

Land north of Sefter Road, Pagham,
Bognor Regis

Ecological Protection and Enhancement Plan
(relating to Condition 15 of Planning Permission
P/134/16/OUT)

July 2020

Quality Management	
Client:	Taylor Wimpey Southern Counties
Project:	Land at Sefter Road, Pagham, Bognor Regis
Report Title:	Ecological Protection and Enhancement Plan
Project Number:	1003697
File Reference:	3697 EPEP vf1 CL
Date:	10/07/2020

Copyright
The copyright of this document remains with Aspect Ecology. All rights reserved. The contents of this document therefore must not be copied or reproduced in whole or in part for any purpose without the written consent of Aspect Ecology.

Confidentiality
This report may contain sensitive information relating to protected species. The information contained herein should not be disseminated without the prior consent of Aspect Ecology. All records of Badger setts must remain confidential. Where this report is circulated publicly or uploaded to online planning portals, reference to Badger setts must be redacted and any maps pertaining to the locations of Badger setts removed from the document.

Legal Guidance
The information set out within this report in no way constitutes a legal opinion on the relevant legislation (refer to the relevant Appendix for the main provisions of the legislation). The opinion of a legal professional should be sought if further advice is required.

Liability
This report has been prepared for the exclusive use of the commissioning client and unless otherwise agreed in writing by Aspect Ecology no other party may use, or rely on the contents of the report. No liability is accepted by Aspect Ecology for any use of this report, other than for the purposes for which it was originally prepared and provided. No warranty, express or implied, is made as to the advice in this report. The content of this report is partly based on information provided by third parties. Unless otherwise stated, information obtained from any third party has not been independently verified by Aspect Ecology.

Contact Details
Aspect Ecology Ltd Hardwick Business Park : Noral Way : Banbury : Oxfordshire OX16 2AF 

Contents

Text:

1	Introduction	1
2	Document Framework and Background.....	3
3	Existing Ecological Position	4
4	Ecological Protection Measures.....	7
5	Ecological Enhancements and Monitoring	20
6	Summary and Conclusions.....	27

Plans:

Plan 3697/EPEP1	Site Location
Plan 3697/EPEP2	Ecological Protection Measures
Plan 3697/EPEP3	Reptile Mitigation Plan
Plan 3697/EPEP4	Ecological Enhancement Measures

Appendices:

Appendix 3697/EPEP1	Reptile mitigation/enhancement specifications
Appendix 3697/EPEP2	Faunal Enhancement Specifications

1 Introduction

1.1 Background and permitted development

1.1.1 Aspect Ecology has been commissioned by Taylor Wimpey Southern Counties in regard to ecological matters at the site, located north of Sefter Road, Pagham, Bognor Regis, centred approximately at OS grid reference SZ 901 995 (see Plan 3697/EPEP1).

1.1.2 The site is in receipt of outline planning permission for residential development, comprising the development of up to 280 dwellings (including affordable homes), land for a replacement scout hut, land for an Ambulance Community Response Post Facility and land for either a 1FE primary school or care home and associated ancillary facilities and landscaping, granted by Arun District Council, dated 15th October 2019 (ref: P/134/16/OUT).

1.1.3 The planning application was informed by ecological survey information and assessment, as set out within Aspect Ecology's reports entitled "*Land North of Sefter Road, Bognor Regis: Ecological Appraisal*", dated December 2016 (ref: 3697 EcoAp vf1) and "*Land at Sefter Road, Bognor Regis: HRA Screening Report*", dated December 2016 (ref: 3697 EcoAp vf2.IJ).

1.1.4 In order to update the previous survey information and inform the progression of the detailed design and reserved matters (which are understood to remain in discussion with Arun DC at the current time), further update survey work has been undertaken at the site by Aspect Ecology Ltd during December 2019, the results of which are set out at Aspect Ecology's Technical Briefing Note entitled "*Land at Sefter Road, Pagham, Bognor Regis: Updated Ecological Survey Work to Inform Reserved Matters Application under Outline Permission P/134/16/OUT*", dated February 2020 (ref: 1003697 BN09 EUN vf).

1.1.5 The outline planning permission is subject to a number of conditions, of which condition 15 relates to ecology and nature conservation, requiring information to be submitted to, and approved by the LPA.

1.2 Relevant planning conditions

1.2.1 Condition 15 of the outline planning permission relates to ecological matters, stating:

"Prior to the commencement of development of any preparatory works an Ecological Protection & Enhancement Plan shall be submitted to and agreed in writing by the Council. The Plan shall be based on the mitigation measures proposed in Ecological Appraisal dated December 2016 prepared by Aspect Ecology and will include a programme of ecological monitoring to inform the long term management of the site. The Ecological Protection & Enhancement Plan shall include a full mitigation strategy for reptiles and a work programme with clear timelines for each mitigation measure to be carried out. The mitigation measures shall be implemented in accordance with the timescales set out in the agreed plan."

1.3 Purpose of this document

- 1.3.1 The purpose of this document is to provide details relating to the required Ecological Protection and Enhancement Plan (EPEP) for the site in order to address the stated requirements of condition 15 of the outline planning permission.
- 1.3.2 Information set out includes reference to the previous survey work undertaken at the site (as described within the previously submitted information relating to the planning application process) and existing ecological position at the site, details of ecological mitigation measures, safeguards to be implemented and associated responsibilities, and details of enhancements to be brought forward, with reference to the specific requirements of the planning condition.

2 Document Framework and Background

2.1 Land covered by this document

- 2.1.1 This document relates specifically to the land within the identified site boundary for the permitted development (see Plan 3697/EPEP1).
- 2.1.2 Ecological protection measures and considerations set out cover the entirety of the land within the permitted development site boundary where appropriate, with measures identified relating to specified existing habitats and features with potential to contain particular species as appropriate, as defined within the individual sections of the text.
- 2.1.3 The ecological enhancements and associated ongoing management measures set out relate to those areas of the development site located outside of individual residential dwellings and associated privately owned domestic gardens, except where otherwise specifically stated (e.g. in relation to integrated bird/bat boxes to be provided within individual plots as part of the wider development).

2.2 Tenure and overall responsibility

- 2.2.1 The land covered by this document (the site) is currently understood to be owned and managed by Taylor Wimpey Southern Counties.
- 2.2.2 In the long-term, individual new dwellings and associated plots within the identified residential development areas would be anticipated to be sold on to new owners. Nonetheless, initial measures to be implemented throughout the development areas themselves relate to protection and safeguards to be implemented during clearance and construction works, during which time all areas are anticipated to remain under the control of Taylor Wimpey Southern counties.
- 2.2.3 The majority of enhancements (with the exception of specific features such as integrated bat and bird boxes) and associated ongoing management measures during the life of the development are largely proposed within the open space and would therefore not be anticipated to be affected by the sale of individual residential plots. In the long-term, it is anticipated that responsibility for management of the open space areas will be transferred to a nominated management company (until such time they will remain the responsibility of Taylor Wimpey Southern counties or any subsequent owner of the site). Future measures will be informed by the position at the site, as determined by site observations during implementation of the ongoing measures, which will feed back into any revisions or amendments to this document as appropriate.
- 2.2.4 Should any change to this position take place, this document should be updated to reflect the agreed position.

3 Existing Ecological Position

3.1 Ecological Survey Work and Assessment

- 3.1.1 Ecological survey work was originally undertaken at the site by Aspect Ecology Ltd over the period March 2014 to May 2016 in order to inform the proposed development scheme, including the outline planning application, as reported within the resultant reports, which were submitted as part of the planning application, and are therefore understood to form part of the approved documents.
- 3.1.2 The survey work undertaken included obtaining background ecological information and records from sources including Sussex Biodiversity Records Centre (SxBRC), whilst the site was surveyed based on extended Phase 1 Habitat Survey methodology.
- 3.1.3 In addition, specific survey work and consideration in respect of bats, Badger *Meles meles*, common reptile species, Great Crested Newt *Triturus cristatus* and breeding birds was undertaken (specific reference to individual faunal surveys is set out within the submitted documents and accordingly, detailed information and methodologies are not further set out here).
- 3.1.4 In addition, given the age of the previous survey information and current reserved matters progression, further ecological survey work has been undertaken at the site by Aspect Ecology in December 2019 in order to update the previous position and confirm the current status of habitats and faunal opportunities at the site, as set out within Aspect Ecology's technical note (ref: 1003697 BN09 EUN1 vf, dated February 2020).
- 3.1.5 A summary of the relevant ecological features and species of relevance to the proposed protection and enhancement measures within this document is set out below (for further detail refer to the submitted documents, as specified above).

3.2 Ecological Designations

- 3.2.1 The site does not contain, nor is it located adjacent to any identified statutory or non-statutory nature conservation designation. All such designations are physically removed and well-separated from the site. The site is located within the relevant Zone of Influence associated with recreational pressures on Pagham Harbour RAMSAR/SPA, for which mitigation measures include financial contribution, at the appropriate rate, to strategic access management measures (SAMM), whilst the development proposals (including current Reserved Matters scheme) include extensive areas of greenspace, which will provide a circular walking route for new residents.
- 3.2.2 Accordingly, subject to the previously agreed measures in relation to Pagham Harbour, no further protection or mitigation measures or considerations are required in relation to ecological designations, such that these are not further discussed within this document.

3.3 Habitats

- 3.3.1 The site itself is dominated largely by arable land in the form of a single field, with smaller areas of semi-improved grassland, hardstanding, amenity planting and

buildings and boundary vegetation including trees, scrub, hedgerows and drainage channels, particularly at the west of the site.

3.3.2 The majority of these habitats are of low to negligible ecological value, albeit the boundary hedgerows and trees in particular provide some raised value in the local context, whilst the drainage channels provide a potential route for hydrological contamination or run-off.

3.3.3 Accordingly, ecological habitats and features of value (and therefore requiring protection measures) are focussed largely on the site boundary corridor at the west of the site, with additional minor value (and therefore protection) relevant in regard to the existing field boundary vegetation elsewhere within the site, along with a small number of mature trees.

3.4 Fauna

3.4.1 The previously submitted ecological information includes details of survey work including general consideration of any potential for the presence of protected species along with specific survey work in regard to of bats, Badger, common reptile species, Great Crested Newt and breeding birds. In addition, subsequent to the submitted information, further update survey (including specific consideration in regard to Badger, Water Vole and potential reptile habitats) has been undertaken at the site during December 2019 in order to further inform the reserved matters scheme and confirm the up to date position. A summary of the position with respect to relevant individual faunal groups is set out below.

Bats

3.4.2 No trees were recorded to support features of bat potential within the site. The buildings present were assessed for their potential value to support roosting bats, with further specific survey work undertaken, as reported within the previously submitted documents, during which no bat roosts were recorded.

3.4.3 The drainage channel within the west of the site, along with associated vegetation and boundary corridors likely provide opportunities used by foraging and commuting bats (with these areas identified to support the majority of the recorded bat activity), with the majority of activity represented by Common Pipistrelle. Accordingly, previously identified mitigation requirements in relation to bats are focussed on minimising lighting in the vicinity of retained vegetated corridors and open space.

Badger

3.4.4 No evidence for any use of the site by Badger was recorded during any of the survey work undertaken. Nonetheless, Badger is known to be present within the wider local area, and accordingly it is likely that this species would frequent the site from time to time.

Reptiles

3.4.5 The survey work undertaken included specific reptile survey work undertaken across the site, which recorded the presence of common reptiles in the form of Slow Worm and Common Lizard, associated with the suitable habitats in the west of the site.

Nesting Birds

- 3.4.6 The habitats present, in particular including the boundary hedgerows and trees were recorded to be utilised by common nesting birds (which receive protection under the legislation whilst nesting), including supporting breeding activity, albeit the habitats were recorded to support an unremarkable range of common and widespread species typical of the local area.

Other Species

- 3.4.7 On the basis of the survey work undertaken, other faunal species likely to be present at the site remain common and widespread and receive no specific legislative protection, such that other protected species are unlikely to be present, or represent a constraint on construction works. Accordingly, no specific protective measures or mitigation would appear to be required in respect of such species, whilst in any event the measures and safeguards set out in respect of other ecological receptors will also serve to safeguard common and widespread species.

4 Ecological Protection Measures

4.1 Introduction

- 4.1.1 This document has been prepared with regard to the information set out within BS 42020:2013, and following the individual requirements specified under planning Condition 15 of the outline planning permission for the site.

4.1 Risk assessment of potentially damaging construction activities

- 4.1.1 On the basis of the above information, it is clear that the majority of habitats contained within the body of the construction area (particularly in the form of the intensively managed arable areas) provide no more than low or negligible ecological value. Nonetheless, a small number of habitats are present which provide some raised ecological value, particularly in the form of the boundary vegetation and trees.
- 4.1.2 A small number of trees (limited to the site boundaries) will be retained under the proposals and therefore in terms of habitats and vegetation, potential for adverse effects is largely limited to damage to these trees and associated boundary vegetation.
- 4.1.3 In terms of protected species, site clearance works have potential to affect common reptile species (for which specific mitigation is required – see below) and nesting birds, with precautionary protection measures also required in regard to foraging and commuting bats and Badger.
- 4.1.4 Given the nature of the site and the previous survey results, the construction activities are unlikely to result in any further impacts on existing ecological receptors within or adjacent to the site.
- 4.1.5 In any event, the approach to implementation of the measures set out will be flexible and responsive to progress and conditions at the site during construction. The protection measures will be implemented as appropriate when particular activities are carried out. An ecologist (e.g. Aspect Ecology – see below) will be kept informed of progress during construction and provide advice or make recommendations for additional protection measures if required.

4.2 Identification of 'biodiversity protection zones'

- 4.2.1 Specific protection measures are required within the site in regard to the retained trees and boundary vegetation, whilst additional protection measures will also be required in respect of reptiles and nesting birds and precautionary measures in respect of Badger. Accordingly, the locations of relevant zones in regard to these receptors are also identified at Plan 3697/EPEP2 where appropriate.

4.3 Practical measures to avoid or reduce impacts during construction

Retained Trees and Hedgerows / Boundary Vegetation

- 4.3.1 The permitted development incorporates the retention of a small number of trees, hedgerows and boundary vegetation, largely focussed on the western and northern boundaries. General construction measures set out above will contribute to the

protection of retained trees and hedgerows, whilst in addition a number of further measures should be implemented including in particular the provision and maintenance of suitable protective fencing and buffer zones.

4.3.2 ***Protective Fencing / Buffer Zones.*** In order to ensure the lengths of retained hedgerow and associated trees at the site are protected during construction works, protective fencing will be installed, in line with the information provided in regard to arboricultural considerations, incorporating relevant root protection areas (the location of the fencing will also reflect the habitat protection/mitigation in regard to other species, including common reptiles – see below). The indicative proposed location of the proposed protective fencing is also identified at Plan 3697/EPEP2. Fencing should be maintained and regularly inspected for the duration of construction works to ensure it continues to provide a suitable barrier to disturbance from construction works. With the exception of specific management works to the hedgerows/trees or other habitats (including reptile receptors) within the fenced area in order to benefit these retained areas, along with the installation of the cycle connections understood to be required by ADC (as indicated at Plan 3697/EPEP2 – see below) no access to fenced areas should be made by any construction staff.

4.3.3 ***Installation of cycle connections.*** On the basis of the latest information, it is understood that ADC require the installation of additional cycle connections with offsite routes to be provided at the north eastern corner of the site (indicative locations shown at Plan 3697/EPEP2). The installation of any such connection will require vegetation removal (including short sections of the existing boundary hedgerow and potential to impact on small areas of reptile habitat) within the protected fencing zone. No lighting is understood to be proposed to the proposed cycle linkages shown, albeit should this position change any new lighting scheme may need to be subject to further consideration in order to confirm any potential for ecological impacts.

4.3.4 In order to facilitate the provision of the required linkages, any works area will be minimised to include only that expressly required to facilitate the access routes to address ADC requirements. All such works within the protected area will be undertaken only under the direct supervision of a suitably qualified ecologist/ECOW (e.g. Aspect Ecology), with initial vegetation removal undertaken using hand tools only, with specific reference to measures in regard to nesting birds and reptiles (see below). Where necessary, relevant sections of protective fencing will be removed only as required to allow access for the required works and fencing will be re-installed and maintained at all times outside of the specific works in line with the details set out elsewhere within this document. Given the limited working area and narrow breaks involved (along with the implementation of suitable supervision/methodology), it is not anticipated that the provision of the required cycle linkages will result in significant additional disturbance in the long term.

Drainage Channels

4.3.5 The drainage channels present across the site are largely limited to the boundaries and were recorded to support little aquatic vegetation (likely in part due to considerable shading and overgrowth by dense scrub and Bramble, along with lack of water throughout much of the season). Nonetheless, new landscape management (including favourable management and enhancement of the channels to provide enhanced ecological value) has potential to disturb wildlife along the corridors and result in

contamination and/or run-off. Accordingly, a number of practical measures will be implemented at the site during construction in order to safeguard the channels, and also in order to prevent any potential for contamination to enter the channels during the progression of the permitted development site, including the following.

4.3.6 **Pollution prevention.** Given the potential sensitivity of the drainage channels, practical measures during construction works will in particular include focus on pollution prevention (including in line with any permitted Drainage Strategy for the site).

4.3.7 In order to ensure a precautionary approach to safeguard against any potential run-off or pollution events which may affect the drainage channels (or offsite areas downstream of the site) during construction, best management practice will be followed in accordance with the advice previously issued by the Environment Agency in its Pollution Prevention Guidelines¹ or relevant updated documents. This will include relevant safeguards such as:

- Storage areas for chemicals, fuels, etc. will be sited well away from the drainage channels and associated site boundaries, and stored on an impervious base within an oil-tight bund with no drainage outlet;
- Implementation of a Dust Management Plan;
- Water washing of vehicles, particularly those carrying fresh concrete and cement, mixing plant, etc. will be carried out in a contained area as far from the drainage channels/western parts of the site as practicable (ideally within the more open eastern parts of the site), to avoid contaminated water entering this habitat; and
- Refuelling of plant will take place in a designated area on an impermeable surface, well-removed from the pond.

4.3.8 **Disturbance/Accidental encroachment.** In order to prevent any damage or accidental encroachment of works in the vicinity of the drainage channels and associated vegetation (with the exception of specific, directed habitat works to provide enhanced vegetation management, along with necessary provision of the access between the eastern and western sections of the site which crosses the main drainage channel), secure protective heras fencing will be installed along the perimeter of the retained corridors (extending to include additional retained habitats and vegetation elsewhere within the site – see below). The indicative location of the proposed fencing is identified at Plan 3697/EPEP2. With the exception of specific habitat management and enhancement works, no access to fenced areas will be made by any construction staff.

Reptiles

4.3.9 The previously reported survey work identified the presence of populations of the reptile species Slow Worm and Common Lizard at the site, centred on the grassland habitats in the west of the site. Accordingly, in line with best practice guidelines and the previously approved information, it is proposed that a mitigation strategy be put in place to ensure reasonable steps are taken to avoid any significant potential adverse impact on common reptiles.

¹ Primarily: Environment Agency (2012) 'Working at construction and demolition sites: PPG6 Pollution Prevention Guidelines', 2nd Edition

- 4.3.10 As such, a programme of translocation to a receptor area within the northern part of the site will be undertaken to ensure that reptiles are protected against killing and injury and hence avoid an offence under the relevant legislation. In order to carry out the translocation and safeguard reptiles during works, it is proposed that individual reptiles are relocated to suitable areas (as shown at Plan 3697/EPEP3) prior to commencement of construction works at the development areas at the site, with reptile exclusion fencing installed where necessary to prevent re-colonisation of worked areas. In order to ensure the receptor areas are suitable to receive additional reptiles, initial habitat enhancement measures and ongoing management have previously been progressed, including creation of new grassland habitats at the north of the site, whilst further enhancement and management will be provided specifically for the benefit of reptiles (with reference to other species where appropriate) to ensure that the receptor habitats are suitable to receive the reptile population at the appropriate time.
- 4.3.11 In 1998 the Herpetofauna Groups of Britain and Ireland (HGBI) produced the advisory note entitled 'Evaluating Local Mitigation/Translocation Programmes: Maintaining Best Practice and Lawful Standards'. This advisory note presents a series of best practice guidelines and makes recommendations in regard to all aspects of herpetofauna translocations.
- 4.3.12 The design of the translocation methodology for the site is based on the guidelines set out within the HGBI advisory note. In particular, the design will give consideration to the following main elements:
- i) Timing of Exercise
 - ii) Duration of Exercise
 - iii) Capture Method
 - iv) Reptile Exclusion Fencing
 - v) Location of Refugia
 - vi) Size of Refugia
 - vii) Density of Refugia
 - viii) Trapping Procedure
 - ix) Data collection
 - x) Animal Welfare
 - xi) Destructive Search
 - xii) Receptor Site
- 4.3.13 **Timing.** Translocation exercises can be undertaken over a series of visits between March/April and September/October. These visits would be carried out during suitable weather conditions (between 9-18°C, and avoiding windy or rainy conditions), and generally during the morning and late afternoon when reptiles are most likely to be basking. Accordingly, it is currently proposed to commence the trapping exercise during 2020 in order to allow the progression of the permitted development works within the site at the earliest opportunity (currently anticipated September/October 2020), albeit any exercise will be undertaken within the suitable seasonal window and subject to ongoing development timescales and progression of reserved matters.
- 4.3.14 **Duration.** The aim of any translocation exercise is to remove a significant proportion of the animals from the affected areas. The HGBI guidelines recommend a minimum of 60 suitable trapping days for a low populations (<50/ha) of common reptiles (up to 70 or 90 days minimum for medium (>50/ha) or high (>100/ha) populations, where

refugia (tins) are laid out at a density of 50 (100 for medium/high populations) refugia/ha and checked once per day. However the methodology currently proposed at the site exceeds the HGBI recommended capture effort considerably (by increasing the refugia density and checking twice per day where conditions are suitable, see below) and accordingly a reduced exercise duration is likely to be sufficient. Nonetheless, the actual number of trapping days undertaken would be guided by the capture rate of reptiles experienced during the exercise, and the exercise will only be completed when it is clear from the ongoing results that the significant majority of reptiles have been removed from the donor areas.

- 4.3.15 The successful translocation of the majority of the reptile population can usually be confirmed by analysing the results of the translocation exercise in order to confirm if there has been a significant decrease in the numbers of reptiles translocated throughout the exercise. Particular attention should be given to the numbers captured during the final few trapping days.
- 4.3.16 **Capture Method.** Trapping would take place utilising sections of roofing felt, which act as artificial refugia. Refugia are favoured as reptiles are ectothermic (cold blooded), and would preferentially use such refugia to raise their body temperature at certain times of day. Reptiles typically take advantage of the fact these refugia warm up more quickly than the surrounding areas and retain heat longer. Hence by checking these refugia at appropriate times of day reptiles can be seen and captured by hand.
- 4.3.17 **Reptile exclusion fencing.** In order to ensure relocated reptiles remain excluded from the initial receptor areas, it is proposed to use temporary exclusion fencing to create a barrier between receptor areas and areas to be worked (see Plan 3697/EPEP3). The installation of the proposed fence line will take place following suitable vegetation clearance in this location, where required.
- 4.3.18 The fence design would form a vertical barrier above ground with an overlap on top to prevent animals climbing over and would be buried in the ground with an underlap at the base to prevent animals from moving under, as shown at Appendix 3697/EPEP1.
- 4.3.19 The exclusion fencing would be maintained throughout the construction phase of the development to prevent reptiles re-entering the development footprint. This would include maintenance of habitats either side of the fence through cutting to prevent tall vegetation developing which could assist reptiles in climbing the fence. Upon completion of the development fencing will be removed under the supervision of a suitably qualified ecologist / ECoW.
- 4.3.20 **Location of refugia.** Refugia would be placed across the suitable habitat areas within the development footprint (see Plan 3697/EPEP2). The refugia layout will be designed to provide maximum opportunities for the interception of reptiles at the site, with more refugia present within more suitable areas of reptile habitat on the ground.
- 4.3.21 **Size of refugia.** Refugia would comprise tiles of roofing felt, measuring approximately 0.5m² as recommended in published guidance.
- 4.3.22 **Refugia density.** The HGBI guidelines recommend that refugia are laid out at a density of 50 refugia/ha and checked on all suitable days. However, it is proposed that refugia density significantly exceeds the guidelines by at least 3-4 fold within worked areas of suitable habitats, with greater densities used within most suitable habitat areas.

4.3.23 **Trapping procedure.** Refugia would be checked in the morning as they are heating up, but before they become too hot, and/or as they are cooling down in the afternoon/evening but before they have become cold. These are the prime two times of the day to catch reptiles, although the best trapping times vary daily depending on weather conditions on that particular day. On days with inclement weather conditions or cooler temperatures, particularly earlier in the season, a single mid-day check can be more effective and this would be undertaken where appropriate on the ground. Checking the refugia twice a day where appropriate represents an increase in survey effort.

4.3.24 **Data collection.** Standard recording forms would be used to keep detailed records of the data collected throughout the exercise. Information that would be recorded during each visit is listed below:

- Date and Time of trapping visit;
- Visit number of the day;
- Weather (cloud cover/rain/sun);
- Temperature;
- Species captured;
- Sex of individual captured;
- Age of individual captured (adult/juvenile);
- Area on site from which individual captured (where applicable);
- Individuals of species seen but escaped capture; and
- Other - general observations.

4.3.25 **Animal welfare.** The welfare of the captured animals is paramount at all times throughout the exercise. Upon capture, animals would be either relocated immediately to the receptor areas, or otherwise transferred to into vivaria, with grass and other suitable vegetation to provide suitable conditions, which are kept out of direct sunlight to keep them as cool as possible. The number of individuals placed in any one vivarium will be limited according to the size of individuals and vivarium, with small numbers of individuals within a single vivarium and these always being of the same species and roughly similar in size. The reptiles will then immediately transported to, and released at the receptor areas.

4.3.26 **Destructive search.** Once it has been demonstrated that the majority of reptiles have been removed from the development areas, and that reasonable effort has been undertaken, a destructive search would be undertaken of areas in which reptiles have been recorded. A destructive search is a further capture method that can be used to locate and capture any few reptiles that may remain on the site after the trapping exercise has been completed. It is important to note that reasonable effort would already have been demonstrated by the translocation exercise and the use of a destructive search constitutes an additional precautionary trapping effort.

4.3.27 The destructive search would comprise a systematic search of the areas of particularly suitable habitat and individual features in which reptiles were recorded, the searching and removal by hand of any refugia, blocks or rubbish and translocation of any reptiles that are found, following which (once the supervising ecologist gives consent) final clearance of remaining vegetation can take place. a carefully controlled and ecologically supervised vegetation strip of reptile habitat would be carried out. Once the vegetation has been physically removed, no suitable reptile habitat would remain on the site and development can safely commence.

- 4.3.28 **Receptor site.** The HGBI guidelines preferred solution is for reptiles to be kept on site, where possible, or relocated to a receptor site within close proximity of the donor site. Under the current proposals, the reptiles will be relocated to retained (enhanced) areas within the northern site boundary, with initial habitat creation and enhancement measures provided (including new refugia/hibernacula) in order to support the reptile population initially. In the long term, considerable areas of new habitat will be provided within the new open space at the site (particularly focussed on wildflower grassland areas linked to the site boundaries and SUDs features), with appropriate management put in place, which will safeguard and enhance the long-term habitats to support the reptile populations at the site (as indicated at Plan 3697/EPEP4).
- 4.3.29 The initial receptor site should be ready to receive reptiles prior to commencement of any works affecting reptile habitat. This would include the installation of exclusion fencing (as above), in addition to the initial completion of enhancement measures detailed below. Following restoration/enhancement measures, it is anticipated that the carrying capacity at the receptor site would be sufficient to receive individuals relocated from the development areas given the numbers of reptiles recorded to be present and the associated habitat areas involved. These enhancements would be completed prior to commencement of translocation, and should include:
- Creation of a number (at least 3) of hibernacula/refugia using logs/inert rubble or other suitable materials, distributed within the initial receptor site in order to provide hibernation, shelter and basking habitats. An example specification for hibernacula creation is provided at Appendix 3697/EPEP1;
 - Introduction of favourable management, including targeted pollarding/coppicing of trees and scrub, along with hedgerow management and grassland management, which will provide suitable reptile habitats including a range of aspects and vegetative structure.

Foraging and Commuting Bats

- 4.3.30 As highlighted within the previously submitted information, the potential exists for disturbance to individual foraging and commuting bats at the site, (particularly associated with the denser vegetated boundaries at the west and north of the site), during construction works through light-spill resulting from temporary construction lighting. Accordingly, in order to minimise any such potential disturbance, the following measures will be implemented at the site throughout the construction phase:
- Temporary lighting will be minimised where possible and will only be operational during hours of poor/no natural light, within working hours (07.30 to 18.00) and switched off outside these hours and/or when construction activity is not in progress in individual areas. Accordingly, for the majority of the year, it is anticipated that there will be no lighting required, as the working day will be within daylight hours. As such, the temporary lighting will only be required for short periods (likely 15:30 –18:00 depending on sunset time) on weekdays during winter months. Bat activity is markedly reduced over winter months and as such it is anticipated that by restricting the use of lighting to these limited periods over winter, any potential effects on foraging bats will be minimised; and

- All temporary lighting will be carefully directed and orientated, so that any light spill is directed away from all linear/boundary habitats (in particular the drainage channel corridors), along with offsite habitats and potential roosting sites.

Badger

4.3.31 The survey work undertaken recorded no evidence for any use of the site by Badger, albeit this species is known to be present within the local area. As such, this species could access the site as part of their wider territory at any time and levels of use may change at any time, such that new setts or other activity could arise within the site. Accordingly, suitable precautionary mitigation and safeguards will be put in place in regard to this species. Such measures will also serve to safeguard other mammal species such as Hedgehog which may access the site. Working measures/safeguards will include the following:

- Any trenches or deep pits within the site that are to be left open overnight will be provided with a means of escape should a Badger enter, in the form of a roughened plank of wood placed in the trench as a ramp to the surface. This is particularly important if the trench fills with water;
- Any trenches/pits will be inspected each morning by a member of the construction staff appointed by the site manager, to ensure no Badgers have become trapped overnight. Should a Badger become trapped in a trench it will likely attempt to dig itself into the side of the trench, by forming a temporary sett. Should a trapped Badger be encountered the ECoW (Aspect Ecology) will be contacted immediately for further advice;
- The storage of topsoil or other 'soft' building materials in the site will be given careful consideration. Badgers will readily adopt such mounds as setts. So as to avoid the adoption of mounds, these will be kept to a minimum and any essential mounds subjected to daily inspections (or nightly patrols if 24 hour security is present at the site) with consideration given to temporary fencing around any such mounds to exclude Badgers;
- The storage of any chemicals or building materials at the site will be contained in such a way that they cannot be accessed or knocked over by any roaming Badgers and in any event kept away from identified Badger setts;
- Fires will only be lit in secure compounds away from retained habitats and boundary features and not allowed to remain lit overnight;
- Unsecured food and litter will not be left within the working areas overnight; and
- Given the dynamic nature of Badger, Should a considerable amount of time elapse (i.e. over 1 year) from the previous inspection, the current situation and continued absence of setts should be confirmed through update survey work/inspection at the site, the results of which will be used to further inform any additional protection measures that may be required in regard to this species. Should any new setts or Badger activity be recorded within the site, the below mitigation measures will be amended to reflect the updated position.

Nesting birds

4.3.32 The habitats within the site have some potential to be utilised by a number of common nesting birds. All wild birds receive protection under Section 1 of the Wildlife &

Countryside Act 1981 (as amended) such that, with certain exceptions, it is an offence to intentionally:

- Kill, injure or take any wild bird;
- Take, damage or destroy the nest of any wild bird whilst in use or being built; and / or
- Take or destroy an egg of any wild bird

4.3.33 Accordingly, in order to prevent damage or destruction of nests and avoid any potential offence, any removal or works to suitable vegetation (in particular hedgerows, or other woody vegetation – the locations of which are shown at Plan 3697/EPEP2), (including regular maintenance) should ideally be undertaken outside of the breeding season (i.e. outside of March to August inclusive).

4.3.34 Should this not be possible, clearance of vegetation (including in particular any removal of hedgerows, trees, scrub or Bramble) will only be undertaken following (within no more than three days) confirmation of the absence of any active nests by a suitably qualified ecologist/Ecological Clerk of Works (e.g. Aspect Ecology Ltd – see below) and will be preceded by a toolbox talk provided to site staff by the ecologist. Any nests identified would need to be retained within a suitable buffer of retained vegetation and protected until nesting is finished.

General Construction Measures

4.3.35 In addition to the above specific measures relating to individual ecological receptors, a number of general construction safeguards and working practices are proposed to be implemented throughout the site in order to further ensure the protection of the retained habitats and offsite areas where appropriate, as set out below:

4.3.36 **Ecological Clerk of Works.** An ECoW (e.g. Aspect Ecology Ltd) will be retained by Taylor Wimpey Southern Counties in order to provide ongoing ecological advice and input through the construction period associated with the permitted development of the site. The role and responsibility of the ECoW are set out below at section 4.6).

4.3.37 **Construction Staff.** Prior to any works at the site, all construction staff will be fully briefed on the sensitivity of the retained ecological habitats and the need to ensure they are fully protected during the works.

4.4 Location and timing of sensitive works to avoid harm to biodiversity features

4.4.1 The locations of habitats requiring specific ecological mitigation and protection measures are identified at Plan 3697/EPEP2 and detailed above, where appropriate. Works affecting sensitive habitats/features required for clearance will only be undertaken following the implementation of the protective/mitigation measures in line with the information set out above (including with reference to stated seasonal timing restrictions where appropriate).

4.4.2 Further, no construction/clearance works should proceed within other areas of the site until such time as initial protective fencing and measures have been installed in relation to retained/protected habitats, following which the general protective/mitigation measures set out above will be complied with.

4.5 Times during construction when specialist ecologists need to be present on site to oversee works

- 4.5.1 Specific ecological mitigation measures in regard to reptiles and nesting birds (vegetation surveys/inspection where appropriate) as specified above, will be undertaken by appropriately qualified and experienced ecologists (Aspect Ecology). At other times, and following the implementation of the measures and safeguards set out above, it is not anticipated that specialist ecologists would need to be present at the site to oversee general site clearance/construction works, albeit this position will be regularly reviewed as part of the role of the Ecological Clerk of Works (ECoW – see below) in consultation with the site manager. Where individual items (e.g. vegetation clearance) are deemed to require ecological supervision, these will be undertaken under direct supervision from a suitably qualified/experienced ecologist (Aspect Ecology) as directed by the ECoW.

4.6 Responsible persons and lines of communication

- 4.6.1 In the first instance Taylor Wimpey Southern Counties will be responsible for demolition and construction activities and associated protection measures including those set out within this document, along with compliance with the relevant regulations, legislation and planning matters.
- 4.6.2 The appointed site manager will be directly responsible for ensuring that the measures set out are implemented, including in direct communication with the ECoW where appropriate in regard to ecological matters.

4.7 The role and responsibilities of an ecological clerk of works (ECoW) or similarly competent person

- 4.7.1 An Ecological Clerk of Works (ECoW - Aspect Ecology Ltd) will be retained by Taylor Wimpey Southern Counties in order to provide ongoing ecological advice and input through the construction period associated at the site.
- 4.7.2 In particular, works to be undertaken by the ECoW will include the following (in line with the information set out above):
- *Initial advice and clarification with site manager in regard to ecological requirements and measures (as required), including initial site inspection prior to commencement in order to highlight any further likely ecological issues or considerations*
 - *Implementation of reptile mitigation measures in accordance with the methodologies set out within this document.*
 - *Nesting bird survey work (where required to facilitate clearance of vegetation in accordance with the measures set out within this document)*
 - *Any vegetation clearance or other works required within the identified protected buffer zones (e.g. including the identified provision of cycle connections to offsite facilities at the north eastern corner of the site as required by ADC and set out above/at Plan 3697/EPEP2).*
- 4.7.3 Given the nature of the site and with the exception of the above identified items (and subject to any further issues identified during the above work), further supervision of

individual construction activities or site attendance by the ECoW is unlikely to be required, albeit the ECoW (Aspect Ecology Ltd) will provide additional advice and input as required, including a direct contact point available for the site manager (or other construction staff) in the event of further ecological queries or requirements that may arise throughout the construction period.

4.8 Protective fencing, wildlife exclusion barriers and warning signs

4.8.1 As set out above (including in regard to retained vegetation and reptiles, protective fencing (e.g. secure Heras or similar) will be installed at the site prior to commencement of site clearance and/or construction works covered under this document, in order to prevent damage or encroachment towards the retained boundary vegetation, trees and initial reptile receptor habitats.

4.8.2 The indicative location of proposed ecological protective fencing is identified at Plan 3697/EPEP2.

4.8.3 Fencing will be maintained and regularly inspected for the duration of construction works to ensure it continues to provide a suitable barrier to disturbance or encroachment from construction works.

4.8.4 This fencing will serve to separate habitats proposed for retention and enhanced from the construction areas. Contractors will be instructed not to move or enter areas beyond protection fencing, except if required to carry out landscaping works or to undertake ecological restoration or management works (e.g. in connection with the habitat creation or enhancement works and specific provision of the required cycle connections identified above, and under detailed ECoW supervision).

4.8.5 The temporary fencing will be subject to inspections by the site contractor at least once per week throughout construction, to ensure a suitable barrier is maintained. Any repairs required will be undertaken at the earliest possible opportunity.

4.9 Schedule of Works

4.9.1 A schedule of works and identified responsibilities for the above measures is detailed in Table 4.1 below.

Table 4.1 Timetable for Implementation

Activity	Trigger Point	Time Restrictions	Responsibility
Safeguards Prior To and During Site Clearance			
Reptile mitigation works (translocation exercise) prior to works affecting suitable habitats.	To be undertaken during clearance of suitable habitat.	To be undertaken during the reptile active season (March/April to Sept/Oct) and during suitable temperatures and weather conditions. <i><u>NB Currently anticipated for 2020 based on predicted development timescales, but dependent on final delivery programme and progression of relevant planning considerations.</u></i>	Site manager to ensure identified habitats remain unaffected until completion of relevant mitigation. Reptile mitigation (trapping/translocation) to be undertaken by Ecologist/ECoW (Aspect Ecology).

Activity	Trigger Point	Time Restrictions	Responsibility
Nesting Bird checks prior to any ground clearance works.	Ecologist to carry out checking survey no more than three days before any initial ground / vegetation clearance works commence.	Only required if vegetation/ground clearance is carried out during the breeding season between March and August inclusive (clearance outside this period can proceed without the need for any such inspections)	Site Manager (or appointed member of staff) will inform the ECoW when checks are required. The Ecologist will then carry out the check(s) and provide appropriate advice/guidance.
Installation of protective fencing	Prior to commencement of any works at the site with potential to encroach on retained habitats.	N/A	Site Manager / Taylor Wimpey
Safeguards During Construction			
Site-wide pollution prevention (with particular reference to avoidance measures relating to the drainage channels)	To be adhered to at all times	Ongoing throughout construction	All staff
Badger / mammal safeguards	To be adhered to at all times	Ongoing throughout construction	All staff. Site manager to appoint a member of staff to carry out daily checks on excavations/spoil piles, open pipes etc as appropriate where these are present.
Appropriate inspection and maintenance of protective fencing	To be adhered to at all times	Ongoing throughout construction	All staff. Site manager to appoint member of staff responsible for weekly checks to ensure the protective fencing installed remains present and in suitable condition.
Positioning of any temporary lighting required during construction to safeguard commuting/foraging bats (in particular removed from the boundary/linear habitats)	To be adhered to at all times when erecting or moving temporary lighting	Ongoing throughout construction	Site manager (or a member of staff appointed by them) will review the locations of temporary lighting and adjust if necessary and ensure lighting is only in use during permitted periods. Further advice sought from ECoW should construction lighting be required in the vicinity of the site boundaries.

Activity	Trigger Point	Time Restrictions	Responsibility
Provision of required cycle connections and/or any other works within identified protected/buffer zones	To be adhered to at all times		Only to be undertaken as directed/supervised by the appropriately qualified ECoW and in line with specific measures in regard to individual protected species (including reptiles and nesting birds)
General Site Safeguards		Ongoing throughout construction	All staff

5 Ecological Enhancements and Monitoring

5.1 Introduction

- 5.1.1 This section provides specific information in regard to the proposed ecological enhancement measures to be incorporated as part of the permitted development.

5.2 Provision of Ecological Enhancements

New Habitat Creation

- 5.2.1 Considerable new ecological habitat creation measures are proposed at the site as part of the green infrastructure provision, forming a considerable corridor around the entire site and providing accessible natural greenspace (whilst also buffering the existing boundary habitats, which are to be retained), broken only by the proposed site access from Sefter Road in the south west of the site (see Plan 3697/EPEP4). In particular, these include the following:

- New attenuation ponds
- Wildflower grassland
- Native hedgerows, tree and shrub planting.

- 5.2.2 Key ecological considerations associated with individual landscaping/habitat provisions are set out below (refer to the relevant landscape planting plans for detailed provisions and locations).

- 5.2.3 **Attenuation Ponds.** New attenuation ponds will be created within the open space areas, particularly within the south eastern and western parts of the site (see Plan 3697/EPEP4). Creation and detailed design of the attenuation ponds will necessarily need to be directed by flood drainage requirements. Nonetheless, where these do not conflict with drainage requirements, the new attenuation ponds will be constructed in accordance with the following broad principles:

- Ponds will be excavated sufficiently to provide permanent standing open water and associated aquatic and marginal vegetation. Open water areas will be large and deep enough to prevent total drying during most years in order to provide a consistent resource
- The banks will be profiled to ensure that gentle slopes and broad draw down zones are created which will ensure the safety of the general public, as well as providing a variety of microhabitats including shallows and shelves which will warm up quickly in the mornings, and deeper 'cooler' areas of water available at the pond centres. Pond slopes will be designed to generally be between 1:5 and 1:20 in gradient, providing large areas of shallow water, and the margins will have a sinuous form, maximising the available edge habitat
- Natural colonisation of waterbodies will be favoured where possible, albeit in order to speed vegetative development and minimise potential erosion of newly created features, planting of native aquatic/marginal species is proposed (refer to proposed landscape planting information for detailed provisions) to speed colonisation/development of vegetation. In any event, specific care will be taken

during this process to avoid the potential introduction or spread of any non-native invasive species

- Protective fencing to be installed to reduce disturbance to the new attenuation pond areas following initial creation, during any remaining construction works/initial establishment.

5.2.4 **Native hedgerows, tree and shrub planting.** Areas of new native tree and shrub planting are proposed throughout much of the site, within the open space areas, in particular focussed on the site boundaries, buffering and extending the existing hedgerow vegetation in these areas. Planting will include native species common to the local area. New native hedgerows, scrub and woodland edge planting will include species such as Dogwood *Cornus sanguinea*, Hawthorn *Crataegus monogyna*, Holly *Ilex aquifolium*, Honeysuckle *Lonicera periclymenum*, Blackthorn *Prunus spinosa*, Dog Rose *Rosa canina*, Elder *Sambucus nigra*, Hazel *Corylus avellana* and Guelder Rose *Viburnum opulus*.

5.2.5 In addition, new native hedgerow planting will be provided to establish additional corridors and strengthen the retained boundary vegetation, using species including Hawthorn, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre* and Oak *Quercus robur*.

5.2.6 **Wildflower grassland.** Substantial areas of grassland will be provided and managed at the site, much of which are proposed for wildflower grassland managed to benefit wildlife.

5.2.7 New grassland areas will be seeded with a suitable native wildflower mix using species common to the local area and managed in the long term in order to maximise wildlife value (refer to landscaping information for detailed provisions), with particular reference to common reptile populations, which are known to be present within the site.

5.2.8 **Amenity Planting/Formal Landscaping.** Areas of new amenity landscaping are proposed within the permitted development, with associated functional requirements for use by local residents (including in particular central LEAP provision, along with clear paths within the open space). These areas will provide amenity function for visitors thereby helping to minimise additional recreational pressure on other habitats and accordingly, their management will need to reflect this use (refer to landscaping information for detailed provisions).

5.2.9 Tree and shrub species within the amenity landscape areas will similarly be maintained through regular inspection and pruning works as appropriate (outside of the nesting season wherever possible), with any replacements or additional planting undertaken where necessary (using further native species common to the local area wherever possible to complement the existing vegetation).

Faunal Measures and Enhancements

5.2.10 In line with the recommendations set out within the Ecological Appraisal report, it is proposed to provide new nesting opportunities for birds and roosting opportunities for bats in the form of new bird and bat boxes/units, whilst measures to benefit mammal species such as hedgehog, as well as reptiles, will also be provided in line with the previously recommended position. Indicative locations for faunal measures (in

particular bird and bat boxes/roost units and habitat piles) are shown at Plan 3697/EPEP4.

- 5.2.11 **Bat Boxes.** New opportunities for roosting bats will be provided at the site in the form of at least 4x woodcrete bat boxes attached to retained trees, and 10x integrated boxes/roost units incorporated into buildings within the site boundary (see Plan 3697/EPEP4). Provision of bat boxes is likely to be limited by the relatively small number of suitable mature trees present (focussed on the western parts of the site), albeit boxes will be provided where possible, whilst new roosting units will be provided within a number of the proposed buildings in the vicinity of wider open space areas. Suitable example bat boxes/units are included at Appendix 3697/EPEP2.
- 5.2.12 Indicative proposed locations for bat boxes/units are identified at plan 3697/EPEP4 (dependent on final permitted internal layout and detailed design under any approved reserved matters scheme). In any event, boxes will be placed where bats can attain direct and free access to them and not in areas where access is restricted by the presence of dense vegetation. Health and safety issues will also be considered when positioning boxes. Care will be made to ensure no new lighting is to be placed within the vicinity of the bat boxes, including any security lighting or temporary construction lighting.
- 5.2.13 In addition, the considerable new areas of native planting (forming buffers to, and strengthening the existing boundary features) and features including SUDs provision will likely provide enhanced opportunities for foraging and commuting bat species.
- 5.2.14 **Bird Boxes.** New opportunities for nesting birds will be provided at the site in the form of at least 4x woodcrete bird boxes attached to retained trees. In addition, as set out within the previously submitted information, a new Barn Owl box will be provided at the west of the site, associated with the open space areas in this location (either on a retained tree in this location, or should this not be possible/appropriate following any vegetation management works the box will be installed on a telegraph pole or similar at a height of at least 4m). Suitable example bird boxes, including Barn Owl box are included at Appendix 3697/EPEP2. Indicative proposed locations for bird boxes/units are identified at plan 3697/EPEP4 (dependent on final permitted internal layout and detailed design under any approved reserved matters scheme).
- 5.2.15 In addition, the new areas of native planting (including native tree and shrub species forming substantial buffers around the site boundaries) will likely provide enhanced foraging and nesting opportunities for a range of bird species.
- 5.2.16 **Hedgehog (and other small mammals).** In order to facilitate movement of small mammals (in particular the priority species, Hedgehog) across the site, gaps will be incorporated into the base of close-board garden and boundary fences where these are present. In particular, gaps of at least 13cm x 13cm will be incorporated at regular intervals within any close-boarded or other boundary fencing to be erected, ensuring individual enclosed areas (e.g. site boundaries and individual residential gardens) are accessible and ensure permeability throughout.
- 5.2.17 In addition, the considerable new buffers of landscape planting, including native species will likely provide enhanced opportunities, in terms of foraging and cover for small mammal species such as Hedgehog (particularly over and above the existing arable and poor semi-improved grassland habitats), whilst new wood piles/refugia

(see below) will similarly likely provide additional resources for Hedgehogs and other small mammals.

5.2.18 **Creation of Habitat Piles.** In line with the above specific reptile mitigation measures, a number of hibernacula/habitat wood piles will be provided within the site within areas of open space at the site in order to provide opportunities for faunal species. These will be of benefit to reptiles and invertebrates in particular. A number of these will be provided in advance of construction works as part of the reptile mitigation measures (see above and Plan 3697/EPEP3), whilst additional habitat/wood piles will be provided elsewhere within the new habitats at the site in order to provide further enhancements for faunal species.

5.2.19 Proposed indicative locations of habitat piles at the site are shown at Plan 3697/EPEP4 (final details to be confirmed based on detailed landscape design following approval of reserved matters - refer to landscaping information for detailed provisions).

5.3 Sources of Habitat Materials

5.3.1 In order to facilitate the specified new habitats and ecological enhancements, along with allowing development of the new landscaped areas, it will be necessary to source new planting stock from commercially available locations.

5.3.2 Wherever possible, new native plant species will be sourced from local stock. Nonetheless, commercial requirements will need to be taken into account, such as the need to ensure appropriate costings are maintained. Accordingly, it is anticipated that new native planting stock will be sourced from commercial nurseries within the regional area surrounding the site, albeit this will depend on suitable stock being available from the relevant nurseries at reasonable cost. New wildflower grassland areas will be created/enhanced using wildflower seed mixtures, where possible using stock responsibly obtained from wild sources.

5.3.3 Similarly any importation of planting substrate (e.g. topsoil) will be minimised, with imported material (if required) limited to amenity planted areas and obtained from ecologically sustainable sources certified to be free of contamination, for instance in the form of chemicals or exotic weed species.

5.4 Habitat Management Measures

Description and Evaluation of Features to be Managed

5.4.1 In line with the above measures and information, a number of new habitats and features of value to wildlife will be created within the site (particularly within the substantial green infrastructure areas forming continuous corridors around the site, whilst specific faunal enhancements, including bat and bird boxes, along with habitat piles, will also be provided within the site.

5.4.2 In order to maximise the value of these features at the site and ensure the site continues to provide opportunities for wildlife in the long term, the following habitats / faunal opportunities should be subject to ecologically-led management as part of the wider landscape management of the site:

- New Attenuation Ponds / SUDs features (subject to flood drainage requirements);

- Wildflower Grassland;
- Hedgerows;
- Trees; and
- Specific Faunal Enhancements

5.4.3 In addition, wherever possible, formal amenity areas and associated planting will be managed using ecological principles, albeit the need for these areas to provide amenity functions will need to be taken into account during any such considerations.

Aims, Objectives and Constraints in relation to Management Measures

5.4.4 Following the completion of development works at the site, including provision of the new habitats and features as set out above, these areas will be subject to ongoing management and maintenance operations in order to ensure that the vegetation continues to develop and in order to maximise the ecological opportunities at the site in the long term.

5.4.5 In terms of ecological measures, any management should in particular aim to specifically include the long-term enhancement of the existing and newly created habitats through ecologically-led management where possible, whilst providing new habitats and long-term opportunities for faunal species present within the site, as well as providing new opportunities for additional faunal species which may be present within the wider area. In terms of ecological constraints, these relate to the presence of retained boundary corridors and features including drainage channels, hedgerows and trees, as well as the presence of protected species (common reptiles and nesting birds, which are considered to pose specific constraints influencing management activities).

5.4.6 In addition, management measures should take into account the need to ensure that public landscaped areas form part of the recreational and amenity provision (including in particular provision of circular walking route for residents including dog walkers), such that visual and physical use by new residents and the general public need to be incorporated.

5.4.7 Specific management activities should therefore be designed periodically reviewed in order to ensure they remain appropriate at the site in the long term.

5.5 Management measures to be implemented across identified wildlife habitat areas

5.5.1 Detailed landscape management measures and procedures will be set out elsewhere within the landscaping information at the relevant stage. Nonetheless, a number of general management measures should be implemented across the site in general to benefit wildlife wherever possible within the open space areas at the development site including:

- Avoiding the use of pesticides and fertilisers wherever possible, but in particular within the vicinity of the attenuation ponds;
- Given the close proximity of the proposed wildlife habitats to residential areas, it may be necessary to remove any litter that has been left or blown into this area and as such, regular checks should be undertaken of these habitats to remove any litter; and

- Regular monitoring and inspection of habitat areas should be undertaken in order to establish the ongoing status of habitats and inform future management works and any alterations to the proposed management actions to benefit the wildlife and habitats present (see below).

5.6 Management Responsibilities

- 5.6.1 In the first instance, Taylor Wimpey Southern Counties or any subsequent owner of the site will be responsible for protection and maintenance operations at the site, as set out within this management scheme.
- 5.6.2 It is anticipated that long-term responsibility for management of the open space areas will be handed over to a nominated management company, under suitable legislative agreement. Accordingly, upon commencement of any such agreement, the nominated management company will also be responsible for the implementation of the management and maintenance measures detailed in this document. Specific responsibilities for individual nature conservation management operations will be dependent on the appropriate stage and timescales involved, and for clarity individual responsibilities are set out at the associated management sheets, where appropriate.

5.7 Ongoing Monitoring and Remedial Measures

Contractor/Maintenance Company Monitoring

- 5.7.1 In order to inform ongoing management activities, annual inspections of all habitats within the site will be undertaken by the maintenance contractor responsible and any remediation or other appropriate action informed by the results of such inspections on a day to day basis.
- 5.7.2 In addition, faunal enhancements should be visually checked annually to ensure that they remain present and, where appropriate, securely affixed. In the unlikely event that any boxes have become damaged, detached or missing, they will be re-secured or replaced as appropriate.
- 5.7.3 A formal record/log of management activities undertaken will be kept, along with details of vegetation development (and any informal records of associated wildlife use where appropriate), which will be used to inform and provide suitable justification for any alterations to the management activities undertaken. An annual summary of the measures undertaken and any snags or deviations will be prepared. Should measures not have been undertaken in line with the requirements, or other issues identified, the annual summary will include actions to remedy these, including dates, timelines and responsibility. A copy of the annual summary will be kept with the log/record and made available upon request for inspection.

Ecological Monitoring and Reporting

- 5.7.4 In line with the requirements of condition 15, details of specific ecological monitoring are required in order to inform the long term management. Accordingly, the habitats at the site will be surveyed/monitored by a suitably qualified ecologist (e.g. Aspect Ecology) with findings reported as appropriate to inform the ongoing management actions by the appointed maintenance contractor.

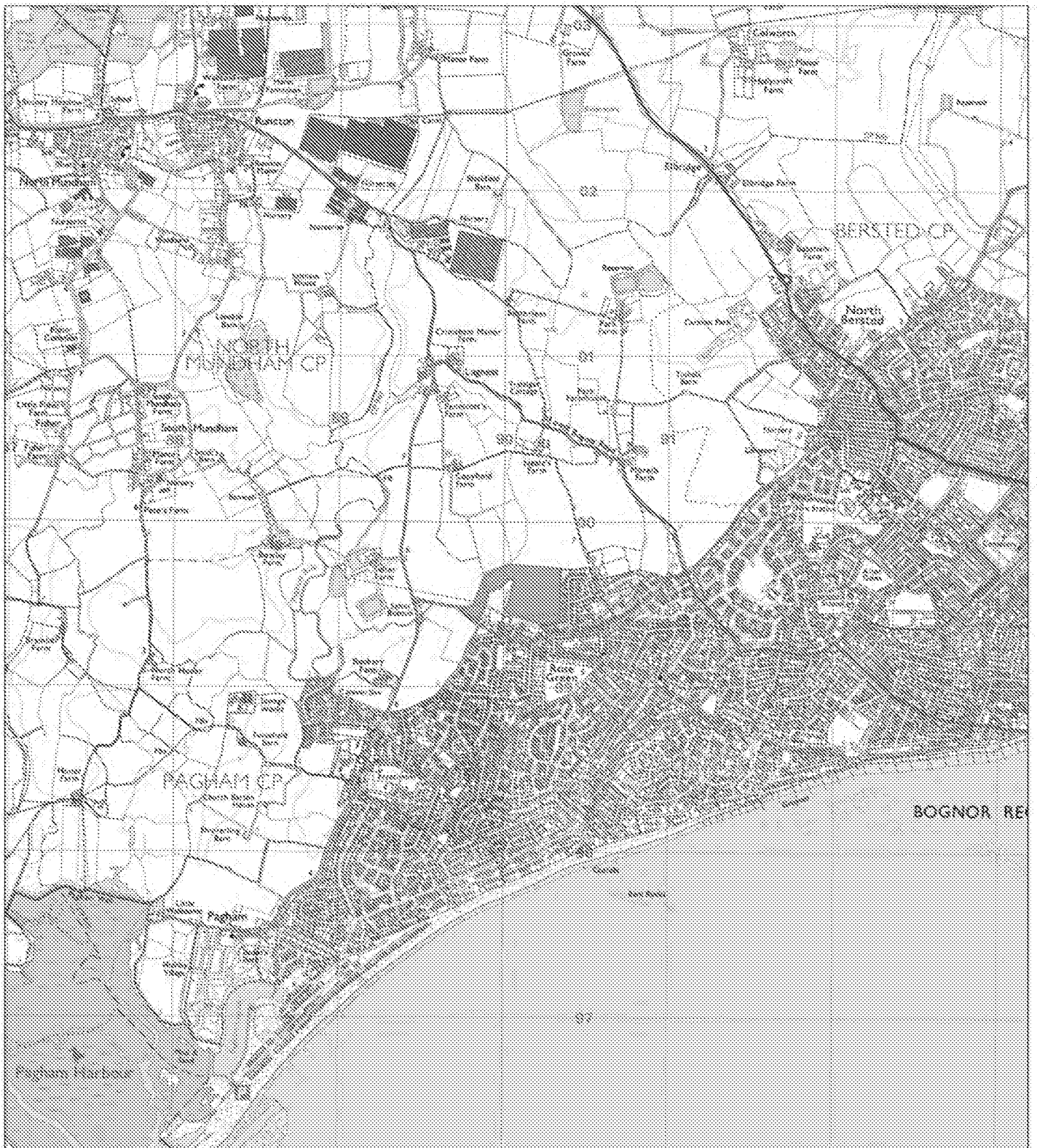
- 5.7.5 An initial survey will be undertaken during the year immediately following completion of the development (i.e. Year 1) to confirm that the ecological mitigation, compensation and enhancement measures have been undertaken/provided in accordance with approved details. Notes will be made as to any deviation from the approved details and remediation measures (and their implementation). Should any measures be outstanding at the time of the visit this will be conveyed to Taylor Wimpey Southern Counties (and/or the appointed landscape contractor), and a follow-up visit will be undertaken once the outstanding measures have been implemented in order to confirm successful completion. The results of the monitoring, along with any remediation actions will be set out within a technical briefing note and associated plan, which will form a formal record of the monitoring.
- 5.7.6 In order to update/confirm the long term position, once new habitats have become established, a further ecological monitoring visit will be undertaken at the site in year 3 following practical completion of the development. The monitoring visit will be used to assess compliance of management in line with the approved details; effectiveness of the management regime; the quality of retained and new habitats; and suitability of habitats for target species; and make a record of species present within each habitat. Where appropriate recommendations for any remediation measures or variations to the long-term management measures resulting from the ecological monitoring will be communicated to the appointed landscape management company and any such measures incorporated into revised management plan information.

6 Summary and Conclusions

- 6.1.1 Aspect Ecology has been commissioned by Taylor Wimpey Southern Counties in regard to ecological matters at the site, located north of Sefter Road, Pagham, Bognor Regis.
- 6.1.2 The site is in receipt of outline planning permission for residential development and associated infrastructure, subject to a number of planning conditions. Of these, Condition 15 relates to ecological matters, requiring the submission and approval of an Ecological Protection and Enhancement Plan (EPEP), the details of which will then need to be implemented as part of the development works.
- 6.1.3 This document sets out details of the EPEP and specifically proposed protection and enhancement measures, (with particular reference to reptiles in line with the condition wording), along with details of monitoring approach to inform long term management measures.
- 6.1.4 Following the implementation of the measures set out in this report, it is considered that wildlife will be fully safeguarded during the construction process, and that a number of ecological enhancements will be provided, including newly created habitats which will be managed for the long-term benefit of wildlife at the site.
- 6.1.5 It is therefore considered that, subject to the implementation of the detailed measures set out and associated ongoing updates and revisions, this report satisfies the stated requirements of conditions 15 of the planning permission for the site in regard to the preparation of information for submission to the LPA and as such, the relevant pre-start requirements of this condition can be suitably discharged.

Plan 3697/EPEP1:

Site Location



KEY:



Site Location

aspectecology

Aspect Ecology Limited - West Court - Monmouth Business Park
New Mill - Bognor - Durrantville - PO18 2W
01293 279721 - info@aspect-ecology.co.uk - www.aspect-ecology.co.uk

Land north of Seftor Road, Pagham,
Bognor Regis

Project

Site Location

Title

3697/EPEP1

Dr/C200
NO



February 2020

Page

Plan 3697/EPEP2:

Ecological Protection Measures



Key:

-  Site Boundary
-  Retained habitats and associated buffers to remain unaffected during site clearance and construction works
-  Habitats supporting reptile population (Subject to mitigation measures prior to clearance works - refer to text for details)
-  Indicative location of habitats suitable for nesting birds (Bramble, hedgerows, shrubby vegetation and trees) to be removed (*subject to seasonal clearance/safeguards*)
-  Proposed Line of Protection Fencing (in accordance with approved arboriculture information and B55837)
-  Indicative route of future cycle connections required by ADC: works area to be minimised and vegetation to be cleared by hand under ecological supervision

aspect ecology

Aspect Ecology Limited - West Court - Hardwick Business Park
Norot Way - Banbury - Oxfordshire - OX16 2AF
01295 279723 - info@aspectecology.com - www.aspectecology.com

Land north of Seftor Road, Pagham, Bognor Regis

Ecological Protection Measures

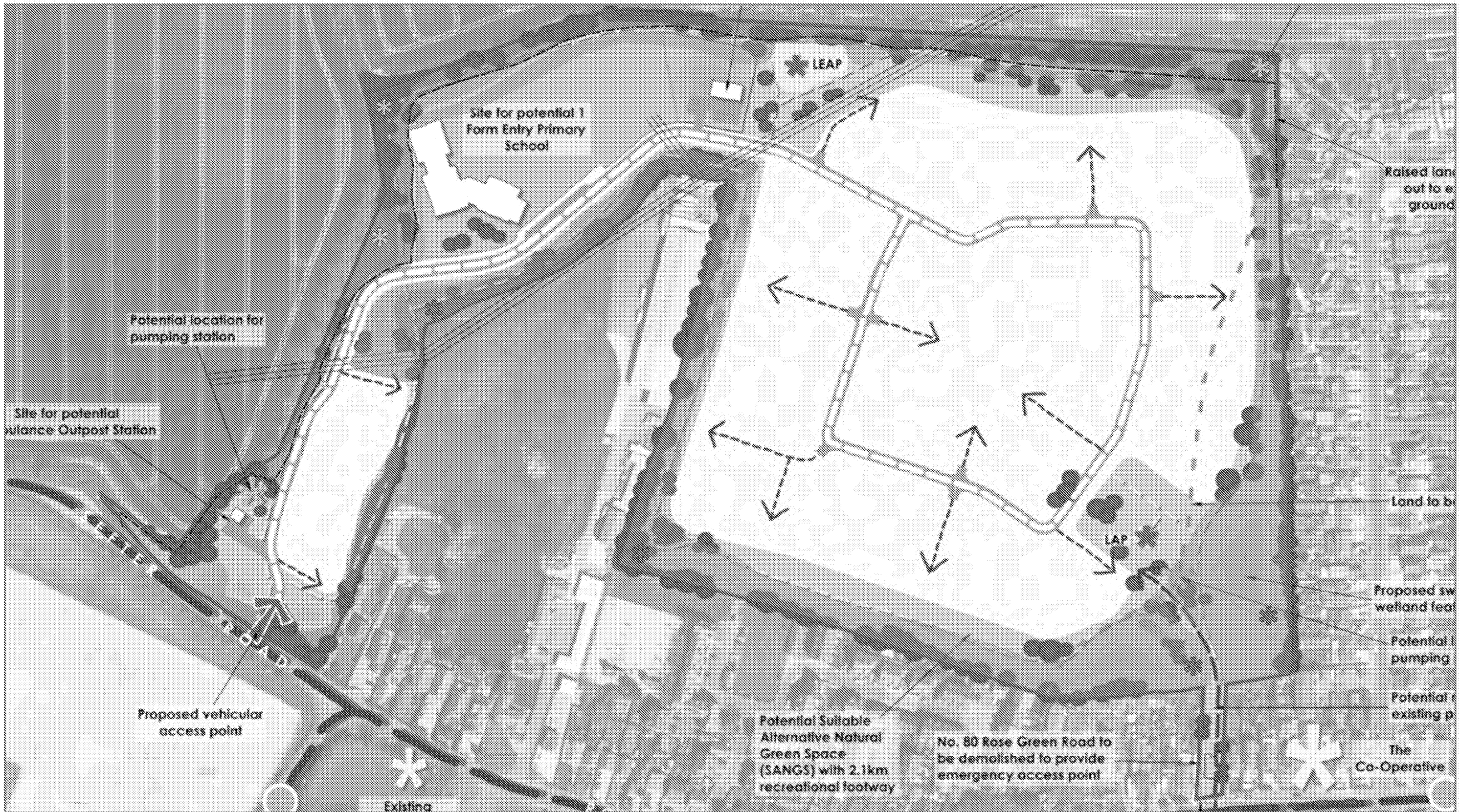


3697/EPEP2
NO
A
July 2020

PROJECT
TITLE
DRAWING
NO
REV
DATE

Plan 3697/EPEP3:

Reptile Mitigation Plan



Key:

-  Site Boundary
-  Indicative Location of Proposed Reptile Fencing
-  Initial Reptile Receptor Area
-  Long Term Reptile Habitats
-  Proposed Refugia/Hibernacula (initial receptor)
-  Proposed Refugia/Hibernacula (long-term provision)

aspect ecology

Aspect Ecology Limited - West Court - Hardwick Business Park,
Norfolk Way - Banbury - Oxfordshire - OX16 2AF
01295 229713 - info@aspectecology.com - www.aspectecology.com

Land north of Sefter Road, Pagham,
Bognor Regis
Reptile Mitigation Plan

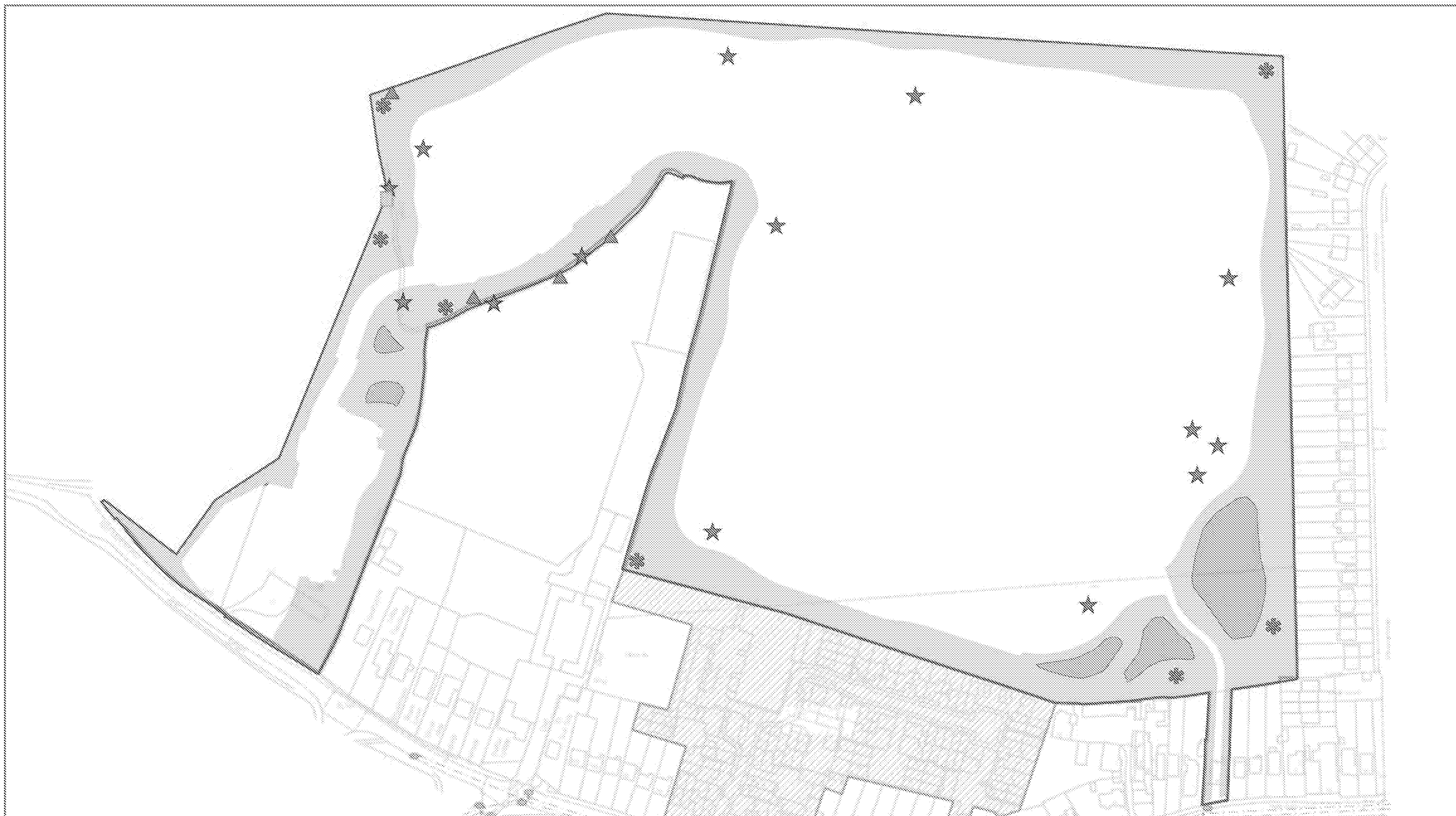


3697/EPEP3
A
July 2020

PROJECT
TITLE
DRAWING
NO.
REV
DATE

Plan 3697/EPEP4:

Ecological Enhancement Measures



Key:

 Site Boundary

New Habitats / Features

 Proposed SuDS Pond (incorporating permanently wet areas and damp grassland - refer to Drainage and Landscape Planting Information for detailed provisions)

 Proposed Informal Open Space incorporating new/enhanced native planting (trees, shrubs and wildflower grassland - refer to detailed Landscape Planting Information for further specifications)

Proposed Faunal Enhancements

-  Indicative location of proposed integrated Bat Roost Unit
-  Indicative location of proposed Bat Box (e.g. Schwegler 2F/1FF)
-  Indicative location of proposed Bird Box (e.g. Schwegler 1B)
-  Indicative location of proposed Barn Owl Box
-  Location of proposed Refugia / Hibernacula

aspect ecology

Aspect Ecology Limited - West Court - Hardwick Business Park, North Way - Banbury - Oxfordshire - OX16 2AF
01295 229723 - info@aspectecology.com - www.aspectecology.com

Land north of Sefter Road, Pagham,
Bognor Regis
Ecological Enhancement Measures



3697/EPEP4

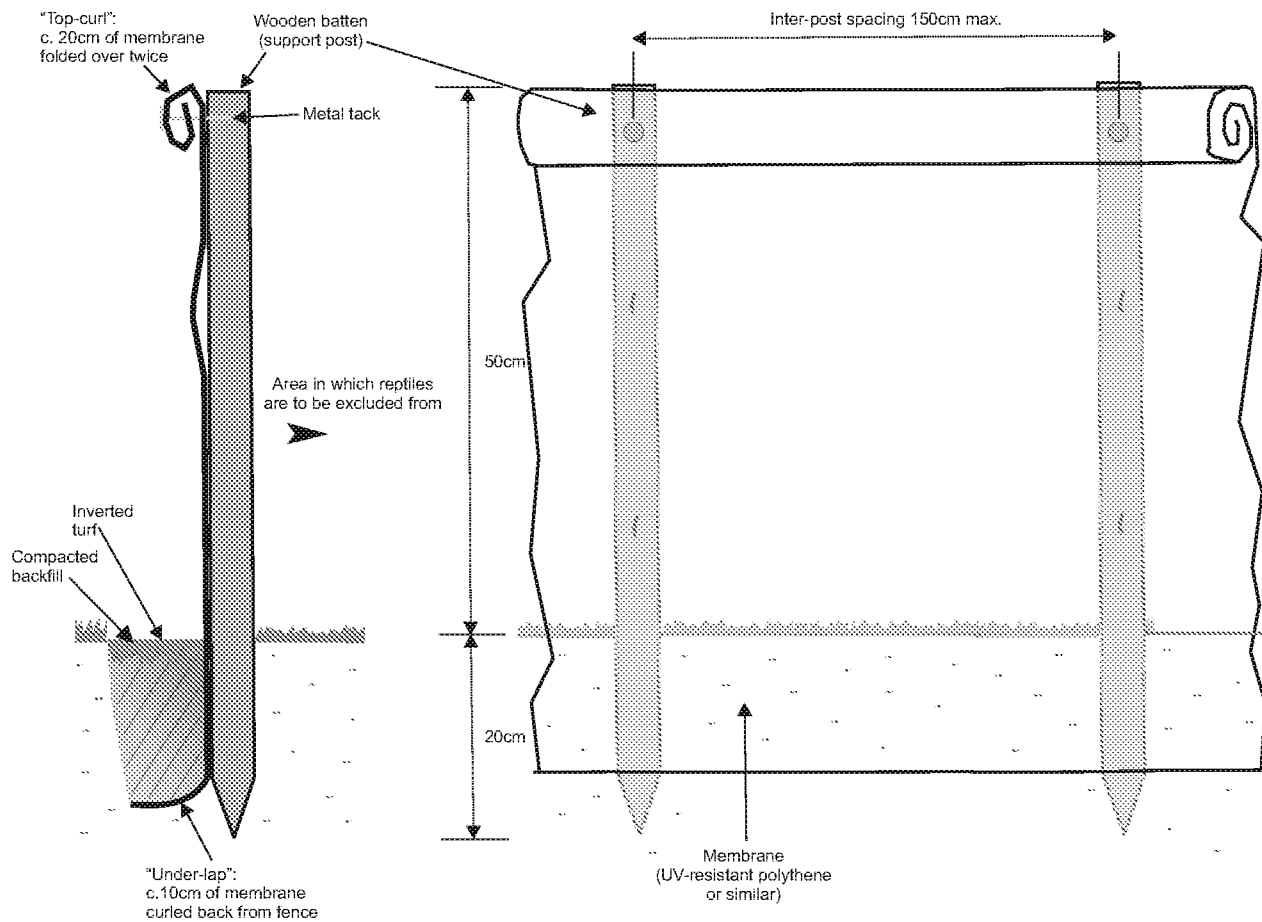
A

July 2020

Appendix 3697/EPEP1:

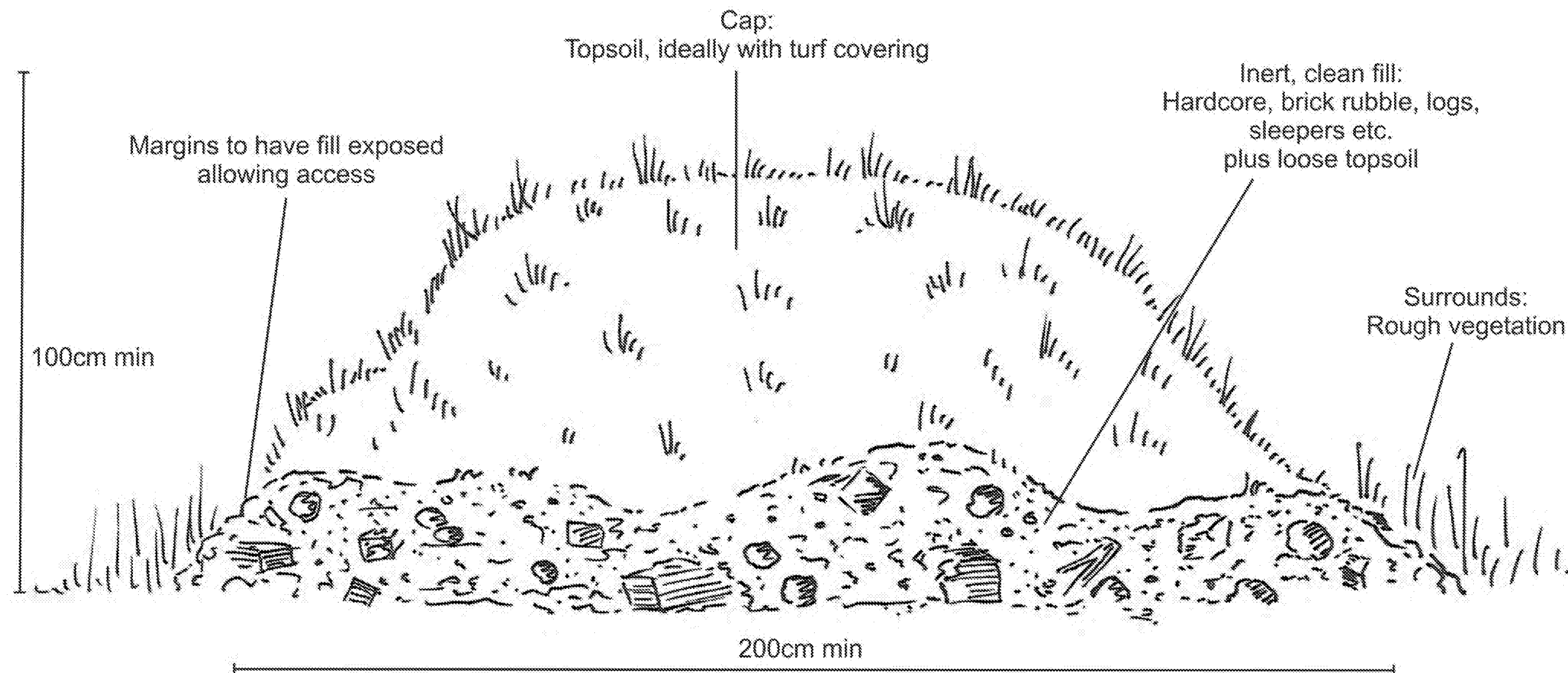
Reptile mitigation/enhancement specifications

SEMI-PERMANENT EXCLUSION FENCING



CROSS-SECTION

FRONT VIEW



The design mimics artificial and natural conditions in which reptiles have frequently been found over-wintering. Dimensions should not be below 2m length x 1m height. The illustration design would be suitable for locating on an impermeable substrate. On free-draining substrates, the design is largely similar but the bulk of the fill is sited in an excavated depression in the ground.

Appendix 3697/EPEP2:

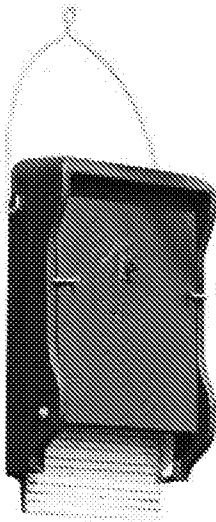
Faunal enhancement specifications

Bat Boxes

Schwegler bat boxes are made from 'woodcrete' and have the highest rates of occupation of all types of box.

The 75% wood sawdust, clay and concrete mixture is ideal, being durable whilst allowing natural respiration and temperature stability. These boxes are rot and predator proof and extremely long lasting.

Boxes can be hung from a branch near the tree trunk or fixed using 'tree-friendly' aluminum nails.



1FF Bat Box

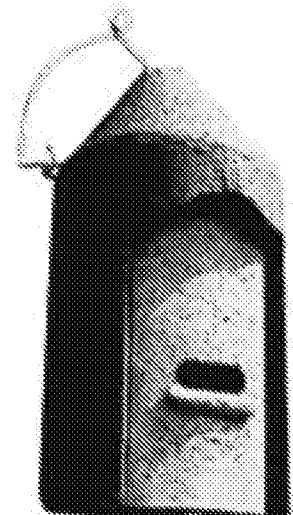
The rectangular shape makes the 1FF suitable for attaching to the sides of buildings or in sites such as bridges, though it may also be used on trees. It has a narrow crevice-like internal space to attract Pipistrelle and Noctule bats.

Woodcrete (75% wood sawdust, concrete and clay mixture)
Width: 27cm
Height: 43cm
Weight: 7.3kg

2F Bat Box

A standard bat box, attractive to the smaller British bat species. Simple design with a narrow entrance slit on the front.

Material: Woodcrete
Diameter: 16cm
Height: 33cm
Weight: 4kg.



Bat Boxes

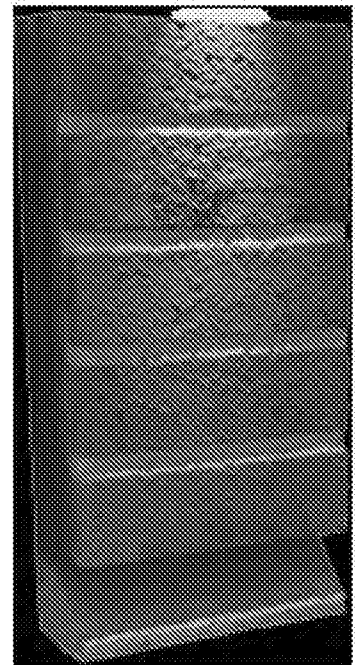
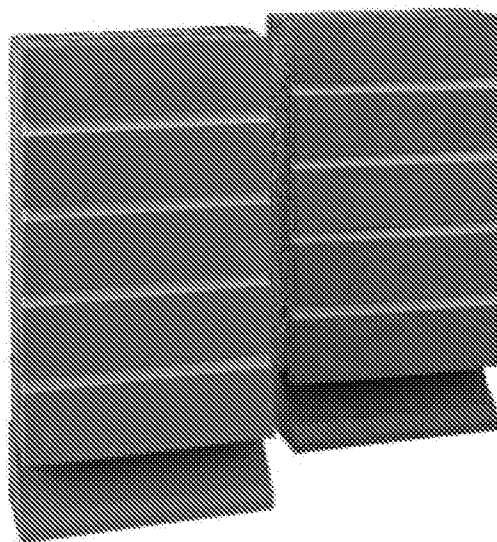
Habibat/Weinerberger Integrated Bat Box

The Habibat/Weinerberger Bat Box has been specifically designed to be incorporated into the fabric of buildings and to encourage the use by species such as Pipistrelles, Natterer's, Whiskered and Brandt's bats which are most commonly found roosting in buildings.

They are larger in size than other similar boxes and can accommodate more bats. The internal structure is not split into chambers and with the unique arrow head internal fixings allows bats to congregate in different areas. The box is available in either Staffordshire Smooth Red or Smooth Blue but can also be manufactured to suit any other brick type.

Dimensions:

102mm (d) x 215mm (w) x 440mm (h).



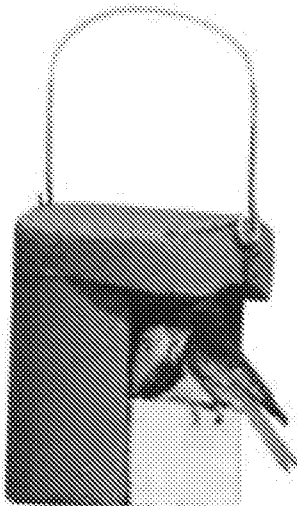
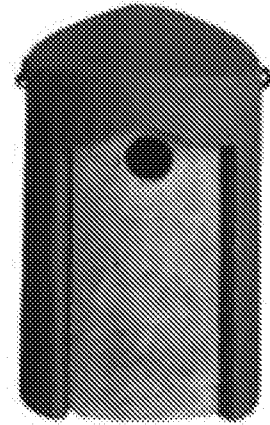
Bird Boxes

Schwegler bird boxes have the highest rates of occupation of all types of box. They are designed to mimic natural nest sites and provide a stable environment with the right thermal properties for chick rearing and winter roosting. Boxes are made from 'Woodcrete'. This 75% wood sawdust, clay and concrete mixture is breathable and very durable making these bird boxes extremely long lasting.

1B Bird Box

This is the most popular box for garden birds and appeals to a wide range of species. The box can be hung from a branch or nailed to the trunk of a tree with a 'tree-friendly' aluminium nail.

Available in four colours and three entrance hole sizes.
26mm for small tits, 32mm standard size
and oval, for Redstarts.



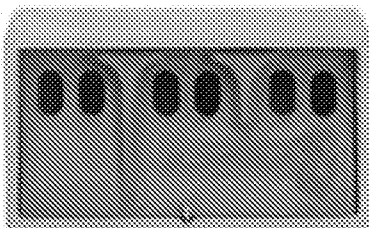
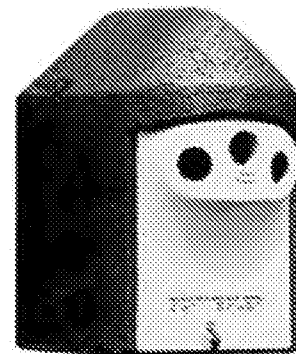
2H Open Fronted Nest Box

This box is attractive to Robins, Pied Wagtails, Spotted Flycatcher, Wrens and Black Redstarts. They are best sited on the walls of buildings with the entrance on one side.

2GR Nest Box

Because of the special design of the large nesting area and front panel, this box is especially well protected against predators.

Available as shown with three 27mm holes for small tits or with a single oval entrance hole.
Nesting area 14cm x 19cm.



15P Sparrow Terrace

House sparrows are gregarious and prefer to nest close to each other, so this woodcrete box provides room for three families under one roof.

For siting on buildings of all kinds at a height of at least 2m (e.g. under eaves.)

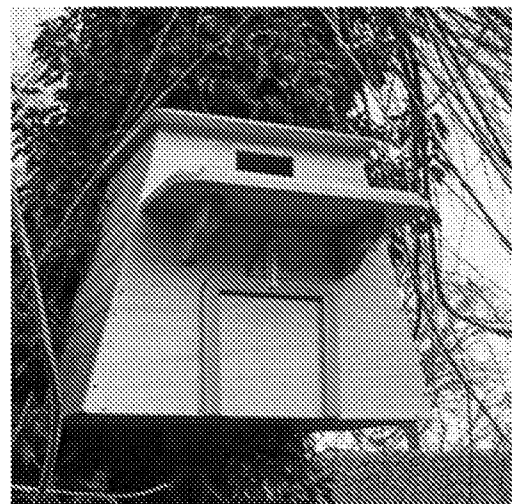
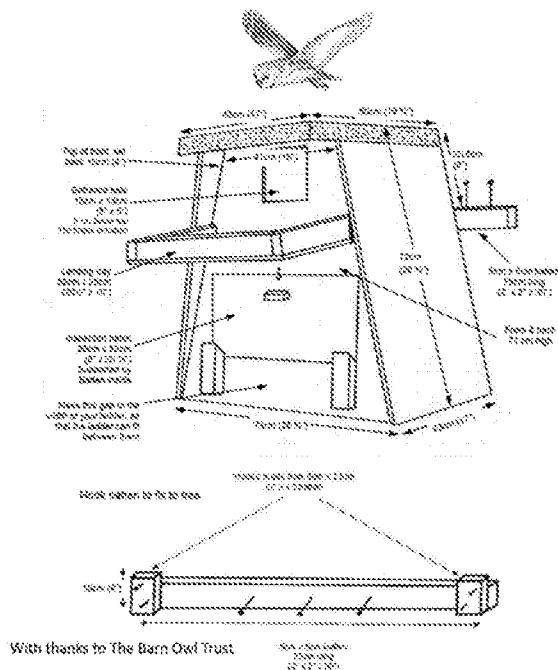
Bird Boxes

Barn Owl Box

The box must face open ground so that the entrance hole is obvious to a passing owl. Do not hide it behind the tree - if the hole cannot be seen the box is unlikely to be used. Try to avoid facing the entrance into the prevailing wind and rain. enerally this means avoiding the west or south-west. South-east is generally a good direction.

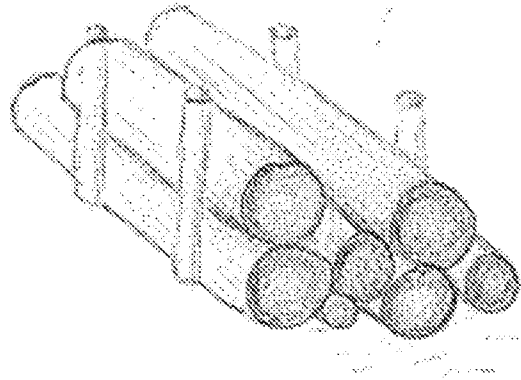
The nest box should be placed as high as possible to minimise human interference (ideally a height in the region of 4.5-m). It is a good idea to ensure that, when erected, the box is slightly lower at the front. This will help prevent rain water splashing in through the entrance hole.

Tanalised 50mm x 50mm (2" x 2") timber and galvanised nails can be used to secure the box. Alternatively you can drill holes and use nylon bolts, or use ratchet straps. A piece of tanalised timber 50mm x 50mm x 750mm (2" x 2" x 30") should be attached to the trunk of the tree, making sure that it is level and VERY secure. This should have 'hooks' made out of 25mm x 50mm (1" x 2") tanalised timber attached to each end. These should be approximately 75mm (3") long and the top 25mm (1") will protrude above the top of the ends of the 50mm x 50mm timber (see diagram). The purpose of this is to enable the box to be placed so that it is held in place by the hooks, allowing the person erecting the box to have both hands free whilst attaching it. A second piece of 50mm x 50mm tanalised timber should be attached firmly to the back of the box approximately 200mm (8") from the top (see diagram). Screw from the inside of the box through to the timber. This joint will take all the weight of the box so it needs to be very secure. The piece that is attached to the box will rest on the piece that is attached to the tree. Holes should be drilled to enable the two pieces to be nailed or screwed together when the box is in position.



Wood Piles for invertebrates

Dead and decaying wood is an important wildlife habitat, used by many species of beetle and other invertebrate.



These creatures then become a foraging resource for species higher up the food chain, including birds, bats and terrestrial mammals.

Create a wood pile by sinking 4 posts approximately 8-10cm in diameter, at least 20cm into the ground as shown above.

Logs with bark, of any diameter should be cut into consistent lengths of 1.5 - 2m, and then tightly and neatly stacked into the space between the uprights.

Avoid making log piles too high, or the timber will dry out.

Wood from any broad-leaved tree can be used, but oak, beech or fruit trees are best, as these support the richest insect communities.

A buffer zone should be created around the logs so that the soils and vegetation are protected as much as possible from disturbance, and ideally the surrounding vegetation should not be cut between May-September.

Allowing plants to grow over the log pile both retains moisture and provides shade for the invertebrates.

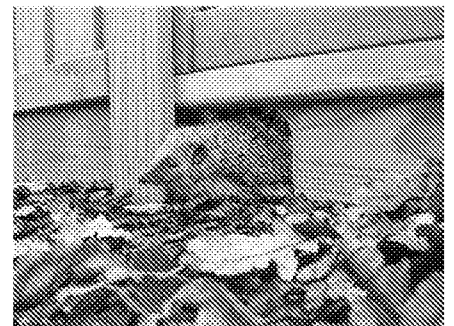
Hedgehog cut-outs



Cut outs will be located at the base of garden fences to enable Hedgehogs to move freely between gardens. Gaps will be a minimum of 15cm high and 15cm wide.



Alternatively, specifically designed gavel boards are available from a variety of suppliers.



ecology • landscape planning • arboriculture

aspect

Aspect Ecology Ltd
West Court
Hardwick Business Park
Noral Way
Banbury
Oxfordshire OX16 2AF