



ECOLOGICAL MANAGEMENT PLAN

THOMAS ALFRED HOMES

LAND AT OLD MEAD ROAD,
LITTLEHAMPTON,
WEST SUSSEX

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CT Ecology Limited (Registered Office), 140 Bevendean Crescent, Brighton, East Sussex, BN2 4RD

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1. INTRODUCTION

Background

- 1.1 CT Ecology Limited has been commissioned by Thomas Alfred Homes to compile an Ecological Management Plan document prior to development at land at Old Mead Road in Littlehampton (hereafter referred to as 'the site').
- 1.2 This document has been compiled in relation to planning reference: LU/48/20/PL in order to address the request made by Chichester District Council (CDC) in a letter dated 4th March 2020 with which CDC request that measures to ensure biodiversity gains are incorporated into the design in order to guarantee there is no net loss in biodiversity as a result of the works.
- 1.3 This document has been informed by this request and by the initial ecological assessment carried out by a separate consultant (Lizard Landscape Design and Ecology, 2017). The findings of this initial ecological assessment are summarised below.
 - * Water vole (*Arvicola amphibius*) field signs were observed along the ditch located in the northern extent of the site to include latrines and feeding remains; and
 - * Building 2 supported nesting birds and areas of scrub and trees had some potential to support this species group.
- 1.4 This report provides details on the protection of habitats and ecological features to be retained in addition to ecological enhancement measures which will aim to augment the quality of the site in the long-term for protected species and to ensure that any adverse impacts of development activities are fully mitigated, compensated and restored.
- 1.5 The site wide enhancement and management post development will be undertaken by the future management company. This document must be made available to anyone undertaking ecological management at the site.

Site Description

- 1.6 The proposed development site comprises a single residential dwelling set in a large plot covering approximately 1 hectare (ha). The habitats present are typical of this land use type, being dominated by grassland, hardstanding, bare ground and existing buildings.
- 1.7 The site is located circa 40 metres above sea level and is bordered to the north by Black Ditch; to the east by static homes; a residential property and a large glasshouse is to the west together with large storage yard and farmland is to the south.

- 1.8 The site is within a semi-rural landscape, situated to the west of Lyminster. Land to the north and west is dominated by a matrix of arable and pastoral farmland while residential areas of Lyminster and Wick extend for approximately 1.5km to the south and east.

Development Proposals

- 1.9 Proposals involve the demolition of the on-site residential bungalow & outbuildings and subsequent erection of 22 no. dwellings with associated parking & open space. It is anticipated that the construction period will be between 18-24 months.

Planning Policy

- 1.10 The following National and Local Planning Policies are relevant to the site.

National Planning Policy Framework (2012)

- 1.11 The National Planning Policy Framework (2012) emphasises the need for sustainable development. The Framework specifies the need for protection of designated sites, priority habitats and priority species. An emphasis is also made for the need for ecological networks through preservation, restoration and recreation. The protection and recovery of priority species is also included as a requirement of planning policy. In determining a planning application, planning authorities should aim to conserve and enhance biodiversity by ensuring that: designated sites are protected from adverse harm; appropriate mitigation or compensation measures are in place where significant harm cannot be avoided; opportunities to incorporate biodiversity in and around developments are encouraged; and planning permission is refused for development resulting in the loss or deterioration of irreplaceable habitats including aged or veteran trees and also ancient woodland.

Arun Local Plan (2011-2031)

- 1.12 The Arun Local Plan (2011-2031) (Chapter 17) contains the following nature conservation policies relevant to the site.

Policy ENV SP1: Natural Environment

- 1.13 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.

Policy ENV DM3: Biodiversity Opportunity Areas

1.14 Development shall:

- a) retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones; and
- b) be designed in order to minimise disturbance to habitats.

1.15 Development proposals that do not reasonably address opportunities for enhancing these through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the LPA prior to the determination of any planning application.

Policy ENV DM4: Protection of Trees

1.16 Development will be permitted where it can be demonstrated that trees protected by a Tree Preservation Order (TPO) identified as Ancient Woodland, in a Conservation Area or contributing to a local amenity will not be damaged or destroyed now and as they reach maturity, unless development;

- a) would result in the removal of one or more trees in the interests of good arboricultural practice;
- b) would enhance the survival and growth aspects of other protected trees; and
- c) the benefits of the proposed development in a particular location would outweigh the loss of trees or woodland, especially ancient woodland.

Policy ENV DM5: Development and Biodiversity

1.17 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 and 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.

2. LEGISLATION

Bats

2.1 Bats are protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). This act protects individuals from:

- * intentional or reckless disturbance (at any level);
- * intentional or reckless obstruction of access to any place of shelter or protection; and
- * selling, offering or exposing for sale, possession or transporting for purpose of sale

2.2 In addition, all species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- * deliberate killing, injuring or capturing of Schedule 2 species (all bats);
- * deliberate disturbance of bat species as to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young; and
 - (ii) to hibernate or migrate.
- * deliberate disturbance of bat species as to affect significantly the local distribution or abundance of the species;
- * damage or destruction of a breeding site or resting place; and
- * keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

2.3 A Protected Species Mitigation Licence issued by Natural England will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake activities listed above. A licence is required to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and monitored.

Breeding Birds

2.4 Under the Wildlife & Countryside Act, 1981 (as amended), a wild bird is defined as any bird of a species that is resident in or is a visitor to the European Territory of any member state in a wild state. Game birds, however, are not included in this definition (except for limited parts of the Act). They are covered by the Games Acts, which fully protect them during the closed season.

2.5 Under the Wildlife & Countryside Act, 1981 (as amended), all birds, their nests and eggs are protected under Sections 1-8 of the Act and it is an offence, with certain exceptions, to:

- * intentionally (or recklessly in Scotland) kill, injure or take any wild bird;
- * intentionally (or recklessly in Scotland) take, damage or destroy (or, in Scotland, otherwise interfere with) the nest of any wild bird while it is in use or being built
- * intentionally take or destroy the egg of any wild bird;
- * have in one's possession or control any wild bird, dead or alive, or any part of a wild bird, which has been taken in contravention of the Act;
- * have in one's possession or control any egg or part of an egg which has been taken in contravention of the Act;
- * use traps or similar items to kill, injure or take wild birds;
- * have in one's possession or control any bird (dead or alive) unless registered, and in most cases ringed, in accordance with the Secretary of State's regulations; and
- * in Scotland only, intentionally or recklessly obstruct or prevent any wild bird from using its nest.

2.6 Certain rare species receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC). This affords them protection against:

- * intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young;
- * intentional or reckless disturbance of dependent young of such a bird;
- * in Scotland only, intentional or reckless disturbance whilst lekking; and
- * in Scotland only, intentional or reckless harassment.

2.7 The British Trust for Ornithology (BTO) has a list of birds that are Species of Conservation Concern. These birds are not legally protected but where they are found on site, they should be given planning consideration. The criteria for birds listed as amber (medium conservation concern) include:

- * historical population decline during 1800-1995, but recovering: population has more than doubled over last 25 years;
- * moderate (25-49%) decline in UK breeding population over last 25 years;
- * moderate (25-49%) contraction of UK breeding range over last 25 years;

- * moderate (25-49%) decline in UK non-breeding population over last 25 years;
- * species with unfavourable conservation status in Europe (Species of conservation Concern);
- * five year mean of breeding pairs in the UK;
- * >50% of UK breeding population in 10 or fewer sites.
- * >50% of UK non-breeding population in 10 or fewer sites;
- * >20% of European breeding population in UK; and
- * >20% of NW European (wildfowl), East Atlantic Flyway (waders) or European (others) non breeding populations in UK.

Herpetofauna (Reptiles and Amphibians)

2.8 The following species receive full protection under the Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2.

- * sand lizard (*Lacerta agilis*);
- * smooth snake (*Coronella austriaca*);
- * natterjack toad (*Epidalea calamita*);
- * great crested newt (*Triturus cristatus*); and
- * pool frog (*Pelophylax lessonae*).

2.9 Under this legislation, Regulation 41 prohibits:

- * deliberate killing, injuring or capturing of species listed on Schedule 2;
- * deliberate disturbance of any Schedule 2 species as to impair their ability:
 - (i) to survive, breed, or reproduce, or to rear or nurture young; and
 - (ii) to hibernate or migrate.
- * deliberate disturbance of any Schedule 2 species as to affect significantly the local distribution or abundance of the species;
- * deliberate taking or destroying of the eggs of a Schedule 2 species;
- * damage or destruction of a breeding site or resting place; and
- * keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part of a species.

2.10 With the exception of the pool frog, these species are also currently listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). Under this Act, they are additionally protected from:

- * intentional or reckless disturbance (at any level);
- * intentional or reckless obstruction of access to any place of shelter or protection; and
- * selling, offering or exposing for sale, possession or transporting for purpose of sale.

2.11 Other native species of herpetofauna are protected solely under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). These species include:

- * adder (*Vipera berus*);
- * grass snake (*Natrix helvetica*);
- * common lizard (*Zootoca vivipara*); and
- * slow-worm (*Anguis fragilis*).

2.12 Under this legislation, for these species it is prohibited under Section 9(1) & (5) to:

- * intentionally (or recklessly in Scotland) kill or injure these species
- * sell, offer or expose for sale, possess or transport for purpose of sale these species, or any part thereof.

2.13 The following species are listed in respect to Section 9(5) of Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) which only affords them protection against sale, offering or exposing for sale, possession or transport for the purpose of sale:

- * common frog (*Rana temporaria*);
- * common toad (*Bufo bufo*);
- * smooth newt (*Lissotriton vulgaris*); and
- * palmate newt (*L. helveticus*).

Water Vole

2.14 The water vole (*Arvicola amphibius*) (=terrestris) is fully protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). This makes it an offence to:

- * intentionally kill, injure or take (capture) this species;
- * intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection;
- * intentionally or recklessly disturb water voles while they are occupying a structure or place used for shelter or protection; and
- * sell, offer or expose for sale, or have in his possession or transport for the purpose of sale, any live or dead water vole or part of this species.

2.15 Where development works are liable to affect habitats known to support water voles, Natural England must be consulted. All alternative design options must have been explored and communicated to Natural England in order to demonstrate that works have tried to avoid contravening the legislation e.g. the use of alternative sites, appropriate timing of works to avoid times of the year in which water voles are most vulnerable etc. Conservation licences for the capture and translocation of water voles may be issued by Natural England for the purpose of development activities if it can be shown that the activity has been properly planned and executed and thereby contributes to the conservation of the population.

Wild Mammals

2.16 All wild mammals are protected against intentional acts of cruelty under the Wild Mammals (Protection) Act 1996. Under this legislation it is an offence to:

- * mutilate, kick, beat, nail or otherwise impale, stab, burn, stone, crush, drown, drag or asphyxiate any wild mammal with intent to inflict unnecessary suffering.

2.17 To avoid possible contravention of this legislation, due care and attention should be taken when carrying out works that have the potential to impact any wild mammal as described above.

3. MANAGEMENT PLAN

Site Wide

Aims

3.1 The overall aims of the project are as follows:

- * Retain ecological features where possible and to safeguard these features throughout construction;
- * provide habitat enhancements that will offer conditions to increase biodiversity at the site in the long-term;
- * provide conditions suitable for UK, regional and local Biodiversity Action Plan (BAP) species and habitats;
- * follow relevant British Standards and Codes of Practice; and
- * use a selection of plants of known wildlife value.

Habitat Retention

Trees

Rationale

- 3.2 The retention of existing trees within the northern extent of the site will serve maintain connectivity for more mobile animals in the locality. Retention of these established specimens also contributes to the overall biodiversity value at the site as well as providing an aesthetic value both within the site and the adjoining land.
- 3.3 The species supported are of some wildlife value, providing a food source for birds.
- 3.4 Additionally, the retained trees are likely to provide nesting opportunities for a range of bird species such as house sparrow, starling and dunnock. The features will also provide foraging and commuting habitat for bats.
- 3.5 A total of four trees within the northern extent of the site will be retained. A single tree located along the southern site boundary will be felled to facilitate access and the construction of Units 1-8.

3.6 All trees will be retained in accordance with guidelines contained within BS 5837; 2012; 'Trees in Relation to Design, Demolition and Construction - Recommendations'. Recommended protection measures include, but are not limited to, the following:

- * All trees to be retained on site are to be protected with fencing erected around the area of vegetation in accordance with current guidelines;
- * any excavations, cultivation and grading below the canopy of existing trees and within the specified Root Protection Areas of the existing trees / vegetation is to be carried out using hand tools only, taking great care not to damage or disturb any existing tree roots;
- * within the specified tree root protection area, the following activities are prohibited;
 - o No vehicles to be used in the fenced off areas;
 - o No materials to be stockpiled or stored;
 - o No chemicals to be stored;
 - o No excavation / increased soil levels; and
 - o No fires shall be lit within the site.
- * trees designated for removal are to be felled prior to the installation of any tree protective fencing; and
- * all excavation works within designated RPAs are to be undertaken manually with hand tools (or air spades) in order to protect existing tree roots and this must be undertaken in accordance with current guidance.

3.7 The locations of retained trees are marked on Figure 1 in Appendix A.

Aims

3.8 The following aims are to achieve a balance between the biodiversity value of the features as well as the amenity requirements at the site.

- * To provide attractive and relatively well-maintained trees;
- * to provide foraging for a range of widespread birds, bats and nectar feeding invertebrates;
- * to promote new and healthy growth; and
- * to maintain feeding and sheltering opportunities for birds and feeding and commuting opportunities for bats between the site and the wider surrounds.

Management

Maintenance

- 3.9 Pruning trees will be undertaken between September and February inclusive. This is outside the breeding bird season, which is taken to run between March and August, and will therefore avoid disturbance to nesting birds and their young.
- 3.10 It is important to note however that birds can nest outside the stated nesting period if weather conditions are suitable and therefore due care should be taken when undertaking pruning works at any time of the year. If breeding birds, or their nests are suspected, or discovered. Then the pruning of trees in the vicinity of the nest must be postponed until young birds have fledged and the nest is no longer in use.
- 3.11 It is preferable to maintain a dense tree canopy where this is practicable around the site and pruning outer branches regularly will promote this. It is understood some trees may need to be maintained as smaller specimens to maximise light levels and minimise leaf litter.
- 3.12 Any dead or diseased specimens should be removed and replaced with a similar species.

Black Ditch and Associated 5m Buffer Area

Rationale

- 3.13 The retention of a 5m buffer area within the northern extent of the site, between the off-site water course will serve maintain connectivity for more mobile animals in the locality and safeguard water voles present within the off-site water course.
- 3.14 Retention of a buffer area also contributes to the overall biodiversity value at the site; enabling a grassland management scheme to be implemented within this area together with additional biodiverse planting to be undertaken, enhancing the site for water vole in addition to other species including bats, birds, invertebrates, reptiles and hedgehog. The retention of a buffer area also adds an aesthetic value both within the site and to the adjoining land.
- 3.15 The buffer area will be retained in accordance with the following;
 - * The buffer area will be fenced off from the construction site using Herras™ fencing or similar;
 - * fencing will be required in order to stop ingress of machinery into the retained habitats; and

- * no machinery or material storage or excavations are to take place within the buffer area.

3.16 The location of the retained buffer area is marked on Figure 1 in Appendix A.

Aims

3.17 The following aims are to achieve a net increase in the biodiversity value of the retained habitat features at the site.

- * To provide an attractive natural area along the northern site boundary;
- * to provide additional foraging and sheltering for water vole associated directly with the riparian habitat along Black Ditch;
- * to provide foraging for a range of widespread birds, bats and nectar feeding invertebrates;
- * to provide shelter for reptiles and mammals including hedgehog;
- * to promote a diverse grassland flora; and
- * to maintain commuting opportunities for mobile species including bats and hedgehog between the site and the wider surrounds.

Management

Establishment-Grassland

3.18 Based on the initial ecology assessment, recommendations within this retained area are for a relaxed grassland management scheme to enable the existing floral species to develop rather than re-seeding the grassland. Management must include period clearance of scrub species from the banks of the water course to control over shading in this area.

3.19 The grassland management regime should commence concurrently with the construction period.

Establishment-Aquatic Planting

3.20 Additional aquatic planting must be carried out along the southern bank of the water course. Species favoured by water vole for food and shelter should be planted to include yellow flag (*Iris pseudacorus*), rushes (*Juncus* sp.) sedges (*Carex* spp.), reed canary grass (*Phalaris arundinacea*) and foals water cress (*Apium nodiflorum*). The length of water course running adjacent to the site extends for approximately 85m.

- 3.21 Plants should be planted at a density of approximately three plants per 5m along the water course therefore 50 plug plants comprising the above species must be planted. These should be located both along the water margin and along the lower and upper banks of the water course.

Maintenance-Grassland

- 3.22 It is recommended that the grassland is cut twice a year which will serve to reduce the nutrient levels in the soil and will encourage a more diverse sward to develop. This grassland management should be carried out before and after flowering in spring and autumn. Allowing the sward to develop through the summer will promote invertebrate diversity and provide cover for reptiles and small mammals.
- 3.23 Based on the nature of the site, mowing is considered more practical than grazing. After mowing in both the spring and autumn the cuttings must be collected and removed from the area, this will stop nutrients from the arisings going back into the soil. Arisings could be stacked in the corner of the site to create a compost area. Concurrently with the mowing, areas of scrub along the banks of the water course must also be cut back using hand held flails or brush cutters.
- 3.24 Regular cutting of the grassland sward should limit the growth of undesirable species such as thistles (*Cirsium* spp.) and docks (*Rumex* spp.) however if these species reach more than approximately 5% cover then they should be spot treated with a non-residual herbicide.

Maintenance-Aquatic Planting

- 3.25 The additional planting should require minimal maintenance however the water course should be monitoring annually and any dead specimens should be removed and replaced with a similar species in order to maintain a good coverage of aquatic plants along the water course margin and associated southern bank.

Habitat Creation and Enhancement

Grassland

Rationale

- 3.26 Amenity grassland will be created in the front and rear gardens associated with the 22 new properties. An amenity grassland area will also be created in the northern site extent.

3.27 Although these grassland areas are likely to receive regular management for use as gardens, grassland edge habitat associated with the open amenity space, particularly the northern edge adjacent to the retained buffer area should receive a more relaxed management approach to enable a taller sward to develop throughout some of the year. Flowering grassland species present in the sward can be productive invertebrate habitats for conspicuous nectar-feeding species such as butterflies and bumblebees, for nocturnal moths and their associated predators which in turn provide food sources for birds and bats. Grassland areas will also provide habitat connectivity and foraging opportunities for reptiles and small mammals, with taller grassland areas also providing additional cover opportunities. Species potentially benefiting from the proposed planting include house sparrow (*Passer domestica*), starling (*Sturnus vulgaris*), bats, reptiles and hedgehog.

3.28 Grassland areas are shown on Figure 1 in Appendix A.

Aims

3.29 The following aims are proposed for the grassland areas.

- * To provide 0.3ha of flowering lawn for at least five years from the completion of the development. This will include approximately 0.2ha associated with the open amenity space with the remainder divided between the 22 residential plots;
- * to manage the grassland to balance amenity use with biodiversity value;
- * to maintain an average of four flowering (non-grassy) species overall at the site for the five-year period;
- * to provide a regularly mown cutting regime for the proposed grassland for amenity use to maintain a sward of 25 to 40mm year-round;
- * where possible, a taller sward of between 50-100mm should be maintained around grassland edge habitat associated with the amenity space between April to September to encourage wildlife and flowering; and
- * to limit the extent of invasive species to less than 5% cover.

Management

Establishment

3.30 Based on the development proposals, all areas of existing grassland will require removal to facilitate the development.

- 3.31 Ground preparation should include scarification however in areas where the ground has been disturbed through construction activities the area may require any ground compaction to be reversed prior to grassland seeding commencing, with the ground being levelled off and seeded areas subsequently protected from further disturbance after sowing.
- 3.32 The seed mix to be used is Emorsgate's EL1 - Flowering Lawn Mixture. The composition of this seed mix is provided below and this mix should be sown at a rate of 4g/m² and firmed in with a roller.

Table 3.1: Grassland Seed Mix

%	Latin name	Common name
Wildflowers		
4	<i>Galium verum</i>	Lady's bedstraw
0.5	<i>Leontodon hispidus</i>	Rough hawkbit
1	<i>Leucanthemum vulgare</i>	Oxeye daisy
3.7	<i>Lotus corniculatus</i>	Bird's-foot trefoil
3	<i>Primula veris</i>	Cowslip
4	<i>Prunella vulgaris</i>	Selfheal
3.5	<i>Ranunculus acris</i>	Meadow buttercup
0.3	<i>Trifolium pratense</i>	Wild red clover
Grasses		
8	<i>Agrostis capillaris</i>	Common bent
40	<i>Cynosurus cristatus</i>	Crested dog's-tail
28	<i>Festuca rubra</i>	Slender-creeping red-fescue
4	<i>Phleum bertolonii</i>	Smaller cat's-tail

Maintenance

- 3.33 In the establishment year (first year after sowing), the seeded areas should establish a minimum height of 35mm before the first cut and grassland edge areas associated with the amenity grassland area should be left uncut for the first year to enable a sward height of 50-70mm to develop.
- 3.34 Once established, cutting should be undertaken fortnightly, or as necessary to maintain to a height of 30mm during the growing season and as required during the winter months, with any informal grassland areas subject to cutting once or twice a year in October/November and March to enable a sward height of 50-70mm to develop through the summer months.

- 3.35 The final cut of the year should be undertaken in November and this should include all grassland edge habitats to reduce the entire grassland sward to 30mm over winter months.
- 3.36 Where possible, the cutting regime should be relaxed in late June to encourage flowering.
- 3.37 Prior to mowing, litter including fallen leaves should be raked from grass areas prior to mowing. All arisings must be collected and removed from site or stacked to form a compost area.
- 3.38 Regular cutting should limit the growth of undesirable species such as thistles and docks however if these species reach more than approximately 5% cover then they should be spot treated with a non-residual herbicide.
- 3.39 Any grass seeded areas which fail to establish or become bare due to wear should be top dressed with sandy loam topsoil and re-seeded as required. Any reseeded areas should be temporarily fenced off to enable establishment.
- 3.40 Grassland areas should be checked for bare patches twice annually for the first five years following completion of the development.

Hedgerow/Tree/Shrub Planting

Rationale

- 3.41 The purpose of hedgerow, tree and shrub planting is principally for biodiversity as well as for aesthetic purposes. The majority of species chosen will be of wildlife value, particularly for nectar-feeding invertebrates which in turn will provide a food source for birds, bats and hedgehog. The berry yielding species will also provide a food source for birds.
- 3.42 Additionally, much of the proposed planting will provide a layered structure. The combination of tree, shrub and hedgerow planting, together with grassland habitat is likely to provide a productive habitat for a range of bird species such as house sparrow, starling and dunnock. The vegetation structure will also provide foraging habitat for bats, with hedgerow providing sheltering opportunities for reptiles and sheltering and commuting features for hedgehog and other mammals, including fox.
- 3.43 The soft landscape scheme will serve to provide additional tree and hedgerow planting to the eastern and western boundaries of the site and within the northern extent of the proposed development area.

- 3.44 In addition to the boundary hedgerows, hedgerows will also be planted extending east-west to separate Plots 1-8 from Plots 9-14 and to separate Plots 9-14 from Plots 15-18. A total of no 40 trees will be planted around the site to include along the eastern and western site boundaries and in the rear gardens of Plots 1-8 and Plots 15-22. A small number of trees will also be planted along the southern edge of the newly created amenity area. New tree and hedgerow planting will equate to approximately 95m².
- 3.45 Shrub planting will be carried out along the eastern site boundary and around the eastern, western and southern edges of the amenity space. New shrub planting will equate to approximately 260m².
- 3.46 Planting areas are shown on Figure 1 in Appendix A.
- 3.47 A detailed landscaping plan has not yet been compiled for the site and this will be informed by the details included in this management plan.

Aims

- 3.48 The following aims are to achieve a balance between the biodiversity value of the features as well as the amenity requirements for these areas.
- * To provide attractive and relatively well-maintained shrub/hedgerow areas;
 - * to retain vegetation providing habitat structure for invertebrates such as seed heads, old leaves etc. for as long as possible;
 - * to provide foraging for a range of widespread birds, bats and nectar feeding invertebrates;
 - * to promote new and healthy plant growth; and
 - * to maintain feeding and sheltering opportunities for birds and widespread reptiles and feeding and commuting opportunities for bats and hedgehogs between the site and the wider surrounds.

Management

Establishment/Installation

- 3.49 Following soil preparation, which should include incorporating a peat-free organic compost into the soil of all hedgerow and tree planting, species should be planted in the spring, firmed and watered in making sure there are no air pockets. Organic mulch should be spread over the soil beneath the plants, overlaid with ornamental bark mulch.

- 3.50 The following species will be included in the hedgerow planting: field maple (*Acer campestre*), hazel (*Corylus avellana*), hawthorn (*Crataegus monogyna*), holly (*Ilex aquifolium*), and dogwood (*Cornus sanguinea*).
- 3.51 The following species will be included in the tree planting: Field maple, crab apple (*Malus* sp.), cherry (*Prunus* sp.), elm (*Ulmus* sp.) and willow (*Salix* sp.)
- 3.52 The following species can be included in the shrub planting although this list is not exhaustive and may be subject to change to suit the soil conditions at the site: jasmine (*Jasminum* spp.), climbing hydrangea (*Hydrangea anomala* ssp. *petiolaris*); honeysuckle (*Lonicera periclymenum*), clematis (*Clematis* spp.), blackthorn (*Prunus spinosa*), dog rose (*Rosa canina*), field rose (*R. arvensis*), hazel, dogwood, Oregon grape (*Mahonia* sp.), flowering cherry (*Prunus pendula* f. *ascendens* :Rosea).
- 3.53 Trees will be standard heavy stock, between 3.5-4.25m in height. Hedgerow planting will be formed of shrub transplants between 60 - 90cm in height.

Maintenance

- 3.54 Pruning hedgerows and shrubs will be undertaken between September and February inclusive. This is outside the breeding bird season, which is taken to run between March and August, and will therefore avoid disturbance to nesting birds and their young.
- 3.55 Once established, newly planted trees should be pruned annually between September and February inclusive.
- 3.56 It is important to note however that birds can nest outside the stated nesting period if weather conditions are suitable and therefore due care should be taken when undertaking pruning works at any time of the year. If breeding birds, or their nests are suspected, or discovered. Then the pruning of trees and shrubs in the vicinity of the nest must be postponed until young birds have fledged and the nest is no longer in use.
- 3.57 It is preferable to maintain a dense tree canopy where this is practicable around the site and pruning outer branches regularly will promote this. It is understood some trees may need to be maintained as smaller specimens to maximise light levels and minimise leaf litter. Newly planted trees within the rear gardens of Plots 19-22 inclusive, trees adjacent to the amenity grassland area and trees along the site boundaries could be managed in the long-term to develop denser canopies due to their distance from the new houses. This will also serve to increase screening between the development and the wider area.
- 3.58 Any dead or diseased specimens should be removed and replaced with a similar species.

Bird Boxes

Rationale

- 3.59 The proposed new buildings lend themselves to supporting bird boxes. The proposed bird boxes will create additional nesting habitat of potential value to widespread bird species such as blue tit (*Cyanistes caeruleus*), robin (*Erithacus rubecula*) and house sparrow (*Passer domesticus*).
- 3.60 Bird boxes will be attached to the four of the new buildings, positioned out of direct sunlight. Approximate locations are marked on Figure 1 in Appendix A.

Aims

- * The provision of four bird boxes on the western elevations of the building housing Plots 1-8, 9-14 and Plot 22;
- * to contribute to the mitigation against the removal of nesting habitat on site; and
- * to enhance the site for a range of garden bird species including those listed as Birds of Conservation Concern¹ (BoCC) such as house sparrows.

Management

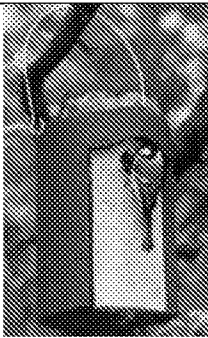
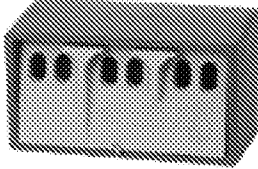
Establishment/Installation

- 3.61 Schwegler woodcrete¹ bird boxes have been specified as they are durable and long-lasting (20-25 years), protect nesting birds from draughts, fluctuations in temperature and humidity and are simple to install.
- 3.62 The boxes will be placed on buildings in the western site extent.
- 3.63 Boxes will be positioned at a minimum height of 3m and a discrete distance apart, out of direct sunlight.

¹ Birds of Conservation Concern status is prioritised into high concern (Red), medium concern (Amber) and low concern (Green) (Eaton et al, 2009). Red-list species are those that are globally threatened according to the IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and have not shown a substantial recent recovery. Amber-list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations. Green-list species are those that fulfil none of the criteria.

- 3.64 A total of three Schwegler 1B hole-fronted nest boxes will be used. This type is suitable for a variety of widespread bird species including; great tit (*Parus major*), house sparrow (*Passer domestica*) and possibly wren (*Troglodytes troglodytes*). In total 1x 1B box will comprise a 26mm entrance hole and 2x 1B boxes will comprise a 32mm entrance hole. These should be installed on the three buildings housing Plots 1-8, Plots 9-14 and Plot 22.
- 3.65 A single Schwegler Sparrow Terrace 1SP will be sited on the western elevation of the building housing Plots 9-14 at a minimum height of 2m and under the eaves where possible. The box must be angled away from the prevailing wind and there must be unobstructed access to the entrance of the box.

Table 3.2: Bird Box Details

Example	Number	Type	Dimensions L x W x H (cm)	Target Species
	1x 26mm entrance hole 2x 32mm entrance hole	Schwegler Nest Box 1B Hole-fronted	18 x 15.5 x 25.5	Multi-purpose, including; great and blue tit and house sparrows amongst others.
	1	Schwegler Sparrow Terrace 1SP	20 x 43 x 24.5	House sparrow. It may also occasionally attract tits, redstarts and spotted flycatchers.

- 3.66 Installation of nest boxes will be carried out immediately following completion of the works on the building.
- 3.67 The direction that the box faces makes little difference provided that it is sheltered from prevailing wind, rain and strong sunlight.

Maintenance

- 3.68 Monitoring is recommended over the first few years so as to assess use of the boxes and replace or repair any damaged boxes. If they remain unused after two years consideration should be given to moving them to a different location during the autumn or winter, when they should be checked and cleaned.
- 3.69 Fixings/attachments should be checked for safety and effectiveness on an annual basis (autumn-winter). Damaged or old bird boxes should be repaired or replaced as necessary. The sparrow terrace does not require any cleaning.

Bat Boxes

Rationale

- 3.70 Trees, grassland and the adjacent water course provide potential for foraging and commuting bats within and adjacent to the site. The proposed bat boxes will provide roosting habitat for crevice dwelling bats including pipistrelle (*Pipistrellus* sp.) and Myotis (*Myotis* sp.) bats; both of which have been recorded in the locality.
- 3.71 Bat boxes will be attached to the new buildings. Approximate locations are marked on Figure 1 in Appendix A. Specific locations will be determined between the on-site contractor, client and ecologist on-site at the time of installation.

Aims

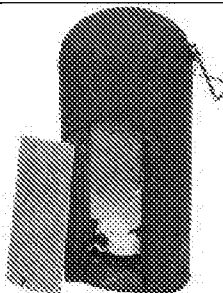
- * The provision of two bat boxes on new buildings at the site;
- * creation of roosting habitat suitable for priority bat species including pipistrelle species; and
- * general enhancement of the site for roosting bats through the provision of roosting features.

Management

Establishment/Installation

- 3.72 The bat boxes are to be placed at least 3m from ground level. The boxes must be carefully sited to ensure that there is a clear flight path for bats to enter and leave the boxes. The following boxes will be used:
- * Schwegler 2FN X 2

Table 3.3: Bat Box Details

Example	Number	Type	Dimensions L x W x H (cm)	Target Species
	2	2FN Schwegler Bat Box	16 x 16 x 36	Highly successful with a range of species including woodland bats e.g. noctule and Bechstein's.

Maintenance

- 3.73 None of the specified bat roosting features require any additional maintenance. Once bats have inhabited a roost site, they may only be disturbed by licensed bat workers.

Log Piles

Rationale

- 3.74 The site has potential to support reptiles once grassland becomes suitable within the buffer area through management. Hedgehogs may also pass through the site. Enhancement of the site for these species groups will increase its long-term suitability.
- 3.75 A series of two log piles will be created in the retained buffer area in the northern site extent. These will be situated within grassland adjacent to the off-site water course. Approximate locations are marked on Figure 1 in Appendix A.
- 3.76 Log piles are ideal environments for reptiles; the surface of the structures may be used by this species for basking; the dead wood in the log piles also supports a diverse invertebrate fauna offering a food source; and the log piles offer shelter and stable temperatures for hibernation over the winter months. They may also be used as a refuge from predators. These features also create feeding and sheltering opportunities for hedgehogs, including shelter for overwintering.

Aims

- * To improve the suitability of the on-site habitat for BAP species including reptiles and hedgehogs through the provision of log piles; and

- * to provide suitable reptile habitat in the long-term.

Management

Establishment/Installation

- 3.77 A total of two log piles will be constructed in suitable habitat along the northern site boundary within grassland.
- 3.78 The log piles will follow an accepted design as described in the Reptile Habitat Management Handbook (Edgar et al, 2010).
- 3.79 The log piles should be made from neatly stacked wood, locally sourced where possible, and stacked approximately 1m in height, in a pyramidal shape (bound with wire to prevent them breaking apart over time). The piles will be oriented such that their longest side faces south, to maximise daily exposure to the sun.

Maintenance

- 3.80 The log piles should be repaired as necessary. If the piles collapse, these should be re-stacked in the active period for reptiles (March to October) and secured with wire.

Hedgehog Highways

Rationale

- 3.81 The site has potential to support hedgehogs which typically have large home ranges and pass through a network of gardens and greenspaces. Enhancement of the site for this species will increase its long-term suitability.
- 3.82 A series of purpose made gaps at the base of fences will be created as part of the post development landscaping design. These will be located in fence panels separating gardens and along any fences delineating the wider site boundary to enable hedgehogs to pass between the site and the wider landscape. Approximate locations are marked on Figure 1 in Appendix A.

Aims

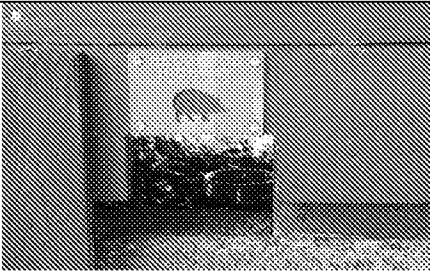
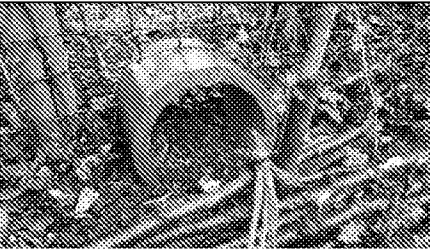
- * To improve the suitability of the on-site habitat for hedgehogs through the provision of 'hedgehog highways'; and
- * to provide connectivity around the site for hedgehogs in the long-term.

Management

Establishment/Installation

- 3.83 A series of purpose-built gaps will be created into fences around the site. The exact number will be determined between the project ecologist and the client once the specification for the fencing is known. The purpose made gaps will be distributed to ensure connectivity around the site. It is assumed some of the rear gardens of the new plots will have fencing and there may be fencing around the wider site boundary.
- 3.84 There are a number of fencing contractors who provide purpose made fence panels with gaps alternatively the gaps can be created retrospectively once the fencing has been installed.
- 3.85 The gaps must measure 13cm x 13cm to enable hedgehogs to pass through them but this will restrict use by cats and dogs and larger mammals. The gaps must be flush with the ground and can be rectangular in shape or rounded providing the core dimensions are sufficient to enable hedgehogs to pass through. In lap board fencing the holes can be cut out or, for chain link or wire fencing, a hole can be cut at the base of the wire and a section of pipe can be installed to create a tunnel ensure the hole remains fit for purpose.
- 3.86 Signs stating 'Hedgehog Highway' should be put above the holes to reduce the risk of closure by occupants of the units.

Table 3.4: Hedgehog Highway Details

Example	Dimensions W x H (cm)
	13 x 13
	At least 13 x 13

Picture Credit: <https://www.hedgehogstreet.org>

Maintenance

- 3.87 The gaps should be checked and cleared of debris as necessary. If the fence panels are replaced, the gap must be recreated in any replacement panel.

Disposal of Wastes

- 3.88 Felled trees and cleared scrub will either be removed off-site for recycling or retained on-site for composting. Any felled timber could be used towards the maintenance of the log piles.

Long-Term Site Management

- 3.89 A five-year management schedule is included in Appendix B. This must be implemented by the future management company and passed onto the occupants, as required, in order to ensure the long-term management of ecological features at the site.

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Appendix A

Ecological Enhancement Plan



Figure 1: Old Mead Road Ecological Enhancement Plan

Drawn by: CT
 Date: 07/04/2020
 Scale: See Plan
 Orientation: See Plan



Appendix B

5 Year Management Schedule

Old Mead Road Five Year Ecological Management Plan					V Optimal period for task ê Alternative period for task Where no year is specified the activity must be undertaken in the year of implementation of the management plan				
Management Tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Black Ditch And 5m Buffer Area									
Grassland Management -Mowing	V			V	V	V	V	V	V
Manage scrub encroachment	V			V	V	V	V	V	V
Aquatic Planting	V			V					
Management of Aquatic Planting	V			V	V	V	V	V	V
Hedgerow/Tree/Shrub Planting									
Planting		V	V	ê					
Mulching				V	V	V	V	V	V
Pruning	V			V	V	V	V	V	V
Replacement of Specimens (as required)	V	V	V		V	V	V	V	V
Amenity Grassland									
Soil preparation (assumes no need to treat perennial	V	V							
Seeding	V	V							

Old Mead Road Five Year Ecological Management Plan					V Optimal period for task ê Alternative period for task Where no year is specified the activity must be undertaken in the year of implementation of the management plan				
Management Tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Watering to aid establishment (to commence from	V	V	V		V				
Mowing to maintain a 20-40mm sward height (not J une)	V	V	V	V	V	V	V	V	V
Relaxed mowing (if possible for some of the sward)	V			V	V	V	V	V	V
Treat perennial weeds if required		V	V		V	V	V	V	V
Re-Seeding bare patches	V	V	V		V	V	V	V	V
Log Piles									
Install log piles		V							
Manage scrub encroachment	V			V	V		V		V
Repair log piles as required		V	V		V	V	V	V	V
Hedgehog Highways									
Install gaps under fences	V	V	V	V					
Monitor/replace and clear debris as required		V	V		V	V	V	V	V
Bird Boxes									

Old Mead Road Five Year Ecological Management Plan					V Optimal period for task ê Alternative period for task Where no year is specified the activity must be undertaken in the year of implementation of the management plan				
Management Tasks	Jan-Mar	Apr-Jun	Jul-Sep	Oct-Dec	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5
Install bird boxes	V	V	V	V					
Monitor use of bird boxes (can be carried out by management team)		V	V		V	V	V	V	V
Cleaning of bird boxes (if not in regular use)	V			V		V	V	V	V
Annual check of attachment/fixings	V			V		V	V	V	V
Bat Boxes									
Install bat boxes	V	V	V	V					
Generic									
Removal and Replacement of dead or dying shrubs or trees	As required				V	V	V	V	V
Remove any accumulated rubbish	Throughout				V	V	V	V	V
Pest and disease monitoring	Throughout				V	V	V	V	V