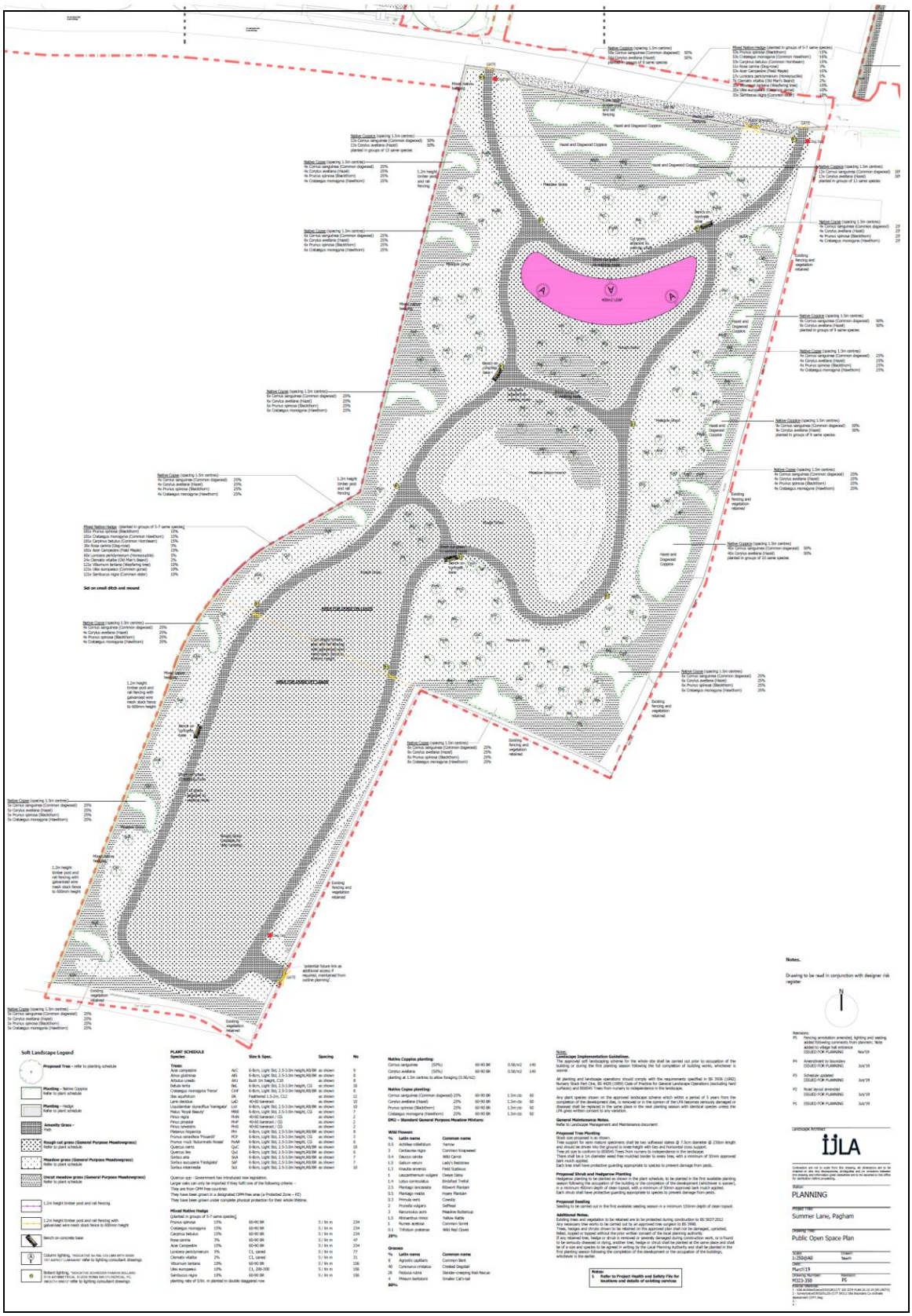



***Figure 3b – Public Open Space Landscape Strategy (from IJLA, 2019)***

***Figure 3c: Public Open Space Grassland Treatment, with <u>new</u> seeded uncut grassland reptile habitat areas shown (IJLA, 2019)***



ARUN DISTRICT COUNCIL P/23/20/DOC

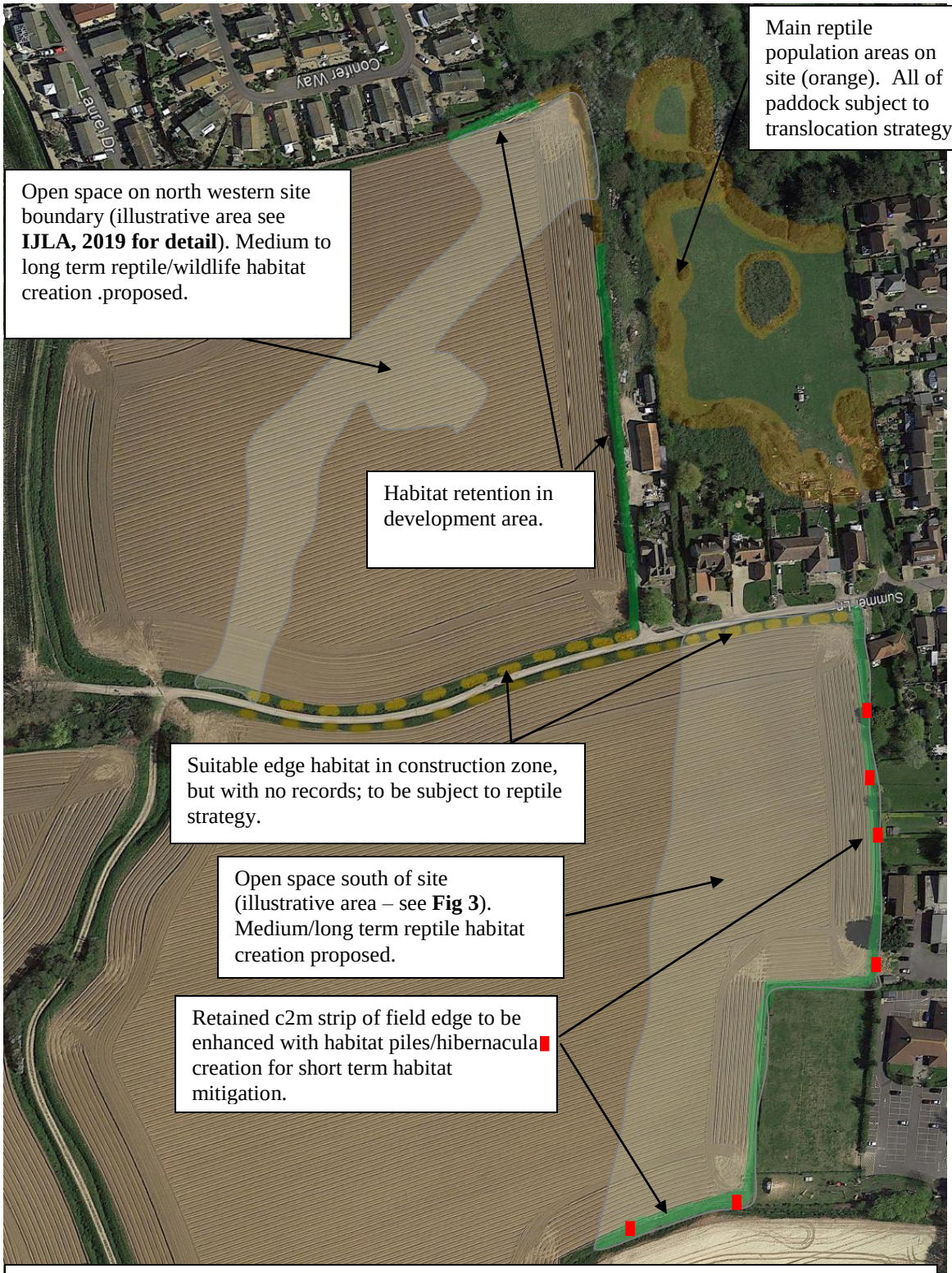



***Figure 4: Summary of Reptile Strategy.*** ***Imagery Copyright Google Earth***



ARUN DISTRICT COUNCIL P/23/20/DOC

## SUMMARY TIMETABLE

A timetable showing main construction mitigation work periods for ecology is provided below at **Table 1** (but see method statements for detail).

***Table 1: Summary of Anticipated Protected Species Mitigation Timescales During Construction***

| 2019-20 = | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| ***Vegetation*** | | | | | | | | | | | | | | | | | | | |
| Protect retained vegetation with fencing | | | | | | | | | | | | | | | | | | | |
| Planting of new habitats in Southern POS | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| ***Nesting Birds*** | | | | | | | | | | | | | | | | | | | |
| Principal Cutting of woody vegetation period | | | | | | | | | | | | | | | | | | | |
| Vegetation manipulation of potential ground nesting bird habitat | | | | | | | | | | | | | | | | | | | |
| Erect Bird Boxes | ASAP for boxes on trees/vegetation or when relevant dwellings are under construction | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| ***Bat Mitigation*** | | | | | | | | | | | | | | | | | | | |
| Erect Bat Boxes | ASAP for boxes on trees/vegetation or when relevant dwellings are under construction | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| ***Badgers & Foxes*** | | | | | | | | | | | | | | | | | | | |
| Ongoing site monitoring for Badger Fox | | | | | | | | | | | | | | | | | | | |
| Fox earth exclusion measures | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| ***Water Vole*** | | | | | | | | | | | | | | | | | | | |
| Ongoing site monitoring | | | | | | | | | | | | | | | | | | | |
| Cut/destructive search of ditch where no evidence recorded | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

| 2019-20 = | J | J | A | S | O | N | D | J | F | M | A | M | J | J | A | S | O | N | D |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| ***Reptiles*** | | | | | | | | | | | | | | | | | | | |
| Grass cutting/manipulation | | | | | | | | | | | | | | | | | | | |
| Monitor reptiles | | | | | | | | | | | | | | | | | | | |
| Translocation | | | | | | | | | | | | | | | | | | | |
| Destructive Search | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |

## 11.0 REFERENCES

BCT (2016) Bat Survey Guidelines 3rd Edition

Dean M, Strachen R, Gow D & Andrews R (2016) The Water Vole Mitigation Handbook. The Mammal Society Mitigation Guidance Series. Edited by Matthews F, & Chanin P.

Edgar, P., Foster, J. and Baker, J. (2010) Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth

Froglife, 1999. Froglife Advice Sheet 10. Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife, Halesworth, Suffolk.

Gov.UK (2019) Standing Advice for Protected Species and Habitats

Herptofauna Groups of the British Isles (HGBI) Guidelines (1998) "Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards." HGBI Advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth, personal collection.

IJLA (2019) Detailed Landscape Planting Plan; Landscape Maintenance and Management Plan for Public Open Space, Land at Summer Lane, Pagham

JLighting Design (2019) Proposed Lighting Layout Technical Note & Drawing 100046.PRIV.1300.001

RCP (2019) Land North of Summer Lane, Pagham, West Sussex. Owners Manual Relating to Surface Water Drainage Maintenance

Strachen, Moorhouse, Gelling (2011) Water Vole Conservation Handbook, 3rd Edition. Wildcru



ARUN DISTRICT COUNCIL P/23/20/DOC

**Technical Appendix 1**
**Wildlife & Countryside Act**
**Habitats Regulations and Schedule 2 Species**
**Natural Environment & Rural Communities Act 2006**

## WILDLIFE & COUNTRYSIDE ACT 1981 (AS AMENDED)

The Wildlife and Countryside Act 1981 (as amended) (WCA) is the principle legislation in Britain for the protection and conservation of our wildlife and its habitats of national importance. The legislation adopts a habitat and species based approach to nature conservation. Habitats and some species are protected in designated Sites of Special Scientific Interest (SSSI). Other species are afforded some protection from harm or disturbance by way of inclusion in either Section 1 (birds), Schedule 1 (specially protected birds), Schedule 5 (specially protected animals) or Schedule 8 (specially protected plants).

***Protection Afforded to SSSIs***
The presence of an SSSI on or near to a development is a material consideration, and this is discussed further in planning policy (see National Planning Policy Framework)

***Law Relating to Protected Species***
The WCA provides protection to such species in Part 1 of the Act. These sections provide protection from intentionally:

- killing, injuring or taking any wild bird or taking, damaging or destroying the nest or eggs of a wild bird
- disturbing any wild bird in Schedule 1 whilst building, on or near a nest, or disturbing dependant young of such birds
- damaging, destroying or obstructing access to any structure or place of shelter or protection of a schedule 5 animal, or disturbs any such animal whilst it is occupying a structure or place it uses for that purpose
- killing, injuring or taking any animal listed in Schedule 5
- Having in procession or control any live or dead wild bird or egg, or any wild animal in Schedule 5, or trading in any animal under Schedule 5.
- Damage to plants listed in Schedule 8 or uprooting of wild plants unless an authorised person.

Exemption and licences for development can be obtained in certain circumstances. Protected species are also a material consideration in planning applications.



ARUN DISTRICT COUNCIL P/23/20/DOC

***Disturbance & Recklessness***

The Countryside and Rights of Way Act 2000 (CRoW Act 2000) adds to protected species legislation in the WCA. The lesser test of 'Recklessness' is added to the protection from disturbance in three circumstances. These are:

- disturbance to Schedule 1 birds and their nests, eggs and dependant young,
- disturbance to Schedule 5 animals in their place of shelter/protection, and
- disturbance to the places of shelter/protection of Schedule 5 animals.

This addition means that any person who deliberately takes an unacceptable risk or fails to notice an obvious risk is falls under the Section irrespective of intention. The CRoW Act also provides greater protection to SSSIs from operations (and non operations) of owners, occupiers and third party users of the SSSI.

For further information see: https://www.legislation.gov.uk/ukpga/1981/69

**HABITAT REGULATIONS 2017**

***General***

The Conservation of Habitats and Species Regulations 2017 ('The Habitat Regulations') consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations provide for the designation and protection of 'European sites', the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites.

***European Protected Species***

Species listed under Annex II of the Habitats Directive were formally afforded protection by the Habitat Regulations. European protected species include the great crested newt, dormice and all species of bats. The provision relating to wild animal offences is reproduced below:

Protection of certain wild animals: offences
43.—(1) A person who—
(a) deliberately captures, injures or kills any wild animal of a European protected species,
(b) deliberately disturbs wild animals of any such species,
(c) deliberately takes or destroys the eggs of such an animal, or
(d) damages or destroys a breeding site or resting place of such an animal,
is guilty of an offence.

(2) For the purposes of paragraph (1)(b), disturbance of animals includes in particular any disturbance which is likely—
(a) to impair their ability—



ARUN DISTRICT COUNCIL P/23/20/DOC

(i) to survive, to breed or reproduce, or to rear or nurture their young; or
(ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate;
or
(b) to affect significantly the local distribution or abundance of the species to which they belong.
(3) It is an offence for any person—
(a) to be in possession of, or to control,
(b) to transport,
(c) to sell or exchange, or
(d) to offer for sale or exchange,
anything to which this paragraph applies.
(4) Paragraph (3) applies to—
(a) any live or dead animal or part of an animal—
(i) which has been taken from the wild, and
(ii) which is of a species or subspecies listed in Annex IV(a) to the Habitats Directive;
and
(b) anything derived from such an animal or any part of such an animal.
(5) Paragraphs (1) and (3) apply regardless of the stage of the life of the animal in question.
(6) Unless the contrary is shown, in any proceedings for an offence under paragraph (1) the animal in question is presumed to have been a wild animal.
(7) In any proceedings for an offence under paragraph (3), where it is alleged that an animal or a part of an animal was taken from the wild, it is presumed, unless the contrary is shown, that that animal or part of an animal was taken from the wild.
(8) A person guilty of an offence under this regulation is liable on summary conviction to imprisonment for a term not exceeding six months or to a fine, or to both.
(9) Guidance as to the application of the offences in paragraph (1)(b) or (d) in relation to particular species of animals or particular activities may be published by—
(a) the appropriate authority; or
(b) the appropriate nature conservation body, with the approval of the appropriate authority.
(10) In proceedings for an offence under paragraph (1)(b) or (d), a court must take into account any relevant guidance published under paragraph (9).
(11) In deciding upon the sentence for a person convicted of an offence under paragraph (1)(d), the court must in particular have regard to whether that person could reasonably have avoided the damage to or destruction of the breeding site or resting place concerned.

Section 44 provides certain defences to the above.

***The granting of a licence under Part 5 Section 55 of the Habitat Regulations***

In order to carry out a lawful operation (e.g. development work which has full planning permission) that may result in any of the offences above, it is necessary to obtain a licence from Natural England to allow the operation to proceed.

However, in accordance with the requirements of the Habitats Regulations, a licence can only be issued after the following conditions have been satisfied:

- *that there is no satisfactory alternative, and*



ARUN DISTRICT COUNCIL P/23/20/DOC

- *that the action authorized will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.*
- *that the action is required in preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment;*

Full planning permission is required to apply for a Natural England licence (where such a consent is necessary for the work to be carried out). In addition, a method statement which details the survey results, methodology of work to be undertaken, mitigation and compensation measures, must be submitted to Natural England with the licence application.

***Plans and Projects & Designated Sites***

The Regulations provide procedure whereby designated SAC or SPA and other European Protected Sites are afforded protection from plans and projects that may be likely to have a significant effect on the Features for which these sites are designated. Where a significant effect is considered likely in-combination with other projects an appropriate assessment is required to be undertaken. Details of this procedure can be found at Part 6 of the Act onwards, see link below.

For Full details of the 2017 Habitat Regulations see:
http://www.legislation.gov.uk/uksi/2017/1012/pdfs/uksi_20171012_en.pdf

**NATURAL ENVIRONMENT AND RURAL COMMUNITIES ACT 2006**

This Act places a specific duty to conserve biodiversity on all public bodies, including Local Planning Authorities. In order to aid with this process Section 41 of the Act requires the Secretary of State to publish lists of living organisms and habitats which are of principal importance for the purpose of conserving biodiversity. These are the national Biodiversity Action Plan (BAP) lists, and BAP projects are also undertaken at a County, Borough or District level.

For further information see: https://www.legislation.gov.uk/ukpga/2006/16/part/3



ARUN DISTRICT COUNCIL P/23/20/DOC

**Technical Appendix 2**

**Badger Survey Methodology**

**Survey Methods**

Survey work involves systematically searching for the presence of Badgers *Meles meles*, in particular badger setts, on or near (30-40m) of the site where access could be obtained. A site is also assessed for the presence of badger foraging activity and territorial behaviour. Such signs include foraging trails, foraging scrapes in short grass, which are commonly known as 'snuffle holes' (shallow scrapes in soft ground or even turf rolling created by foraging for ground-dwelling invertebrates such as worms and grubs), footprints, hairs caught under fences, sett entrances, and latrine sites.

A thorough check of all fencing on site is also undertaken, looking for any potential access points. This can be located by looking for pushed up fencing. These access points can be created by any large mammals included dogs, cats, foxes as well as badgers. The area around a potential access point is methodically searched for mammal hairs as these are usually found underneath any regularly used access point. Any hairs found can be used to identify the species. In addition the vegetation around the entrance gives an indication of frequency of use.

Where substantial vegetation, such as large Bramble domes and scrub precludes extensive searching, signs of entry into the scrub is searched for, although the potential for an unrecorded Sett under such vegetation is always a possibility.

**References**

Kruuk, H., Parish, T., Brown, C.A.J. & Carrera, J. (1979). The use of pasture by the European badger (Meles meles). Journal of Applied Ecology, 16, 453-459.

Cresswell, W.J. & Harris, S. (1988) Foraging behaviour and home-range utilisation in a suburban badger (Meles meles) population. Mammal Review, 18, 37 – 49.

Natural England 2007 Badgers & Development, A Guide to Best Practice and Licensing Interim Guidance. Natural England, Sheffield.



ARUN DISTRICT COUNCIL P/23/20/DOC

**Technical Appendix 3**

**Water Vole & Otter Survey**

**Introduction**

Both Otter *Lutra lutra* and Water Vole *Arvicola atercours* are afforded protection under the Wildlife & Countryside Act 1981 (as amended). Otters are also afforded protection under Annex II and IV of the Habitats Directive, which is implemented in the UK through the Habitat Regulations 1994. Water Voles and their habitat are protected under the Wildlife & Countryside Act, which was amended in 1998 and 2008 to protect their habitat and individuals from harm (respectively); whilst both Otters and their habitat are protected under the Habitat Regulations 2010.

**Survey Techniques for Water Vole**

Site surveys for water vole will again begin with a desk top survey to understand the local area and any known populations of Water Vole. This will then allow a field survey to be targeted.

Field survey work involves undertaking a habitat assessment of the watercourses in question followed by a survey identifying all potential Water Vole habitat, rivers, wetlands, watercourses and ditches and surveying in detail each area of habitat within the study area, zone of influence and development site.

The habitat assessment looks at watercourses to provide an assessment of likely potential based on considering the following criteria relating to dry ground for burrows and nesting, vegetation for foraging and shelter, and water for predator avoidance (see also Strachen *ed*, 2012 and Dean *et al*, 2016):

- Potential for burrows (entrances don't need to be above water levels);
- Bank profile (steep banks are generally preferred for burrowing);
- Bank substrate (eg hard engineering or natural banks) and surrounding area potential;
- Potential for suitable above ground nest sites (eg extensive aquatic vegetation such as reed and sedge beds or tussocks);
- Herbaceous vegetation cover for food and shelter;
- Water levels (as a means of predator avoidance)

The field survey examines all potentially suitable habitat for the following signs of Water Vole presence:

- Faeces;
- latrines;
- Feeding stations;
- Signs of feeding on marginal aquatic vegetation;
- Burrows;
- Footprints

Water Vole reduce their activity during the winter period, therefore survey work during winter will need to be aware of this potential issue. The optimum time for survey is between March and October.



ARUN DISTRICT COUNCIL P/23/20/DOC

Updated survey guidelines (Dean et al, 2016) recommend two survey visits, one between mid March/April –end of June, and the other between July – end of September/October. The visits should be two months apart. Survey work should avoid periods of high rainfall/water levels, which can wash away field signs, as well as immediately following any ditch maintenance works.

An indication of relative population size can be provided by data from the field survey. The table below is reproduced from Dean et al, 2016 at p16:

***Table: Relative Population Density***

| Relative population density | Approximate number of latrines per 100m of bankside habitat | |
|---|---|---|
| | First half of survey season (mid-April to end of June) | Second half of survey season (July to September) |
| High | 10 or more | 20 or more |
| Medium | 3–9 | 6–19 |
| Low | ≤ 2 (or none, but with other confirmatory field signs) | ≤ 5 (or none, but with other confirmatory field signs) |

**Survey Techniques for Otter**

A desk top survey is the first part of an Otter survey to determine whether Otters have been recorded within 5km of a site. The second stage of an Otter survey is to identify all areas of Otter habitat within a study area, and determine where Otters may move to and from along watercourses. Any on site and study area survey will be undertaken in the light of Otter habitat and known records in the local area.

Field survey work will involve identifying all rivers and watercourses which may potentially be affected by the proposals, and that these watercourses are then included in the Otter assessment. Watercourses will be surveyed within 2km of the proposed development. Signs of Otter will be searched for including trackways, holts and spraint sites. All accessible banks of a watercourse should be surveyed and spot checks will be made of all bridge and other potential sprainting features along a watercourse. Otter survey work will be undertaken over as long a period of time to understand and account for seasonal variation as Otters may use different stretches of atercourses at different times of year.

**References**

-Dean M, Strachen R, Gow D & Andrews R (2016) The Water Vole Mitigation Handbook. The Mammal Society Mitigation Guidance Series. Edited by Matthews F, & Chanin P.
-Design Manual for Roads & Bridges (DMRB) (1999) Volume 10 Section 1 Part 9 HA 81/99 Nature Conservation Advice in Relation to Otters.
-English Nature (2001) Water Voles and Development A Good Practice Guide, English Nature, Peterborough
-Strachen et al (2012) Watervole Conservation Handbook third Edition. WILDCRU



ARUN DISTRICT COUNCIL P/23/20/DOC

**Technical Appendix 4**

**Update Survey Photos 2018/2019**

The annotated photos below are based on update site visits in Summer 2018 and April 2019, to update survey information for the reserved matters mitigation recommendations, including detailed Badger and Water Vole survey.

***Horse Paddock Area of site, still open with rabbit grazing. Currently no horse grazing***



ARUN DISTRICT COUNCIL P/23/20/DOC

***Arable field within construction zone –not cultivated in 2019, habitats still open and grassland not developed for reptiles***

***Works to northern boundary watercourse on site and off site to north***



ARUN DISTRICT COUNCIL P/23/20/DOC

***Summer Lane northern edge watercourse – dry during summer 2018 and spring 2019.***

***Southern boundary of POS with watercourse and c4-5m of rough grassland to become early translocation habitat for reptiles***



ARUN DISTRICT COUNCIL P/23/20/DOC

***Southern boundary of POS with watercourse and c4-5m of rough grassland to become early translocation habitat for reptiles***

***Water Vole Grazing signs on grasses within Watercourse off site to the west.***

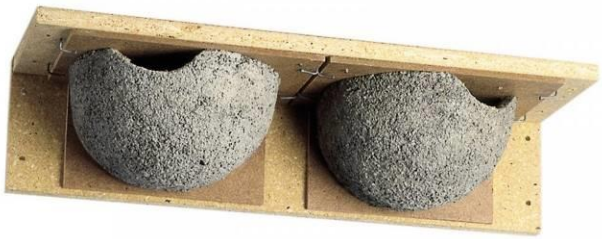


ARUN DISTRICT COUNCIL P/23/20/DOC

**Technical Appendix 5**

**Bat & Bird Box Mitigation Examples**

**Examples of Bird Nesting Opportunities for buildings**

| | |
|---|---|
| ***Swift Nesting Brick –***<br>It needs to be positioned near Apex or high up – position advised by ecologist.<br><br>Design shown is from Ibstock Bricks.<br>https://www.ibstockbrick.co.uk/kevington/eco-products/<br><br>***see also:***<br>https://www.rspb.org.uk/globalassets/downloads/documents/conservation--sustainability/help-swifts/swift-bricks.pdf | |
| ***House Martin Schwegler Nest***<br>Placed under roof overhang, bargeboard – high up position advised by ecologist<br><br>Design shown Schwegler from NHBS:<br>https://www.nhbs.com/9a-schwegler-house-martin-nest |  |
| ***House Sparrow Terrace Schwegler***<br>Usually placed under roof overhang, bargeboard – high up position advised by ecologist<br><br>Design shown Schwegler from Wildcare:<br>https://www.wildcare.co.uk/sparrow-terrace.html | |



ARUN DISTRICT COUNCIL P/23/20/DOC

| | |
|---|---|
| ***Blue/Great Tit Schwegler Nest***<br><br>***Design shown Schwegler from NHBS:***<br>https://www.nhbs.com/1b-schwegler-nest-box | |

**Examples of Bat Bricks/Mitigation for buildings**

| | |
|---|---|
| **Schwegler Bat Roost Unit 2FR**<br><br>This Tube system meets the characteristic behavioural requirements of the types of bats that inhabit buildings. Made with Schwegler wood-concrete, the design maintains excellent climatic conditions inside the roost unit allowing the animals to either hang onto the wooden rear or onto the wood-concrete front. The box, once installed is maintenance free and self cleaning.<br><br>The roost unit can be installed within any external walls (brick, block or panelling) either flush or beneath the wall surface (with suitable entrance ramp extension)<br><br>Dimensions: height 47.5 x width 20 x depth 12.5 cm, Entrance: width 15 x height 2 cm, Weight: ca. 9,8 kg<br><br>Within Brick, can also be placed within cavity with only entrance visible | <br> |



ARUN DISTRICT COUNCIL P/23/20/DOC

| | |
|---|---|
| | |

**Technical Appendix 6**

**Reptile Translocation Methodology**

***Translocation of Reptiles***

In summary, translocation is the movement of animals, usually deliberately, from one location to another (Gent *et al*, 1998). The receptor site is the site to which reptiles are moved, the donor site (or in this case development site/construction zone) is where they are moved from.

The aim of the mitigation strategy is to ensure that an 'equivalent population' is maintained to that which existed before (Gent *et al*, 1998). Reptile mitigation strategies usually involve translocations and habitat management which is implemented between end March/April and Sept/October once any reptiles on site have emerged from hibernation.

Receptor sites must be assessed prior to the translocation of any reptiles, against criteria provided as good practice guidance. This ascertains the existing population of reptiles on the receptor site and identifies any habitat management needs in order to provide the optimum habitat for translocated reptiles.

HGBI (1998) and Gent *et al* (1998) recommend that 'reasonable effort' should be undertaken to clear a site of reptiles prior to any works being carried out. Interpretation of what 'reasonable effort' translates as in minimum trapping days and capture methodologies is provided in **Table A1** below.

Monitoring is necessary in the medium and long term in order to assess the success or otherwise of the translocation programme.

***Capture Areas Assessment***

The areas of the site within the construction zone needs to be assessed as to potential to support reptiles and likely populations present.

***Receptor Area Assessment***

A receptor site for reptiles needs to meet certain criteria to ensure that the conservation status of the populations of reptiles on the capture site and any on the receptor site are maintained. In order that a receptor site is sustainable in the long term the following assessment criteria recommended by HGBI (1998) have been used to find a site:

- A receptor site should be local to the donor site, and as close as possible to it (at least within the same county or similar administrative area, with similar geology/habitat);
- Not currently supporting a viable breeding population of the species to be translocated, for known reasons, or be capable of supporting them given suitable habitat management and creation;
- Not be subject to planning or other threats in the foreseeable future;



ARUN DISTRICT COUNCIL P/23/20/DOC

- Subject to a written, agreed and funded pre- and post-translocation management agreement;
- Subject to a written, agreed and funded pre- and post-translocation monitoring programme.

There have been various translocation programmes which have assessed the populations and carrying capacities of a range of different reptile habitats particularly in relation to slow-worms. It is widely recognised that slow-worms can, in their ideal habitat, regularly occur at 1000+ per hectare but are usually present at lower densities. However it should always be carefully considered that few sites have large areas of continuous good slow-worm habitat capable of supporting such high populations although smaller, localised areas of a site may do so. When estimating the carrying capacity of a release site and considering the number of reptiles to be translocated, a precautionary approach will be used. The mitigation strategy will provide a larger area of suitable habitat at the receptor site than at the capture site.

***Translocation Methodology***

In order to fulfil a translocation of reptiles from the development site to the receptor sites, the animals must be caught, or in the case of a very low population discouraged from the areas of the site to be lost. The most effective method for capture involves the placing of cut up roofing felt or other materials such as corrugated iron sheeting, wood or plastic that snakes and lizards hide under. Refugia/Tins are best placed in locations which will be attractive to reptiles (e.g. 'sun-traps').

The most profitable time for capturing reptiles is generally between late April - June, and again between late August and late September, depending on weather conditions. The suggested number of days required to catch reptiles for a reasonable effort to remove the population is described in **Table A1** above.

***Capture Site Preparation***

The development site must be prepared in order to facilitate the successful removal of reptiles. Sheets of roofing felt and tin will be placed across the site to act as refugia for the reptiles. They will be placed at a high density in suitable habitat. Areas of suitable reptile habitat with a high reptile density may have a tin density of up to 5 refugia per 10m², in line with the guidance in **Table A1**. The placement of a higher number of refugia on site will increase the efficiency of capture and can reduce the number of trapping days required to clear the site of reptiles.

***Capture Effort***

**Table A1** provides the suggested capture effort for reptile species, based on good practice guidance (HGBI, 1998). Reptile translocation can in some circumstances require at least one season (spring to autumn), and sometimes longer, to ensure that all reptiles are removed from the development site.

The purpose of this type of translocation is to make reasonable effort to remove all reptiles from a site prior to a development. Where reptile populations are low or on small sites, Natural England often provide additional guidance that reasonable effort has been made and translocation to be considered complete in any area. The capture rate needs to have declined to zero over at least three to five consecutive trapping visits in suitable weather conditions.



ARUN DISTRICT COUNCIL P/23/20/DOC

***Table A1: Capture Effort for Common Reptiles***

| **Species** | **Population size (adult density)** | **Tin density (tins/ha)** | **Trapping days in good weather** |
|---|---|---|---|
| **Slow-worm** | High (> 100 / ha) | 100 | All suitable days between March & September or a full year (min. 90 suitable days) |
| | Medium (> 50 / ha) | 100 | All suitable days between March & September or a full year (min. 70 suitable days) |
| | Low (< 50 / ha) | 50 | 60 suitable days |
| **Common lizard** | High (> 80 / ha) | 100 | All suitable days between March & September or a full year (min. 90 suitable days) |
| | Medium (> 40 / ha) | 100 | All suitable days between March & September or a full year (min. 70 suitable days) |
| | Low (< 20 / ha) | 50 | 60 suitable days |
| **Grass snake** | High (> 4 / ha) | 100 | All suitable days between March & September or for two years (min. 90 suitable days) |
| | Medium (2 - 4 / ha) | 100 | All suitable days between March & September or two years (min. 70 suitable days) |
| | Low (< 2 / ha) | 50 | 60 suitable days |

The guidelines above are likely to change according to the habitats on a site and populations of reptiles, and manipulation of habitats prior to construction can reduce the number of trapping days, allowing for more efficient capture of reptiles on a translocation site.

***Habitat Manipulation***

The areas of habitat affected by the development will be carefuly modified to reduce their suitability for reptiles where necessary. This will encourage reptile movement within the site to increase capture in key areas around refugia and may also encourage some dispersal to suitable retained habitats. The grass height will be reduced by cutting to no less than 10cm on the first cut and will be phased in bands and habitat areas across the site. The location and timing of this process will be guided by capture rates in the different areas of the site. Habitat manipulation can be used to increase catch efficiency.

***Translocation programme***

The translocation is inspected regularly and any reptiles are captured and moved, using the methods described above to the receptor site. For the translocation to be considered complete in any area, the capture rate needs to have declined to zero over at least three to five consecutive trapping visits in suitable weather conditions.

Close monitoring of the capture rate will allow a judgement to be made of the number of visits considered to be necessary (in relation to guidelines in **Table A1**). The site will be walked very



ARUN DISTRICT COUNCIL P/23/20/DOC

slowly in order to search for basking reptiles and by carefully lifting each refugia, an attempt will be made to catch any reptiles basking beneath.

All reptiles will be transported to the receptor site in a secure ventilated container. At the end of each visit all reptiles caught will be released in suitable conditions at the receptor site. Details of all captures and releases will be recorded.

***Exclusion Fencing***

Reptile fencing will be used where required to prevent reptiles returning to cleared areas, and where populations are considered sufficient to warrant it (it is often in-effective with low populations).

***Supervised site clearance***

Following the completion of the translocation in any areas of the site, a supervised site clearance will be carried out. This will take place outside of the hibernation season usually between April- early October (November – February is the main hibernation period dependent on weather conditions). The technique is a last method used and requires very careful specialist supervision. Normal destructive search rates are between 0.1 and 1.0 ha per day depending on machine size and habitat type.

The search will begin by dismantling rubble piles and other debris by hand. Reptiles may be found sheltering in these structures. Following this, the vegetation will be stripped using an excavator and bucket. Firstly, the top few centimetres of the ground or first layer of rubble should be removed, to expose reptiles sheltering in crevices just below the surface. At least one experienced reptile handler should be positioned to catch any remaining reptiles as they are disturbed. Following this, larger and deeper excavations can be made, concentrating on areas which afford shelter to reptiles, such as tree stumps and buried rubble. Particular care should be taken when emptying the bucket in case any reptiles are dug up with the spoil. It is not anticipated that many reptiles (if any) are discovered as the reptile populations will have almost completely been moved by this stage.

Prior to starting works, the contractors will be alerted to the presence of protected species on the site and provided with the method statement and plans. The contractors will be shown reptiles, so that they are familiar with their identification, should they come across them during vegetation works.

***Monitoring***

Following completion of the work, monitoring of the reptile population at the receptor site is recommended during the following two years, in order to determine the success of the translocation project.

Natural England (English Nature, 1998) suggests the following guidance which may determine the ‘success’ of a mitigation strategy:

- Removal of a ‘reasonable proportion’ of animals from a development site or no significant impact from development where in situ conservation is involved;
- Establishment and maintenance of a range of suitable habitats: with the presence of ‘good’ features and absence of ‘negative’ features;
- Breeding and successful recruitment;



ARUN DISTRICT COUNCIL P/23/20/DOC

- Re-establishment of animals in a range of habitat or spread of the animals throughout a site or to adjacent sites;
- Establishment of an appropriate age structure in the population;
- Survival of a large proportion of the animals that were moved;
- Establishment of:
    - A viable population
    - An expanding population
    - An 'equivalent' population to that which previously occurred
    - A population that is fluctuating in size within acceptable limits;
- Persistence of individual animals over a number of years.

***References***

Herptofauna Groups of the British Isles (HGBI) Guidelines (1998) "Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards." HGBI Advisory notes for Amphibian and Reptile Groups (ARGs). HGBI, c/o Froglife, Halesworth, personal collection.

Froglife, 1999. Froglife Advice Sheet 10. Reptile Survey. An introduction to planning, conducting and interpreting surveys for snake and lizard conservation. Froglife, Halesworth, Suffolk.



ARUN DISTRICT COUNCIL P/23/20/DOC