



Land west of Arundel Road,
Angmering

Ecological Mitigation and Enhancement Strategy

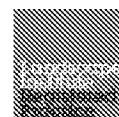
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on behalf of
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EXECUTIVE SUMMARY

This report has been prepared by CSA Environmental on behalf of Gladman Developments. It sets ecological mitigation and enhancement measures to be implemented in association with proposed residential development, to include demolition of the existing buildings, erection of up to 220 dwellings, provision of a new children's play area, a attenuation pond and associated landscaping at Land west of Arundel Road, Angmering (hereafter referred to as 'the Site').

The Site currently comprises an arable field with an area of semi-improved grassland, bounded by mature hedgerows and woodland, and developed land to the east (comprising a residential plot and commercial units) (as shown on the Habits Plan CSA/3378/102).

Ecological features identified within this report comprise the following:

- Habits and Flora: Hedgerows and trees
- Fauna: Bats, nesting birds, badgers, dormice, other mammals, reptiles and amphibians

This report sets out a strategy for avoidance, mitigation and where necessary compensation for potential impacts to these ecological features, as well as provision of ecological enhancement measures to be delivered alongside the proposed development.

A monitoring strategy for these ecological mitigation and management measures is included in order to inform their successful implementation and maintenance. Responsible parties are identified and mitigation proposals are assimilated into a Works Schedule so as to aid enactment.

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INTRODUCTION

- 1.1 This Ecological Mitigation and Enhancement Strategy (EMES) has been prepared by CSA Environmental on behalf of Gladman Developments. It sets ecological mitigation and enhancement measures to be implemented in association with proposed residential development and provision of a new children's play area, attenuation pond and associated landscaping at Land west of Arundel Road, Angmering (hereafter referred to as 'the Site'). The proposed development is shown on the Development Framework Plan (CSA/3467/103).
- 1.2 The Site occupies an area of c. 9.1ha and is located around central grid reference TQ 065 053, to the north of Angmering. It consists of an arable field with an area of semi-improved grassland, bounded by mature hedgerows and woodland, and developed land to the east (comprising a residential plot and commercial units) (as shown in the Habitats Plan CSA/3378/102, provided in Appendix A).
- 1.3 Important Ecological Features (IEFs) identified within this report comprise the following:
- Habitats and Flora: Hedgerows and trees
 - Fauna: Bats, nesting birds, badgers, dormice, other mammals, reptiles and amphibians
- 1.4 This document sets out how potential impacts of development construction and operation will be addressed and details ecological enhancement measures to be delivered in line with the 'mitigation hierarchy' set out within the British Standard BS 42020:2013, which involves the following step-wise process:
- Avoidance – avoiding adverse effects through good design;
 - Mitigation – where impacts are unavoidable, mitigation should be employed to minimise adverse effects;
 - Compensation – where residual effects remain after mitigation it may be necessary to provide compensation to offset any harm;
 - Enhancement – maximise opportunities to deliver biodiversity benefits, which can be delivered alongside the above to resolve potential adverse effects.
- 1.5 Mitigation to be implemented to avoid, mitigate and / or compensate for potential impacts to these IEFs are set out within this document, together with details of implementation and legal responsibilities (as appropriate) and monitoring.
- 1.6 Whilst the majority of survey work has now been completed, some survey work will occur in 2018. Mitigation prescriptions have been informed by full and interim ecological survey information collected during 2017, provided as part of the Ecological Impact Assessment (CSA/3467/01), which should be read in conjunction with this report.

2.0 RELEVANT LEGISLATION AND PLANNING POLICY

Legislation

2.1 Key wildlife legislation of relevance to ecological features identified within this Strategy are listed below:

- The Conservation of Habitats and Species Regulations 2010 (as amended)
- Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- Natural Environment and Rural Communities (NERC) Act 2006
- The Hedgerow Regulations 1997

European Protected Species

2.2 The Conservation of Habitats and Species Regulations 2010 (as amended) enacts the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, into UK law. European Protected Species (EPS) comprise those listed under part 3 (Section 41) of the Regulations.

2.3 These regulations make it an offence to deliberately capture, injure, kill or disturb (impairing their ability to survive, breed reproduce or rear/nurture their young) an EPS or to damage or destroy a breeding site or resting place of an EPS. Where development is proposed that would result in an offence under the Habitats and Species Regulations an EPS licence needs to be granted by Natural England to permit an act that would otherwise be unlawful. This provides for a specific derogation from the legislation, to prevent a legal infringement occurring.

2.4 EPS species of potential relevance to the proposed development and this EMES comprise the following;

- Bats (potential for roosting bats within some of the trees and buildings to be lost during construction phase; potential impacts to bat foraging and dispersal considered in relation to construction and operation phases)
- GCN (suitable terrestrial habitat and pond present on Site, four ponds present in suitable habitat within dispersible distance)
- Dormouse (hedgerows and scrub on-Site are suitable and connected to suitable habitat in the wider landscape)

UK Protected Species

2.5 The Wildlife and Countryside Act 1981 (as amended) forms the primary piece of UK legislation relating to the protection of habitats and species.

The following fauna protected by this legislation, of relevance to construction and operational phases of development are as follows:

- Birds - With regards to wild birds, the Act makes it an offence to kill, injure or take any wild bird, or to take, damage or the nest of a wild bird, or to take or destroy eggs. Potential impacts to nesting birds nesting during vegetation clearance and demolition of buildings. Species listed on Schedule 1 of the Wildlife and Countryside Act, 1981; therefore the birds, their nests, eggs and young are fully protected at all times throughout the UK. It is also an offence to intentionally or recklessly disturb Schedule 1 species at an active nest site with eggs or young or before eggs are laid, or to disturb the dependent young.
- 2.6 Under Section 5, Schedule 9(4) of the Act it is an offence to intentionally or recklessly disturb a species whilst occupying a structure or place which it uses for shelter or protection, or to obstruct access to such a place. This schedule will be of relevance to the following:
- Bats
 - GCN
 - Dormice
- 2.7 Under Section 5, Schedule 9(1) of the Act is an offence to intentionally or recklessly kill or injure a species listed under this schedule. This schedule will be of relevance to the following:
- Reptiles – Common lizard *Zootoca vivipara* have been recorded adjacent to the Site at land between New Place Bungalow and Arundel Road, Angmering (Ref: A/131/16/OUT) and suitable habitat is present reptile species on-Site along field margins, within grassland and scrub.
- 2.8 The Protection of Badgers Act, 1992 affords protection to badgers and their setts. Whilst no badger setts are known to be present on-Site, this species is mobile and can regularly create new setts, and therefore potential impacts to this species which could occur during the site preparation and construction phase have been considered. Precautionary measures to be implemented in order to avoid any potential impacts to badgers and an offence are set out herein.

Priority Species for Conservation

- 2.9 Section 40(1) of the Natural Environment and Rural Communities (NERC) Act 2006 states that each public authority “must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”. This legislation makes it clear that planning authorities should consider impacts to

biodiversity when determining planning applications, with particular regard to the Section 41 list of 56 habitats and 943 species of principal importance, irrespective of whether they are covered by other legislation.

2.10 The S41 list was taken forward for action under the UK BAP (first published in 1994). The UK BAP has now been superseded by the Biodiversity 2020 Strategy, which continues to prioritise the S41 list, setting national targets for the period to 2020, and the UK Post-2010 Biodiversity Framework, which shows how these contribute to targets at the European level. Whilst BAPs are therefore no longer formally recognised, many of the tools and resources originally developed for the BAP remain in use, such as the background information which still forms the basis of work at national level. However, the Sussex BAP has not been updated since 2007 and no current target for biodiversity within Sussex are currently available.

2.11 S41 list species and Birds of Conservation Concern (BoCC) of relevance to the 'construction and operational phases' include:

- S41 Habitats (ponds, hedgerows);
- S41 bat species (common pipistrelle, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared *Plecotus auritus* and barbastelle bat *Barbastella barbastellus*);
- S41 bird species (habitats at the site have the potential to support a range of S41 and/or SBAP species e.g. starling *Sturnus vulgaris*, swift *Apus apus*, skylark *Alauda arvensis*, song thrush *Turdus philomelos* and yellowhammer *Emberiza citrinella*);
- BoCC bird species (habitats at the site have the potential to support a range of BoCC species e.g. dunnock *Prunella modularis*, yellowhammer *Emberiza citrinella*); and
- S41 reptile species (common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis* and grass snake *Natrix natrix*).

Planning Policy and Guidance

2.12 Relevant national and local planning policy and guidance considered within the Strategy document are listed below:

- National Planning Policy Framework (NPPF)
- Arun District Local Plan 2003 saved policies
- Arun District Local Plan 2011-2031 draft policies
- Angmering Neighbourhood Plan

National Planning Policy Framework

- 2.13 Within the NPPF with regards to ecology and biodiversity, Chapter 11: Conserving and Enhancing the Natural Environment, paragraph 109, states that the planning system and planning policies should:
- Minimise impacts on, and provide net gains in, biodiversity where possible, “*contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures*”.
 - Recognise the wider benefits of ecosystem services.
- 2.14 Under these aims, paragraph 117 states the need to plan for biodiversity at a landscape scale, linked to national and local targets. Paragraph 118 sets out the principles that local planning authorities should apply when determining planning applications:
- Refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for.
 - Encourage opportunities to incorporate biodiversity in and around developments.
 - Permission should not normally be permitted where an adverse effect on a nationally designated Site of Special Scientific Interest is likely, either individually or in combination with other developments.
 - Refuse planning permission if development will result in the loss or deterioration of irreplaceable habitats, such as ancient woodland and the aged or veteran trees, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

Arun District Development Plan

- 2.15 The Development Plan for the Arun district includes the following documents of relevance to the proposed development:
- The 'saved policies' of the adopted Arun District Local Plan 2003
 - The 'draft policies' of the Arun District Local Plan 2011-2031
 - Angmering Neighbourhood Plan
- 2.16 Within the Arun District Local Plan 2003, the saved policies of relevance to the proposed development include:
- POLICY GEN28 Trees and Woodlands
“*Development will not be permitted if it would damage or destroy one or more trees protected by a tree preservation order, identified as ancient woodland or in a conservation area unless:*
- the removal of one or more trees would be in the interests of good arboricultural practice; or
- the benefits of the proposed development outweigh the amenity value of the protected trees.”

- POLICY GEN29 Nature Conservation Across the District
"Development will only be permitted on sites which contain semi-natural habitats, features of nature conservation interest, or within wildlife corridors, where these can be largely retained and sympathetically incorporated into the scheme. Legal agreements may be used to offset the loss of, or impact on, any nature conservation resource present on the site prior to development."

2.17 Within the Arun District Local Plan 2011-2031, the draft policies of relevance to the proposed development include:

- Policy ENV SP1 Natural Environment
"Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be permitted where it protects sites listed in Tables 17.1-17.6 that are recognised for the species and habitats contained within them."
- Policy ENV DM4 Protection of Trees
"Development will be permitted where it can be demonstrated that trees protected by a Tree Preservation Order(s), (TPO) identified as Ancient Woodland, in a Conservation Area or contributing to local amenity, will not be damaged or destroyed now and as they reach maturity, unless:
 - a. Would result in the removal of one or more trees in the interests of good arboricultural practice. This shall be demonstrated by the developer following the advice of a suitably qualified person which shall be guided by BS 5837 (2012). Details of any advice received having regard to BS 5837 (2012) shall be submitted, in writing, as part of a planning application; or*
 - b. Would enhance the survival and growth prospects of other protected trees;*
 - c. The benefits of the proposed development in a particular location outweigh the loss of trees or woodland, especially ancient woodland.*

Where planning permission is granted in any of the above instances, conditions shall be used to ensure that, for any trees which are removed as part of a development, at least an equivalent number of a similar species and age (where practical) are planted on the proposed development site. Sufficient space for replacement trees to mature without causing future nuisance or damage shall be

provided. The planting of new trees shall form an integral part of the design of any development scheme.

Proper provision must be made for the protection and management of trees or areas of woodland onsite when undertaking development. A management plan shall be provided as part of a planning application in accordance with BS 5837 (2012) in order to ensure that trees are adequately protected during development and appropriately maintained in the future. Conditions for the continued protection of trees on sites shall be included in any planning permission given.

Where there are existing trees on or adjacent to a development site, developers shall be required to provide:

- d. Land and tree surveys
- e. A tree constraints plan
- f. An arboricultural impact assessment to include a tree protection plan and arboricultural method statement

These will ensure that development is planned to take a comprehensive view of tree issues at an early stage in the design process and that development works do not have a negative impact on existing trees.

Developments shall also be consistent with all other Local Plan policies."

- Policy ENV DM5 Development and Biodiversity
"Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement.

Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of

year and shall be undertaken by a qualified and, where appropriate, suitably licensed person.

All developments shall have regard to Natural England's standing advice for protected species.

Developments shall also be consistent with all other Local Plan *policies.*"

3.0 AIMS AND OBJECTIVES

Overview

- 3.1 In line with national and local planning policy, this strategy aims to minimise adverse effects on protected species and IEFs during the construction and operation phases of development. To meet this aim, objectives have been set out for each protected species and IEF below.
- 3.2 Where appropriate, impact avoidance and mitigation measures during the construction phase will be delivered as part of a Construction Environmental Management Plan (CEMP), to be agreed with Arun District Council at the reserved matters stage.
- 3.3 Mitigation, compensation and enhancement measures during the operational phase (including management and monitoring) will be delivered as part of a Landscape and Ecological Management Plan (LEMP), to also be agreed with Arun District Council at the reserved matters stage.

Habitats and flora

Aim

- 3.4 The Strategy aims to retain, protect and where possible reinstate semi-natural habitat resources (with a focus on S41 habitats protected under the NERC Act 2006) across the Site.

Objectives

- 3.5 Retain and protect hedgerows, trees and grassland on-Site, wherever possible.
- 3.6 Undertake replacement hedgerow and tree planting, or grassland seeding, of equal or greater quality or quantity to that which is lost.

Policy and legislation

- 3.7 Objectives are in line with the NPPF and Local Planning Policy (Arun District Council saved policy GEN 29, and draft policies ENV SP1 and DM5) by maintaining the conservation status of habitats present and the fauna they support.
- 3.8 Protection of trees and hedgerows will also be in line with saved policies GEN28 and draft policy ENV DM4 (Arun District Council, 2014).

Fauna

Aim

- 3.9 This strategy will aim to avoid or minimise adverse effects to protected species, or compensate for these effects if they cannot be prevented.

Objectives

- 3.10 Retain habitat which is suitable to support protected species on-Site, where possible.
- 3.11 Where habitat is lost as a result of development seek to reduce potential impacts through sensitive working practices, timing of works and mitigation provision, in particular to protected species at risk of harm or disturbance (reptiles, GCN, dormice, badgers, nesting birds) if present.
- 3.12 Minimise potential for visitor related impacts to habitats the fauna they support onsite and in the local area through the provision of suitable formal and informal POS within the development.
- 3.13 Ensure that mitigation is legally compliant and subject to Natural England licencing as appropriate.

Policy and legislation

- 3.14 This will ensure that the proposed development is in line with legislation contained within the Conservation of Habitats and Species Regulations 2010, the Wildlife and Countryside Act 1981 (as amended), and the Protection of Badgers Act 1992.
- 3.15 This will aim to conserve species of conservation interest, and biodiversity, which will be in line with national planning policy, saved policy GEN 29, and draft policies ENV SP1 and DM5.

4.0 POTENTIAL IMPACTS IN THE ABSENCE OF MITIGATION

Overview

- 4.1 The potential impacts of both the construction and operational phase have been assessed in detail within the Ecological Impact Assessment (CSA/3467/01). The proposed development is shown on the Development Framework Plan (CSA/3467/103). A summary of those potential impacts is provided below.

Construction Phase

Construction Phase Description

- 4.2 The Construction Phase will comprise the following:
- Cessation of arable cultivation
 - Demolition of existing buildings
 - Removal of hedgerows H1, H4, H7, H8 and H9 for vehicular and pedestrian access and to facilitate construction
 - Clearance of semi-improved grassland, amenity grassland, scrub, tall ruderal/colonising ground vegetation, and a pond
 - Construction of residential dwellings, associated gardens, parking, access infrastructure, and a play area
 - The establishment of formal and informal Public Open Space (POS) including new tree, thicket and meadow planting, as well as recreational routes
 - Construction of a Sustainable Urban Drainage System (SUDS) including a large attenuation basin set within the POS to the north-west of the developed area
 - Strengthening of boundary vegetation with new native species planting

Potential Impacts

- 4.3 In the absence of mitigation, the construction phase has the potential to result in the following impacts:
- Pollution through production of dust, run-off and artificial lighting, which could negatively impact upon retained habitats, the nearby Decoy Ponds (ponds P5 and P6) and Black Ditch stream within the woodland to the north of the Site, and other habitats downstream of the Site;
 - Loss of all arable habitat onsite, which may provide a foraging resource for a range of invertebrates, mammals and birds;
 - Loss of five species-rich hedgerows (H1, H4, H8, H9) and a species-poor hedgerow (H7), and a small number of trees;
 - Minor permanent loss of semi-improved grassland, tall ruderal and scrub habitat to construct new dwellings, which will lead to a temporary loss of habitat for foraging bats, badgers and nesting birds until planting matures, and a minor net loss in terrestrial habitat for reptiles and amphibians;

- Loss of small amount aquatic habitat through removal of garden pond, but provision of a SUDs basin;
- Demolition of all onsite buildings, which includes the loss of buildings with bat roosting potential (bat presence / likely absence unconfirmed);
- Risk of killing / injury of reptiles, amphibians, nesting birds, badgers, dormice and other mammals during Site clearance and construction.

Operational Phase

Operational Phase Description

4.4 The Operational Phase will comprise the following:

- Occupation of new residential dwellings
- Increase in human activity, including use of vehicles and presence of domestic pets
- Increased artificial lighting and anthropogenic noise
- Management of habitats within POS

Potential Impacts

4.5 In the absence of mitigation, the operational phase has the potential to result in the following impacts:

- Increase in ambient lighting, and subsequently decrease in suitability of habitats for bats and other light-sensitive species;
- Increased risk to wild life from killing / injury through traffic collisions, becoming trapped drains and predation from domestic cats;
- Increased disturbance through recreational use of onsite habitats, which may deter some species from breeding successfully onsite.

5.0 IMPACT AVOIDANCE AND MITIGATION MEASURES

Impact Avoidance and Mitigation Measures

Habitats and Flora

Hedgerows and Trees

- 5.1 The trees, six species-rich and three species-poor hedgerows on-Site are of local value, and support a range of fauna. Where possible all hedgerows and trees on-Site will be retained and protected, and habitat loss be mitigated for through replacement planting. The proposed development will include c. 0.5 ha of new native tree planting, with scope for additional planting in the POS and residential parcels.
- 5.2 All construction will strictly adhere to a Construction Environmental Management Plan (CEMP). The CEMP will ensure the impact to on-site habitats from construction noise, dust and run-off is minimised.
- 5.3 Hedgerows and trees around the margins of the Site will largely be retained, with significant semi-natural habitat buffers. These features will be protected during construction by appropriate fencing in line with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BSI, 2012). These measures will be detailed within a Tree Protection Plan, to be agreed with Arun District Council as part of detailed planning consent. The habitat buffers will help to further reduce potential impacts to retained vegetation.

Fauna

Roosting Bats

- 5.4 Under the current development proposals, no trees considered to hold potential roosting opportunities for bats will be lost.
- 5.5 All buildings on-Site have been externally inspected for potential roosting features. Within the industrial estate B2, B3 and B4 were assessed to have low potential to support roosting bats, B8 and B9 low-negligible potential, and the remaining on-Site buildings to have negligible potential.
- 5.6 The house to the north of the industrial estate (B1) has also been internally inspected. Whilst no evidence of bats was found, this building was considered to have moderate potential to support roosting bats due to the presence of external features (i.e. gaps between tiles and internal lining) suitable to support crevice-dwelling species such as pipistrelles *Pipistrellus* sp. However, no bats were seen to emerge from this building during a bat roost / presence survey completed in September 2017.
- 5.7 Although to date, survey work has not indicated that roosting bats are present, during the construction phase, potential roosting habitat could be lost for some species of bat. In line with BCT guidelines (BCT, 2016) further survey work will be completed to determine the presence or likely absence of roosting bats in the buildings assessed as having potential to

support roosting bats, prior to demolition. Further survey work shall include update external and internal inspections and roost presence / absence surveys as appropriate and in line with current BCT Guidelines.

- 5.8 In the event that a bat roost is identified, demolition will need to take place under European Protected Species (EPS) licence. EPS licencing may be progressed by the traditional Natural England approach or via Low Impact Class Licencing (BLICL), dependent upon the survey results.
- 5.9 To mitigate for the loss of potential roost locations, a minimum of one replacement bat box per roost lost will be integrated into new dwellings (Habibat bat tube, or similar), with scope for bat lofts to be created with garages, as required. The exact number of boxes / bat lofts will be determined following further surveys.

Foraging and Commuting Bats

- 5.10 The majority of habitat currently utilized by bats for foraging and commuting will be retained, with significant buffers from new development being provided in many parts of the Site through the creation of new semi-natural habitats (c. 0.5ha new tree planting, c. 0.5ha meadow seeding, and a SUDs basin) which will also be of value to bats due to the invertebrate prey they will support.
- 5.11 Light spill onto habitat used by commuting and foraging bats will be minimised through design of a sensitive lighting scheme, to be detailed at the Reserved Matters planning stage. The scheme will aim to achieve a maximum light-spill of 1 lux onto the woodland edge to the north and retained boundary vegetation. Anti-glare shields, louvres and cowls will be used as appropriate as part of any lighting strategy to minimise light spill. Lighting columns to be erected alongside mature trees and hedgerows will be aligned to minimise light spill onto these habitat corridors. Where light spill onto retained / created habitats cannot be avoided additional mitigation measures, such as restricting the time periods when lighting is turned on, should be considered to ensure that habitat useable resources do not become fragmented by light disturbance.

Badger

- 5.12 Although no badger setts were found onsite in 2017, habitats onsite are suitable for badger and could be used for foraging, dispersal or sett-digging. The majority of hedgerow habitat will be maintained at the site, and grassland along the woodland edge in the north of the site, and therefore foraging and dispersal opportunities will largely be maintained.
- 5.13 As badgers are highly mobile and new setts could be created onsite at any time. As a precaution, a pre-construction check will be completed to confirm the absence of setts prior to the start of site clearance and construction works. Should any active setts be identified which would be impacted by the construction phase, appropriate mitigation (i.e. sett

closure) would need to be undertaken under licence from Natural England before works could commence.

- 5.14 Precautionary measures to be implemented during the construction phase, to prevent any harm / injury to badgers which may cross the site, shall comprise the following and will be detailed within the CEMP:
- Where any pits/trenches are left open overnight, planks should be placed within these at an angle of no more than 45 degrees in order to provide a means of escape for any badgers.
 - In the event that badgers are found to be trapped or injured within the site no attempt should be made to approach the badger and the RSPCA should be contacted immediately.
 - Due to the inquisitive nature of badgers any litter, tools and machinery that could potentially cause harm should be kept away from badgers by appropriate overnight storage.
 - Avoid presenting new digging opportunities for badgers, e.g. by leaving stockpiled soil on the edge of the development for prolonged periods.

Dormice

- 5.15 As dormice have been recorded locally and there is suitable habitat present on-Site in the form of mature hedgerows and scrub, dormice could be present on-Site.
- 5.16 The majority of hedgerows will be retained in the proposed development and buffered by a significant amount of new tree and thicket planting, as shown on the Development Framework Plan (CSA/3467/103). Planting specifications will be decided at the detailed planning stage; however to ensure good habitat provision will include native species of benefit to dormice, such as hazel *Corylus avellana* and blackthorn *Prunus spinosa*, which provide suitable food resources and a dense shrubby understorey.
- 5.17 Management prescriptions for hedgerows will be set out within the LEMP and agreed with Arun District Council at the detailed planning stage. Hedgerows will be sensitively managed for the benefit of wildlife, including dormice should they be present. Cutting intervals lengthened to allow flowering and fruiting, and to maintain their value as dispersal routes. Alternative sides of the hedgerow will be cut at 3 to 5 year intervals in order to maintain the availability of flowers and fruits and to prevent hedgerows becoming outgrown and gappy.
- 5.18 Where suitable dormouse habitat will be lost, this will be informed by dormouse presence / absence surveys to ensure that any measures required to avoid risk of direct impacts during the construction phase can be avoided and that adequate compensatory habitat provision is secured. It is envisaged that the proposed development will result in the loss of c. 0.2ha of scrub and c. 135m of hedgerows to allow creation of the primary site access. Should dormice be found to be present, then impact avoidance and compensation measures will need to be secured

via an EPS licence from Natural England. The proposed development scheme is considered to offer significant scope for the provision of compensatory habitat for dormice (i.e. through new woodland / thicket planting, provision of dormouse nest boxes), and subject to sensitive working practices / seasonality of vegetation works then direct impacts to this species could be avoided and their favourable conservation status maintained.

Nesting Birds

- 5.19 The majority of suitable foraging, dispersal and nesting resources will be maintained through the retention of semi-natural habitats within the POS and retained trees will be protected during construction. Habitat loss will be mitigated for through replacement planting, including c. 0.5 ha native tree planting, with scope for additional planting in the POS and residential parcels.
- 5.20 The proposed development will result in a loss of nesting habitat for species such as swallow *Apus apus* which nest in buildings as all on-Site buildings will be demolished, and a some minor loss for species which nest in scrub vegetation such as dunnoek *Prunus modularis* (c. 0.2ha of scrub, c. 135m of hedgerows and c. 10 trees will be removed, as shown on Tree Retention & Removal Plan, BHA_267_02).
- 5.21 Disturbance impacts to nesting and foraging birds shall be minimised through the sensitive design of access routes through POS, with some dense undisturbed areas of scrub and trees being maintained.
- 5.22 As for dormice, sensitive management of hedgerows will mitigate impacts to nesting birds during the operation phase. Management prescriptions will be set out within the LEMP to be agreed with Arun District Council at the detailed planning stage.
- 5.23 Demolition of buildings and any removal / pruning of hedgerows or trees during the construction or operation phases will be undertaken sensitively, avoiding the peak nesting season of March to August inclusive. If this is not feasible, clearance / demolition will immediately follow a check by a suitably qualified ecologist to confirm there are no active birds' nests present.
- 5.24 If an active bird's nest is found, an exclusion zone will be set up around the nest and no works will take place until the ecologist has verified that all dependent young have fledged. The radius of this exclusion zone will be species-dependent, varying according to the conservation status and vulnerability to disturbance of the species in question.

Reptiles

- 5.25 Rough grassland field margins / areas of scrub provide potential for reptiles to be present. The majority of suitable reptile habitat on-Site (c. 0.8ha of hedgerows and field margins) will be retained within the POS along the edges of the development. The proposed development provides good scope for the favourable conservation status of any

reptile population which may be present on-Site to be maintained, subject to the implementation of suitable impact avoidance and habitat management measures.

- 5.26 The proposed development will result in a loss of habitat suitable for reptiles, as c. 0.2ha of scrub, c. 135m of hedgerows, and c. 0.2ha of tall ruderal/colonising ground will be lost, and c. 1.4ha of grassland of limited suitability for reptiles. This will be mitigated for through a significant amount of new planting, including seeding of c. 0.5 ha native species-rich wildflower meadow, planting of c. 0.5 ha trees, and creation of SUDs features, with scope for additional planting in the POS and residential parcels.
- 5.27 The POS will be designed and managed to ensure it remains suitable to support reptiles, including grassland with a dense and tussocky sward, and some scrub to provide cover and foraging resources for reptiles. Appropriate management measures which seek to avoid adverse impacts to reptile species will be set out within a LEMP to be agreed at the detailed planning stage, but key principles are summarised here:
- Existing grassland and hedgerow bases will be retained where possible, and additional areas of meadow created within the POS.
 - Following establishment, some areas of grassland will be left to grow long during the summer, with a hay cut taken in late summer to no lower than 150mm.
 - Cutting within long grassland must occur during suitable weather conditions (warm and sunny, temperature at least 10°C) to minimise the risk of harming reptiles.
 - Low intervention scrub management will help to maintain open grassland areas for basking reptiles which will involve annual strimming back of encroaching scrub in late autumn.
 - Arisings from habitat management will be raked up and used to make habitat piles, which will provide refuge, foraging and egg-laying resources for reptiles and other fauna.
 - Access routes and planting in the POS will be sensitively designed with an aim to minimise disturbance from walkers and dogs. Some areas will be designed which limit public access through the absence of recreational paths and planting of dense, thorny plant species in key locations.
- 5.28 Where suitable reptile habitat will be lost, this will be informed by presence / absence surveys to ensure that any measures required to avoid risk of direct impacts during the construction phase can be avoided and that adequate compensatory habitat provision is secured. If reptiles are found to be present, a detailed Reptile Mitigation Strategy will be submitted at the Reserved Matters stage, but the key approach is summarised here:

- Dependent on the final layout of the detailed development scheme and the size of reptile populations on-Site (if present), either displacement or translocation will be completed.
- If only a small number of reptiles are present within habitats to be lost, habitat manipulation will be used to displace reptiles into the c. 0.8ha of retained habitat along the northern, western and southern boundaries of the Site.
- Where this is not appropriate, a trapping and translocation exercise will be used to relocate reptiles to a 'receptor area', and the construction footprint will be exclusion fenced. The receptor area will include the retained field margins along the northern, eastern and southern boundaries.
- Retained habitat will be enhanced through creation of log piles and hibernacula to raise its carrying capacity. Should the population of reptiles on-site be too large for the on-site retained habitat, a suitable off-site receptor will be secured.

Amphibian Species

- 5.29 There is a small garden pond on-Site and five within a dispersible distance which could support GCN and other amphibians (HSI score: average suitability), and the hedgerows, scrub and field margins provide suitable terrestrial habitat. A large breeding population of the common toad *Bufo bufo* (a S41 species) has also been recorded in the pond c. 145m north-west of the Site.
- 5.30 The majority of suitable terrestrial habitat on-Site will be retained within the POS (c. 0.8ha of hedgerows and field margins), and a significant amount of new planting will provide replacement habitat. As for reptiles, management of the POS will ensure that meadow habitat remains suitable for GCN through a low-intensity cutting regime, with a rising sward used to create habitat piles.
- 5.31 An attenuation basin will be created as part of a SUDs system, which may include a permanent core, dependent on detailed designs. The banks will be seeded with species-rich wildflower mixes to provide suitable terrestrial habitat. If a wet core is feasible, it will be planted with native aquatic and marginal species to provide suitable aquatic habitat.
- 5.32 Where suitable GCN habitat will be lost, this will be informed by presence / absence surveys to ensure that any measures required to avoid risk of direct impacts during the construction phase can be avoided and that adequate compensatory habitat provision is secured. The proposed development will result in the loss of the small pond (HSI score: 0.65, average suitability), and some terrestrial habitat: c. 0.2ha of scrub, c. 135m of hedgerows, and c. 0.2ha of tall ruderal/colonising ground and c. 1.4ha of grassland of limited suitability.
- 5.33 Should GCN be found to be present, then impact avoidance and compensation measures will need to be secured via an EPS licence from Natural England. The proposed development scheme is considered to

offer significant scope for the provision of compensatory habitat for GCN (i.e. through new planting, of SuDS basin, log piles), and subject to sensitive working practices / seasonality of vegetation works then direct impacts to this species could be avoided and their favourable conservation status maintained.

6.0 COMPENSATION AND ENHANCEMENT MEASURES

Aims and Objectives

- 6.1 Compensation and enhancement measures for protected species and IEFs, relevant to the construction and operation phases of development, are set out herein to address the following aims and objectives:
- Compensate / offset any residual impacts from development where this is not possible through impact avoidance and mitigation measures;
 - Undertake habitat creation which will be in line with national and local planning policy;
 - Provision habitat enhancement features of benefit to S41 species known to be present onsite / locally;
 - Provide long-term benefits for wildlife during the operational phases through suitable habitat provision and management;
 - Ensure that habitat management practices ensure that the value of retained and newly created habitats are maximised through the implementation of a suitable Landscape and Ecology Management Plan (LEMP).

Compensation and Enhancement Measures

Native Grassland Creation

- 6.2 The proposed scheme will provide the scope for a significant amount of new meadow planting (c. 0.5ha) within the POS along the northern, western and southern boundaries, and within the attenuation basin. The ecological value of retained areas of existing grassland and new species-rich native grassland seeding will be maximised through the implementation of appropriate management to be secured through a LEMP.
- 6.3 Species rich native grassland areas will be managed as meadow habitat, with a single hay cut taken in August or September depending on the species mix allowing sufficient time for flowering and seeding. Grass cutting and clearance of encroaching scrub will be in line with herpetile mitigation measures as appropriate, to ensure that opportunities for herpetiles continue to be provided across the site in the long term.
- 6.4 Habitat creation will increase foraging opportunities a variety of fauna. The value of these areas of informal open space shall be maximised by the use of pesticides being avoided to ensure that healthy invertebrate (e.g. worm / mollusc) populations thrive which provide an important foraging resource for badgers, bats, birds and herpetiles.
- 6.5 In the POS sensitive design of access routes and management practices which retain some dense undisturbed areas of scrub will be implemented

to discourage access from people and dogs, to minimise habitat disturbance to herptiles, birds and other species.

Hedgerow, Buffer and Tree Planting

- 6.6 The proposed scheme will provide the scope for a significant amount of new buffer and tree planting within the POS (c. 0.5ha). Within informal areas of open space, native species of known benefit to wild life will be selected to maximise the biodiversity value, such as oak *Quercus robur*, hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*.
- 6.7 Landscape design will seek to provide a range of eco-tones between areas of tree / woodland planting and grassland areas through the use of low growing shrubs at woodland block margins. New trees and thickets will also be planted throughout the wildflower meadow areas. Through this habitat diversification, a habitat matrix will be produced, offering a greater variety of opportunities for wild life. This will benefit invertebrates and herptiles in particular by creating open basking opportunities and refuge areas. Foraging resources will be increased for a range of fauna, including bats and birds.
- 6.8 Within development areas, the use of native tree and hedgerow planting shall be incorporated into areas of more formal planting as appropriate. This will provide benefits in terms of habitat connectivity as well as boosting resources across the development.
- 6.9 The new planting will compensate for the minor loss of current bird nesting habitat through hedgerow, scrub and tree removal, with a significant net gain of available foraging and nesting habitat. Natural roosting opportunities for bats, such as abandoned woodpecker holes, rot holes and splits, will take significantly longer to develop.
- 6.10 Sensitive management of hedgerow and tree planting, along with retained existing habitat, will be delivered through the LEMP. Management shall take account of ecological constraints such as the bird nesting period (March to August inclusive), herptile active season (March to September inclusive), and aim to maintain or increase the abundance and diversity of invertebrate prey species.

Wild life Features

- 6.11 To enhance roosting opportunities for bats a total of 10 artificial bat roost boxes (2FN Bat Box or equivalent; see Appendix C) will be erected on retained trees along the Site boundaries and within the open space and along Site boundaries. In addition a total of 5 bat tubes (Habibat, or similar) will be installed into new buildings within the development. These will be located in sheltered areas close to retained / new planting and away from new external light sources. All bat boxes / tubes should be located with a broadly south-facing aspect, at a height of c. 3-6m above ground level and away from areas which could be accessible by predators (e.g. domestic cats). Details of the locations and specifications

of new bat roost enhancement features will be provided within the LEMP at the Reserved Matters stage.

- 6.12 Lost nesting opportunities for species which nest in the on-Site buildings will be compensated for and enhanced with the provision of a variety of artificial, purpose-built nest boxes. By way of compensation for the demolished buildings, a total of 10 bird boxes will be installed into new buildings within the development (NHBS integrated starling box, terraced sparrow box, and swift box or equivalent; see Appendix C). By way of enhancement, a total of 10 woodcrete nest boxes (1MR Avianex nest box, or equivalent; see Appendix C) will be erected on trees throughout the proposed POS and along the Site boundaries. These will be located in sheltered areas close to retained / new planting and away from new external light sources. All bird boxes / tubes should be located with a broadly north-facing aspect away from direct sunlight and prevailing winds, at a height of c. 2-4m above ground level and away from areas which could be accessible by predators (e.g. domestic cats). Details of will be provided within the LEMP.
- 6.13 To enhance sheltering opportunities for herptiles and invertebrates, dead wood created through habitat management will be retained onsite and used to create log or brush piles. A minimum of five log piles and at least one hibernacula will be created within the reptile mitigation areas and a minimum of 3 invertebrate boxes will be provided within the POS. Locations to be detailed within the LEMP.

7.0 MANAGEMENT AND MONITORING

Management

- 7.1 Basic prescriptions for habitat management of retained and newly created semi-natural habitats have been set out within this report as appropriate. It is envisaged that this shall form a framework for the development of a Landscape and Ecology Management Plan (LEMP) to be produced alongside detailed development proposals at the Reserved Matters stage. The LEMP should include the following:-

- Details of habitat types and areas to be provided;
- Planting and seeding specification;
- Details of management for both establishment of new habitats and ongoing management, with details of at least the first 10 years of management to be set out;
- A works schedule detailing annual management actions; and
- Details of management responsibilities and funding.

Monitoring

- 7.2 A programme of monitoring shall be included within the LEMP to ensure that the success of mitigation and management can be measured, and measures amended as necessary to achieve the objectives set out within this document. It is envisaged that any monitoring framework shall cover the following:-

- Planting – success of new planting to inform replacement as necessary;
- Habitat Assessment – to assess the biodiversity value of habitat delivered in relation to the pre-development baseline;
- Fauna – species specific surveys as appropriate where specific mitigation and compensation measures have been provided to inform further mitigation action requirements and in line with any Natural England / EPS licencing requirements.

- 7.3 A monitoring report will be provided to the Local Planning Authority and species records sent to Sussex Biological Records Centre.

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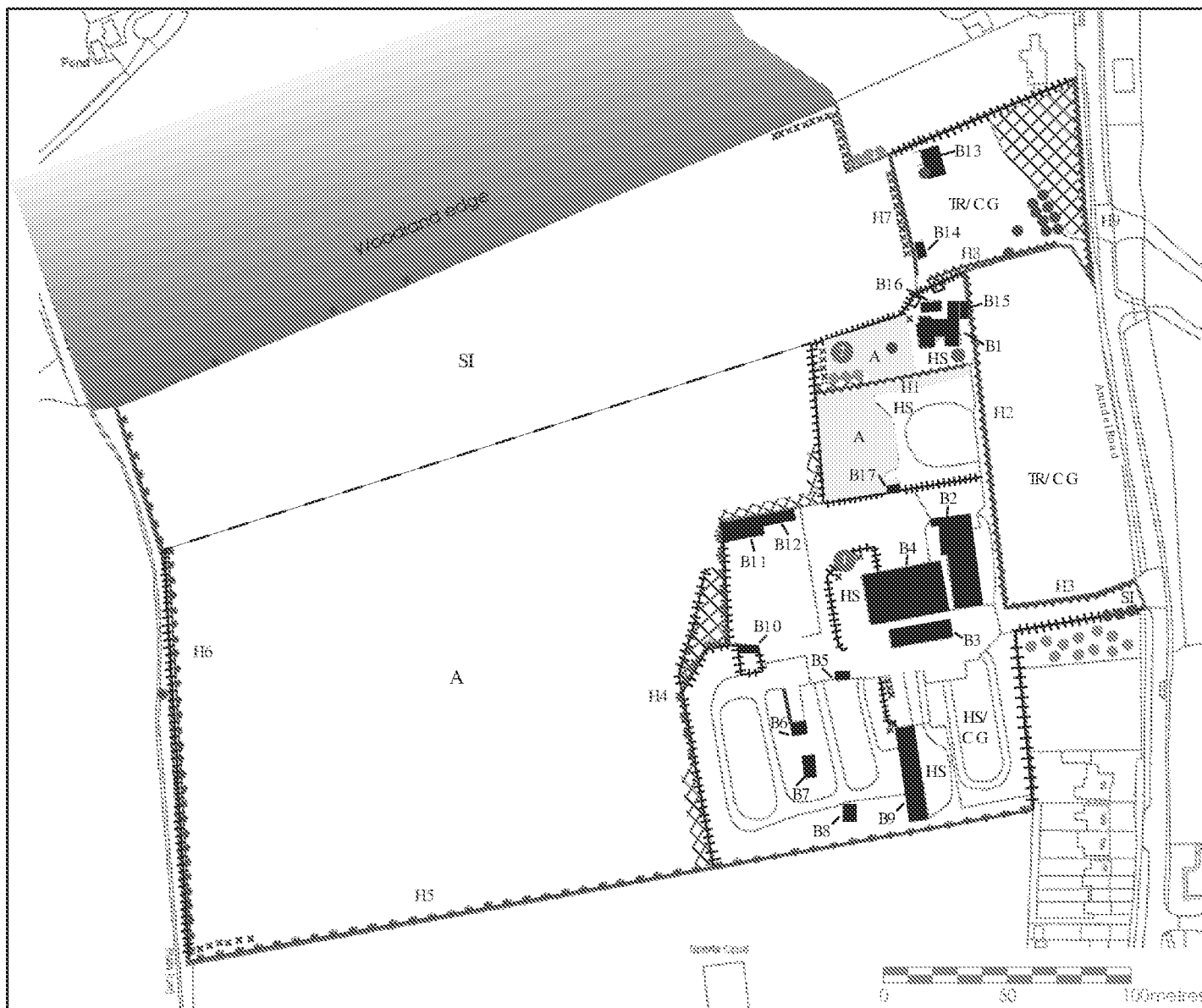
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Appendix A

Habitats Plan (CSA/3467/102)

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	Site Boundary
	Species-rich hedge with trees (H4-6)
	Species-rich hedge (H1-3 & 8-9)
	Species-poor hedge (H7)
	Fence
	Arable
	Semi-improved grassland
	Amenity grassland
	Dense scrub
	Scattered scrub
	Colonising ground
	Hard standing
	Tall ruderal
	Buildings (B1-13)
	Wall
	Individual trees - deciduous
	Individual trees - coniferous
	Pond
	Trees with features suitable for roosting bats
	1 - Brash pile; 2 - Garden, amenity grassland with ornamental planting, mature trees & shrubs, chestnut post & rail fencing

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Project Land West of Arundel Road, Angmering

Drawing Title Habitats Plan

Client Gladman Developments Ltd.

Date: January 2017

Drawing No. CSA/3467/102

Scale: 1:1000

See scale bar

Rev. A

Drawn: KW/JT

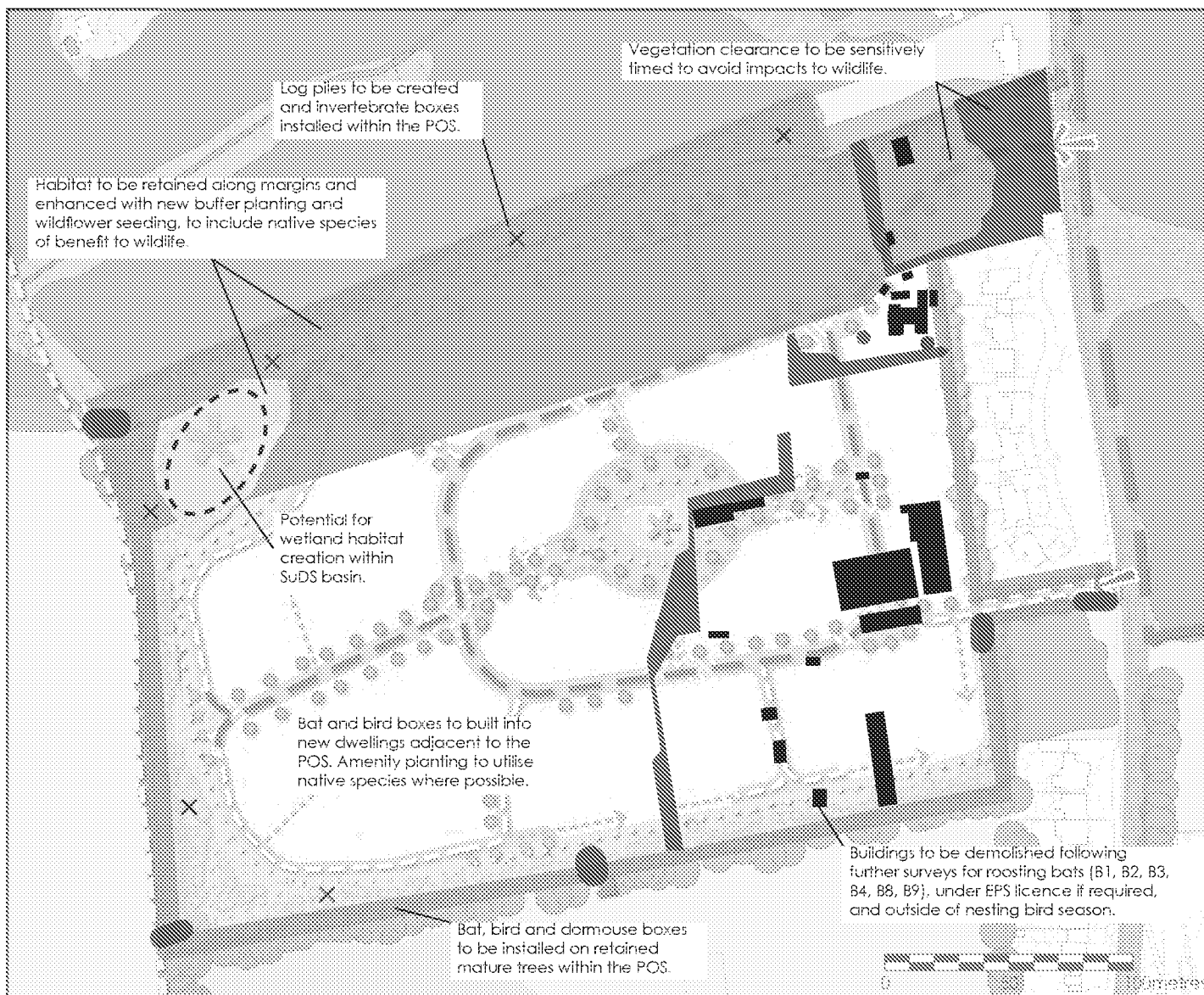
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Appendix B

Ecological Mitigation and Enhancement Plan (CSA/3467/111)

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-  Site Boundary
-  Vegetation to be retained
-  Habitat to be removed: scrub (c. 0.2ha), hedgerow (c. 135m) and small number of trees
-  Grassland/ruderal to be removed (c. 1.6ha)
-  Pond to be removed
-  Buildings to be demolished
-  Long grassland to be re-instated/created
-  Log pile to be installed
-  SuDS basin to be created

Mitigation and enhancement measures to be informed by further survey work for bats, dormice, birds, reptiles and great crested newts, and reduced if appropriate.



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Project	Land West of Arundel Road, Angmering
Drawing Title	Ecological Mitigation and Enhancement Strategy
Client	Gladman Developments Ltd.

Date	November 2017	Drawing No.	CSA/3467/111
Scale	A4	See scale bar	Rev.
Drawn	JT	Checked	CC

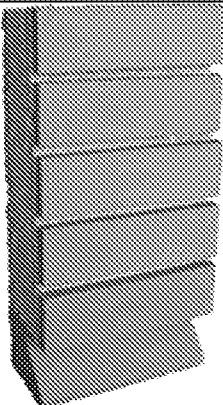
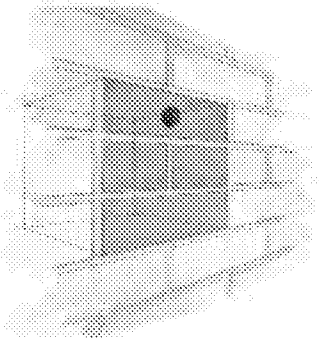
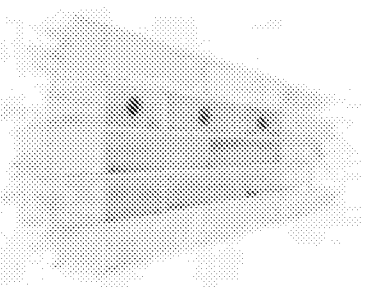
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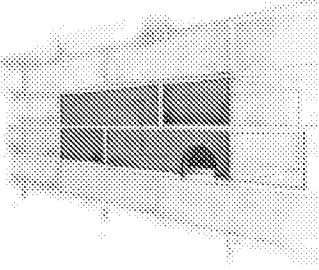
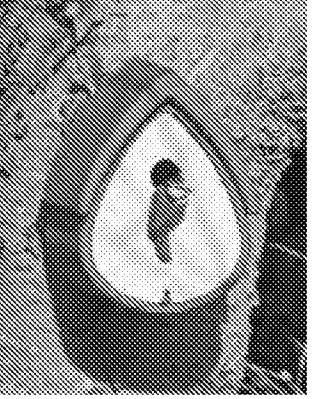
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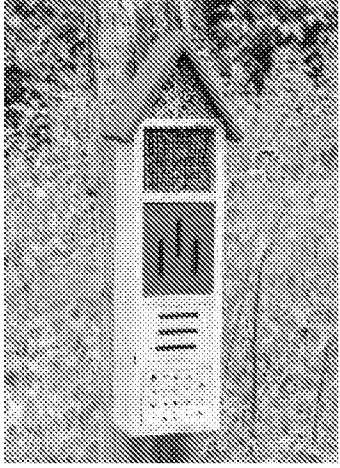
Specification of Proposed Wildlife Boxes and Hibernacula

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Table C1 Wild life boxes to be installed in POS

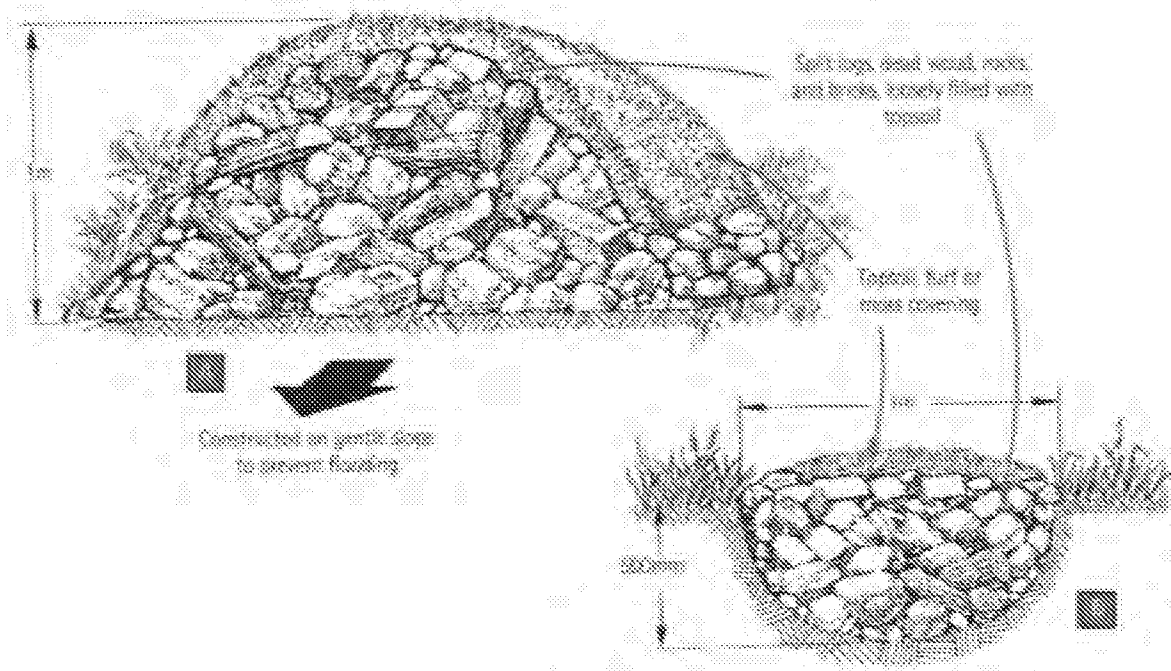
Product	Description	Location
 Habitat Bat Box (or equivalent) x 5 tubes by way of mitigation x 5 tubes by way of enhancement	Suitable for: Crevice-dwelling bats Design: Made of insulating concrete with an internal roost space. A variety of facings can be fitted to suit any existing brick, wood, stonework or rendered finish, rendering the box unobtrusive and aesthetically pleasing. Positioning: Should be sited on buildings away from possible access by domestic cats (e.g. window ledges, fences), and is best positioned at a height of between 3 to 6 metres. Should be ideally sites on southeast to southwest aspects, close to suitable foraging habitat (vegetation).	Integrated into new buildings
 Starling Box (NHBS, or equivalent) x 3 boxes by way of compensation	Suitable for: Starling Design: Large, solid box made of insulating concrete with an internal nesting space which can be incorporated into the fabric of a building as it is built or renovated. The box is designed especially to be unobtrusive and aesthetically pleasing. Positioning: Should be sited on buildings away from possible access by domestic cats (e.g. window ledges, fences). Best positioned at a height of at least 2m favouring north-east to north-west orientations where possible.	Integrated into new buildings
 Terraced Sparrow Box (NHBS, or equivalent) x 3 boxes by way of compensation	Suitable for: House sparrow Design: Large, solid box made of insulating concrete with three internal nesting spaces, allowing three pairs to nest close to each other. This design of box is ideal for house sparrows which are extremely social and prefer to nest near to other pairs. The box is designed to be incorporated into the fabric of a building as it is built or renovated and is both unobtrusive and aesthetically pleasing. Positioning: Should be sited on buildings away from possible access by domestic cats (e.g. window ledges, fences). Best positioned at a height of at least 2m favouring north-east to north-west orientations where possible.	Integrated into new buildings

 Swift Box (NHBS, or equivalent) x 4 boxes by way of compensation	Suitable for: Swift Design: Large, solid box made of insulating concrete with three internal nesting spaces, allowing three pairs to nest close to each other. This design of box is ideal for house sparrows which are extremely social and prefer to nest near to other pairs. The box is designed to be incorporated into the fabric of a building as it is built or renovated and is both unobtrusive and aesthetically pleasing. Positioning: Should be sited on buildings away from possible access by domestic cats (e.g. window ledges, fences). Best positioned at a height of at least 2m favouring north-east to north-west orientations where possible.	Integrated into new buildings
 2FN Bat Box (or equivalent) x 10 boxes (to be installed in pairs) by way of enhancement	Suitable for: Crevice-dwelling bats Design: Woodcrete material, which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects Positioning: Should be sited on trees and is best positioned at a height of between 3 to 6 metres. Bat boxes should ideally be sited in open sunny positions with southeast to southwest aspects.	On mature trees with POS and on Site boundaries
 1MR Avianex nest box (or equivalent) x 10 boxes (to be installed in pairs) by way of enhancement	Suitable for: Hole-nesting bird species Design: Woodcrete material, which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, making it suitable for long-term mitigation projects Positioning: Should be sited on trees and is best positioned at a height of at least 2m favouring north-east to north-west orientations where possible.	On mature trees with POS and on Site boundaries

 CJ Wild life Insect tower x 3 to be installed by way of enhancement	Suitable for: variety of insects Design: The nesting tubes are ideal for solitary bees to build their nests in, the vertical slots are designed to encourage butterflies, other refuge holes are perfect for ladybirds and lacewings and the pine cones offer an excellent habitat for a range of other species. Positioning: Should be sited on a tree facing north-east to north-west, in dappled shade.	On mature trees within POS and on Site boundaries
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Schwegler and CJ Wildlife products can be purchased from the NHBS website www.nhbs.com

Figure C1 Hibernacula Design Taken from Great Crested Newt Conservation Handbook. Froglife 2001. Design A can be used on impermeable soils and free-draining soils whereas B should only be used on free-draining soils.



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