



**STREET BUILDINGS,
NORTH END ROAD, YAPTON**

Extended Phase 1 Habitat Survey

For and on behalf of

Sam Langmead

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CORYLUS ECOLOGY

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CONTENTS

	Page Number
1.0 Introduction	1
2.0 Methodology	2
3.0 Results	4
4.0 Evaluation and Recommendations	14
5.0 Conclusion	20

References

Tables

Table 1 – Bat Tree Schedule

Figures

Figure 1 – Phase 1 Habitat Map and Bat Building Plan

Figure 2 – Annotated Photographs

Appendices

Appendix 1 – Bat Legislation

Appendix 2 – Nectar Rich Plants List

1.0 INTRODUCTION

- 1.1 Corylus Ecology has undertaken an Extended Phase 1 Habitat Survey of an area of land off North End Road in Yapton, East Sussex, hereinafter referred to as 'the Site'. The total Site and survey area covers approximately 1.81ha and includes grazing paddocks and three stables with treelines and hedgerows along the boundaries.
- 1.2 The Site is located within a semi-rural environment approximately 870m to the north of Yapton village centre at OS grid reference at Site centre is SU 97820 04001. The River Arun is approximately 2.4km to the east. The nearest towns are Arundel and Little Hampton, 3.6km to the north-east and 4km to the east respectively. The Site is bounded by another horse stables with paddocks to the south-west, an arable field to the north-west, a grazing field to the north-east and North End road to the south-east. There is also a residential house adjacent to the north-eastern and south-eastern corners.
- 1.3 The proposals include development of up to 45 dwellings and associated landscaping: the development area covers 1.4ha and the area to landscaped open space covers 0.31ha. The stables will be demolished.
- 1.4 The Extended Phase 1 Habitat Survey provides information relating to the habitats within the Site and identifies potential for and, if apparent, evidence of use by protected species. In addition, it provides recommendations for further surveys if required.
- 1.5 The objectives of the surveys were to:
- Classify and map the habitats within the Site according to those within the Phase 1 manual;
 - Determine the potential for protected species to occur within the Site.

Site Information

- 1.6 A Bat Building Survey of the onsite buildings has been undertaken by Sue Harris Bat Surveys (Sue Harris Bat Surveys, June 2017). No further surveys in relations to bats and the buildings were recommended.

2.0 METHODOLOGY

2.1 Desk Study

- 2.1.1 Records of designated sites, priority habitats and granted European Protected Species Mitigation (EPSM) Licences within 3km of the Site were sought from freely available internet resources such as the Multi-Agency Geographic Information for the Countryside (MAGIC) interactive mapping service (DEFRA, 2016). Records of protected species and designated sites were sought from Sussex Biodiversity Record Centre (SBRC) encompassing a 2km search area.

2.2 Extended Phase 1 Habitat Survey

- 2.2.1 The Site was subject to an Extended Phase 1 Habitat Survey on 16th August 2017. The habitats present within the Site were mapped in accordance with the 'Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit' (JNCC, 2003). Habitat areas and features of topographical and/or ecological interest were described in the form of target notes. These were later used to create botanical species lists by target note area and also to create a colour coded Phase 1 Habitat Map. All nomenclature follows Stace (2010). Non-native and invasive species were also identified and mapped where appropriate.

2.3 Protected Species Assessment

- 2.3.1 The Extended Phase 1 Habitat Survey included an assessment of the potential for the Site to support protected species. This type of survey aims to assess the potential for protected species to occur due to the habitats present. It does not include any species specific survey methods that are designed to demonstrate whether the Site is in fact used by such species. With regard to badger *Meles meles*, field signs of badger presence were searched for within the Site, including any holes, scrapes, latrines, pushes and hairs.

Bat Tree Assessment

- 2.3.2 As part of the protected species assessment, a ground level investigation of all suitable trees within and immediately adjacent to the Site was carried out to identify bat potential. Bats may use any crack or hole (such as woodpecker holes), splits or flaking bark and ivy (JNCC, 2004). Bats will also use different roosts at different times of the year, which can make it difficult to definitely locate bat roosts in trees. Field signs to look for include dark streaking below holes and crevices, or droppings under access points. Chattering noises emitted by bats may also be audible, particularly during the summer. However, even where bats are known to occur, such signs are not always evident.
- 2.3.3 Trees were placed into one of four categories as described below (Collins, 2016):

High: Trees with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis, and potentially for longer periods of time due to their size, shelter protection, conditions and surrounding habitat.

Moderate: A tree with one or more potential roost sites that could be used by bats, but which is unlikely to support a roost of high conservation status.

Low: A tree of sufficient size and age to contain potential roost features but with none seen from the ground, or features seen with only very limited roosting potential.

Negligible: Negligible features likely to be used by bats.

- 2.3.4 Trees were also noted if they supported ivy *Hedera helix*. Ivy can do one of two things; very old, dense ivy can provide cavities for bats between the thick interwoven stems and the tree trunk or it can conceal features in the tree itself. The former would be classed as *Moderate* and the latter would be *Low*.

3.0 RESULTS

3.1 Desk Study

Statutory Designations

- 3.1.1 The only statutory designated site within a 3km radius of the Site is South Downs National Park, approximately 2km to the north-east. This park consists of a matrix of habitats including sheep-grazed downland, farmland, flower-rich meadows, wetland, coastal areas and heathland. The habitats support rare and internal fauna and floral species including the Duke of Burgundy butterfly *Hamearis lucina*, silver-spotted-skipper *Epargyreus clarus* butterfly, all four species of reptile and breeding colonies of kittiwakes and fulmars.
- 3.1.2 Climbing Beach Site of Special Scientific Interest (SSSI) approximately 4.5km to the south-east of the Site. Fairmile Bottom SSSI and Local Nature Reserve (LNR) approximately 4.6km to the north of the Site and Arundel SSSI is approximately 4.9km to the north-east. The Site does not fall within the SSSI Impact Risk Zones for these designated sites.

Ancient Woodland

- 3.1.3 The only areas of ancient woodland within a 3km radius of the Site are to the north and the nearest is Lake Copse which is a small fragment (2.5ha) of ancient and semi-natural woodland. Binstead wood is a larger area of ancient and semi-natural woodland (20.24ha) approximately 2.4km to the north and this is connected to Lake Copse via a shaw of deciduous woodland.

Priority Habitats

- 3.1.4 Under Section 41 of The Natural Environment and Rural Communities (NERC) Act 2006, the Secretary of State was obliged to publish a Priority Habitats Inventory which is a list of habitats and species of principal importance for the conservation of biodiversity in England. Within a 3km radius of the Site there are four Priority Habitat types: Coastal and Floodplain Grazing Marsh, Woodpasture and Parkland, Deciduous Woodland and Traditional Orchard. The dominant priority habitat is Coastal and Floodplain Grazing Marsh and the nearest area is 1km to the north-east. The nearest type of priority habitat to the Site is Deciduous Woodland 650m to the west. There are two areas of Woodpasture and Parkland and the nearest is 1.3km to the north. The nearest area of Traditional Orchard is 1.3km to the north-east.

European Protected Species Mitigation Licences

- 3.1.5 There is one record of a European Protected Species Mitigation (EPSM) Licence which has been granted within a 3km radius of the Site. This record relates to bats and allowed the destruction of a resting place of 45kHz pipistrelle *Pipistrellus pipistrellus* for a development approximately 2.4km, active between 2016 and 2021.

Protected Species - Bats

- 3.1.6 SBRC has provided a total of 34 records of bats within a 2km radius of the Site and of these 15 are roost records including one maternity roost, one feeding roost and 13 records of unspecified roosts. The following eight species have been recorded: Western Barbastelle *Barbastella barbastellus*, Serotine *Eptesicus serotinus*, Natterer's bat *Myotis nattereri*, noctule *Nyctalus noctule*, Nathusius pipistrelle *P. nathusii*, 45kHz pipistrelle, 55kHz pipistrelle *P. pygmaeus* and brown long-eared bat *Plecotus auritus*.
- 3.1.7 The maternity roost record is a roost of an unspecified bat species. This record is from 2014 and approximately 1.9km to the north-east of the Site. The other unspecified roost records are bat roosts of serotine, 45kHz pipistrelle, 55kHz pipistrelle, brown long-eared bat, *Myotis* sp., and Pipistrelle sp. and these range from between 1988 and 2015. The 2015 unspecified roost records are records of 55kHz pipistrelle and 45kHz pipistrelle roosts. In 2015, a roost of 220 55kHz pipistrelle bats was recorded approximately 1.7km to the north-west. A large roost of pipistrelle sp. (346 individuals) was found present in 2001 in a building approximately 1.7km to the north-west. The peak counts of bats in these latter two records are indicative of a maternity roost.
- 3.1.8 Six non-roost records of western Barbastelle have been provided and all of these are from 2015. These records were obtained during a radio-tracking project and are from six different locations approximately 2km to the north-west.

Protected Species – Amphibians including Great Crested Newt

- 3.1.9 The desk study has provided records of five amphibian species including great crested newt (GCN) *Triturus cristatus*, smooth newt *Lissotriton vulgaris*, palmate newt *L. helveticus*, common frog *Rana temporaria* and common toad *Bufo bufo* within 2km of the Site. There are a total of six GCN records and these range from between 2002 and 2012. Two of the six records are from 2012 and 1.5km to the west. The nearest records of GCN are from 650m to the south and this includes two records from 2002. There are total of seven records of palmate newt and 12 records of smooth newt and the nearest for both species are from 1.7km to the north-west from 2005. Seven records of common toad and 12 records of common frog have been provided and the nearest records of both species are from 980m to the south-west and range from between 2000 - 2010.

Protected Species - Reptiles

- 3.1.10 The desk study has revealed that four species of reptile have been recorded within 2km of the Site including slow-worm *Anguis fragilis*, grass snake *Natrix natrix*, adder *Vipera berus* and common lizard *Zootoca vivipara*. There are 39 records of slow worm and these range from between 1995 and 2015. There are a total of 15 slow worm records from 2015 and the nearest is from 1.4km to the north-west of the Site and includes a count of eight slow worm. The nearest records of slow-worm to the Site are from

1.2km to the north-east and south-east and both are from 2002. Seventeen records of grass snake ranging from between 1992 and 2016 have been provided. The nearest record is also the most recent (from 2016) and is from 782m to the north-west, in Barnham. There are two records of adder including one from 1998 and 1.4km to the south-west and one from 2002 and 1.7km to the north-west. Regarding common lizard, there are 35 records ranging between 2000 and 2015: the 2015 record is from 1.4km to the north-west and the nearest is from 970m to the south-west and includes records from between 2000 and 2010.

Protected Species – Hazel Dormice

- 3.1.11 One record of hazel dormice *Muscardinus avellanarius* within a 2km radius of the Site has been provided. This record is from 2004 and 1.7km to the south of the Site.

3.2 Extended Phase 1 Habitat Survey

- 3.2.1 The Site contains three horse stables, a small working yard and grazing paddocks. The south-western and north-western boundaries are formed of mature and semi-mature tree lines with no understorey and the north-eastern and south-eastern are formed of species-poor hedgerows. The habitats present within the Site are shown on Figure 1, with further detail provided by way of specific target notes: these are denoted by the letters 'TN'. Photographs of selected target notes are provided within Figure 2.

Scattered trees

- 3.2.2 The south-western boundary comprises a line of mature trees, TN19. The treeline is dominated by Lombardy poplar *Populus nigra 'Italica'* and crack willow *Salix fragilis* with wild cherry *Prunus avium*, hawthorn *Crataegus monogyna* and laburnum *Laburnum anagyroides*. The trees are widely spaced and there is no understorey as it grazed by horses. There is a mix of post and wire and electrical fencing along the boundary.
- 3.2.3 The north-western boundary is also formed of a mature treeline, TN11. The dominant species is semi-mature Lombardy poplar with elder *Sambucas nigra*, English elm *Ulmus procera* and black poplar *Populus x canadensis* at its northern end. The bark around the lower sections of some of the tree trunks shows evidence of deer grazing. There is no understorey and the trees are widely spaced. There is a mix of post and wire and electrical fencing along the boundary.
- 3.2.4 On the northern corner of the Site there is a dirt track (TN12) which extends north and connects to Maypole Lane road. The south-eastern boundary of the track is formed of mature trees (TN13) and the dominant species is ash *Fraxinus excelsior* with Norway Maple *Acer platanoides* and sycamore *A. pseudoplatanus*.

Semi-improved grassland with ruderal species

- 3.2.5 In the working yard area in the south-west of the Site there is an area of unmanaged semi-improved grassland with ruderal species, TN2. The sward is dominated by perennial rye-grass *Lolium perenne*, white clover *Trifolium repens* and knotgrass *Polygonum aviculare*. Other grass species noted to be abundant include creeping bent *Agrostis stolonifera* and false oat-grass *Arrhenatherum elatius*, frequent rough meadow-grass *Poa trivialis* and occasional Yorkshire-fog *Holcus lanatus* and common couch *Elymus repens*. Regarding herbs species, pineapple weed *Matricaria discoidea* is abundant throughout the grassland and ribwort plantain *Plantago lanceolata*, selfheal *Prunella vulgaris* and creeping buttercup *Ranunculus repens* are frequent. Towards the south-western edge pendulous sedge *Carex pendula*, field bindweed *Convolvulus arvensis*, common nettle *Urtica dioica*, common ivy *Hedera helix ssp. helix*, broad-leaved dock *Rumex obtusifolius*, rosebay willowherb *Chamerion angustifolium*, bristly oxtongue *Picris echioides* and scentless mayweed *Tripleurospermum inodorum* are present. There is one dead suckered elder *Sambucus nigra* along the fence on the south-western boundary. Towards the north-eastern side of the grassland lesser burdock *Arctium minus*, white dead-nettle *Lamium album*, red dead-nettle *L. purpureum*, petty spurge *Euphorbia peplus*, groundsel *Senecio vulgaris* and common mallow *Malva sylvestris* are abundant. In the north-eastern corner tall common nettle *Urtica dioica* is locally dominant.
- 3.2.6 To the north-west of the working yard in the south-west (TN2) there is an area of tall, unmanaged grassland TN2a. The vegetation assemblage consists of similar species to TN2, however ground-ivy *Glechoma hederacea*, smooth sow thistle *Sonchus oleraceus*, hogweed *Heracleum sphondylium*, winter heliotrope *Petasites fragrans*, mugwort *Artemisia vulgaris* and fat-hen *Chenopodium album* are also present.
- 3.2.7 Through the centre of the grassland there is wide track of frequently managed semi-improved grassland, TN3. The sward is short and tight and consists of perennial rye grass, creeping buttercup, greater plantain *Plantago major*, lesser plantain, yarrow *Achillea millefolium*, red clover, meadow buttercup *R. acris*, Yorkshire-fog, lesser burdock, daisy *Bellis perennis*, lesser stichwort *Stellaria graminea* and common chickweed *Stellaria media*.
- 3.2.8 The majority of the Site consists of grazing paddocks, some of which are heavily grazed (TN4a and TN4b) and some which are not (TN4) and as a result the sward is tall (approx. 60-100cm). There are areas of bare earth in TN4a and TN4b due to heavy grazing and poaching by horses. The dominant grass species is false-oat grass with abundant Yorkshire-fog and creeping bent, occasional perennial rye grass and rough-meadow grass and rarely occurring crested dogs-tail *Cynosurus cristatus*. The herb assemblage is also tall and ribwort plantain is dominant with abundant broad-leaved dock and scentless mayweed and frequent lesser burdock, wall lettuce *Lactuca muralis*, field bindweed, white dead-nettle, creeping buttercup, red clover, cat's-ear *Hypochaeris radicata*, nipplewort *Lapsana communis*, common chickweed,

yarrow and white clover. Species noted to occur rarely include selfheal and common bird's-foot-trefoil *Lotus coniculatus*. Along the margins hoary ragwort *Jacobaea erucifolia*, rosebay willowherb, cut-leaved crane's-bill *Geranium dissectum* and smooth hawk's-beard *Crepis capillaris* are present. Common nettle and spear thistle *Cirsium sativa* are locally dominant in areas.

- 3.2.9 To the north of the yard and stables is a small residential garden (TN14) with well managed semi-improved grass and vegetable planting. The garden could not be accessed by the surveyors and was surveyed from an adjacent vantage point. The sward consists of similar species to TN2.

Tall Ruderal

- 3.2.10 In the north-western corner there is an area of tall ruderal, TN15. The vegetation is dominated by common nettle with greater burdock, prickly sow thistle *S. asper*, prickly lettuce *Lactuca serriola*, spear thistle, creeping thistle and vervain *Verbena officinalis*. Woody sapling species are also present including elder, butterfly bush and hawthorn.
- 3.2.11 There are wide margins of tall ruderal either side of the access track in the north of the Site, TN16. The dominant species is common nettle with black horehound *Ballota nigra*, spear thistle, common ivy, hogweed, garlic mustard *Alliaria petiolata*, greater burdock, common mallow, prickly sow-thistle, bristly ox-tongue, weld *Reseda luteola*, wall barley *Hordeum murinum*, scentless mayweed and prickly lettuce.

Spoil

- 3.2.12 In the yard area in the north-east of the Site there are three spoil piles, these piles are part of the working stables and appear to be regularly moved and disturbed:
- S1 consists of freshly chopped logs and is located on bare earth and measures approximately 3mx 2m.
 - S2 is located within the area of tall ruderal (TN2) and comprises fresh brash and garden waste. The spoil pile is large (4mx2m) and high (c. 2.5-3m).
 - S3 is a large pile of manure, earth, brash and garden waste.

Hardstanding

- 3.2.13 To the south-east of the Site next to the access there is an area of hardstanding (TN1) with ephemeral species colonising. The grass and flora vegetation is sparsely distributed and species recorded include perennial-rye grass, wall barley, rough-meadow grass, pineapple weed, scentless mayweed, common nettle, Shepard's purse *Capsella bursa-pastoris* and knotgrass.

Disturbed Earth

- 3.2.14 The access track (TN12) on the northern corner of the Site is wide and consists of heavily disturbed earth with tall ruderal species colonising. The dominant species is common nettle with abundant common ragwort, rosebay willowherb, fat-hen, herb-Robert *Geranium robertianum*, petty spurge *Euphorbia peplus*, ground-ivy, dandelion, elder saplings, broad-leaved dock and creeping buttercup. There are current construction works in place for a new development immediately adjacent to the west of the access track.
- 3.2.15 There is an area of bare earth in the working yard in the south-west of the Site, TN17.

Species-poor Hedgerow

- 3.2.16 The southern end of the south-western boundary comprises a species-poor hedgerow, TN5. The hedgerow comprises semi-mature and mature elder, beech *Fagus sylvatica*, hawthorn, butterfly bush *Buddleja davidii*, pacific dogwood *Cornus nuttallii*, field maple, plum *P. domesticam*, holly *Ilex auifolium* with common ivy.
- 3.2.17 The north-eastern boundary is formed of a managed species-poor hedgerow (TN9) that is approximately 3.5m tall. The hedgerow is dominated by mature hawthorn with common ivy and occasional semi-mature oak and elder. The base of the hedgerow comprises tall common nettle, creeping thistle and occasional bramble and dead-nettle and has been grazed short in places where horses have been able to reach
- 3.2.18 To the south of the hedgerow TN9, and the north-east corner of the Site, is a managed species-poor hedgerow, TN10 that is approximately 3.5m tall. The hedgerow is dominated by mature hawthorn with damson sp. *Prunus* sp., sycamore *Acer pseudoplatanus*, common ivy and hedge bindweed. Hazel *Corylus avellana* and Eucalyptus sp. were noted to occur rarely in the hedgerow. The understorey is dominated by tall common nettle.
- 3.2.19 Along the north-eastern boundary of the residential garden (TN18) is a tall hedgerow formed of plum, sycamore, hazel, silver birch *Betula pendula* and hawthorn.

3.3 Protected Species Assessment*Amphibians including GCN*

- 3.3.1 There are no waterbodies within the Site and two known ponds within a 250m radius, however only one existing pond. Pond P1 is the nearest marked pond and approximately 155m to the south-west of the Site, however google earth images reveal that this pond was filled in sometime in 2014 and now no longer present.

- 3.3.2 Pond (P2) is approximately 200m to the north of the edge of the access track on the northern corner of the Site and 275m from the main Site and google earth images reveal it to be within an area of grassland with scattered trees, which is suitable for GCN. The terrestrial habitat between the Site and P2 consists of an arable field with hedgerows along the boundaries, housing and Maypole Lane road, a minor road which may act as a barrier to newt dispersal.
- 3.3.3 The Site contains limited areas of suitable terrestrial habitat for GCN in the form of tall ruderal and unmanaged grassland and hedgerows, which provide sheltered foraging and commuting habitat. The spoil and brash piles in the south-east of the Site are potentially suitable refugia features for GCN and other amphibians, however these are constantly disturbed as part of the working stables. However, the dominant habitat within the Site is short-grazed grassland (TN4a and TN4b) with areas of bare earth which provides no shelter and it is considered that the areas of tall grassland and ruderal vegetation (TN4) are unlikely to be suitable for GCN for an extended period of time as they are used for horse grazing on a regular basis. Additionally, the spoil piles in the south-eastern area are within the working yard therefore are likely to be regularly created/removed which reduces their suitability for hibernating GCN and other amphibians.

Reptiles

- 3.3.4 The areas of tall grassland, ruderal vegetation and spoil/brash piles provide limited opportunities for reptile foraging, commuting and hibernating. However, these habitats are likely to be regularly disturbed and short-grazed reducing their suitability to support a population of reptiles for an extended period of time. The Site is relatively isolated from suitable reptile habitat in the wider landscape by an arable field to the north-west, horse paddocks to the south-west and North End road to the south-east. To the north-east is a large area of grassland with hedgerows along the boundaries, which may contain potentially suitable reptile habitat, however this habitat appears to be irregularly managed.

Bats - Trees

- 3.3.5 All suitable trees within the Site boundary were assessed for their potential to support day roosting bats under the Bat Conservation Trust BCT guidelines (Collins, 2016). The results of the bat tree assessment are shown in Table 1 below:

Table 1 – Bat tree assessment results

Tree number	Arboricultural Tree report number (March 2017)	Species and location	Description of features	Level of potential
T1	T1	Lombardy poplar South-western boundary (eastern end) SU 97802 03957	Woodpecker hole in the main trunk and on the north facing side at approximately 13m. This hole appears to extend back into a cavity suitable for a large number of bats.	High
T2	T42	Lombardy poplar South-western boundary (western end)	Dead tree with a small blind hole on the east facing side of the trunk. This hole does not extend back into a cavity and is not suitable for a bat roost.	Negligible
T3	T79	Norway maple Northern end of access track, on the eastern side	Mature tree with ivy cover. The ivy stems are not thick enough to create suitable cavities for a bat roost, however may conceal features on the main trunk of the tree.	Low
T4	T6	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T5	T12	Lombardy poplar South-western boundary	No features suitable to support a bat roost.	Negligible
T6	T16	Lombardy poplar South-western boundary	No features suitable to support a bat roost.	Negligible
T7	T23	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T8	T25	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T9	T29	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible

T10	T28	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T11	T31	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T12	T46	Crack willow South-west boundary	No features suitable to support a bat roost.	Negligible
T13	T80	Norway maple Western side at northern end of access track (TNX)	No features suitable to support a bat roost.	Negligible
T14	T87	Ash Eastern side at southern end of access track (TNX)	No features suitable to support a bat roost.	Negligible
TN19	T1 – T46 excl. those listed above	Lombardy poplar and crack willow	No features suitable to support a bat roost.	Negligible
TN11	T47 – T77 excl. those listed above	Lombardy poplar and crack willow	No features suitable to support a bat roost.	Negligible
TN13	T79 – T88 excl. those listed above	Lombardy poplar and crack willow	No features suitable to support a bat roost.	Negligible

Bats – Habitat

- 3.3.6 The optimal bat habitat within the Site are the treelines/hedgerows along the boundaries. These boundary features provide suitable linear corridors for bats commuting through the landscape and offer some foraging opportunities, however the lack of an understorey and limited species diversity along the treelines reduces their suitability for foraging. The Site is dominated by horse-grazed paddocks and these are sub-optimal for foraging bats, particularly where the sward has been heavily grazed and is short. The landscape immediately to the north-west and south-west of the Site is sub-optimal for bats consisting of an arable field and horse paddocks, but immediately to the north-east is grassland with hedgerows/treelines which offers suitable foraging and commuting opportunities. The wider landscape is considered to be of sub-optimal quality for bats being dominated by arable and grazing fields with few areas of woodland. The urban habitats of Yapton to the south of the Site are poor for foraging and commuting, but likely to provide roosting opportunities for bats. Overall, the Site is considered to have 'Low' to 'Moderate' suitability for foraging and commuting bats under the BCT guidelines.

Dormice

- 3.3.7 The hedgerows and treelines within the Site are species-poor and do not provide a range of suitable food plants to support dormice throughout the year. The boundary features are connected to other small sections of hedgerow in the immediate surrounding landscape, however these offsite hedgerows are curtilage within residential gardens and do not connect to areas of woodland therefore are unlikely to support a population of dormice.

Badger

- 3.3.8 No signs of badger, including setts, tracks, latrines or snuffle holes, were recorded within the Site.
- 3.3.9 The entire Site is suitable for hedgehog foraging and commuting. The spoil and brash piles provide potential features suitable for hibernation, however the regular disturbance decreases their suitability.

Breeding Birds

- 3.3.10 The boundary treelines and hedgerows are suitable for breeding birds.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 Overview

- 4.1.1 An Extended Phase 1 Habitat survey has been undertaken at land off North End road in Yapton, East Sussex, in August 2017. There were no rare or nationally scarce botanical species or habitats identified within the Site. The Site contains a limited diversity of habitats and is largely horse-grazed paddocks. The features of highest ecological interest include the species-poor hedgerows and treelines along the boundaries.
- 4.1.2 There are three horse stables in the south-west and a Bat Building survey was undertaken by Sue Harris Bat Surveys in June 2017 (Sue Harris Bat Surveys, June 2017). The buildings were not surveyed by Corylus Ecology during the Extended Phase 1 Habitat survey.
- 4.1.3 The current proposals for the Site involve the development of up to 45 residential dwellings and associated landscaping: the development area covers 1.4ha and the area to be landscaped open space covers 0.31ha. The access road will be created along the existing access track on the northern corner of the Site and the existing access to the south-east will be used for pedestrians/cyclists only. The stables will be demolished.

4.2 Protected Species Assessment

Amphibians

- 4.2.1 The desk study has shown that GCN are within the local landscape with the nearest records from 650m to the south of the Site in 2002. There are no waterbodies within the Site and one existing pond within a 250m radius. The nearest existing pond (P2) is 200m to the north and this could not be seen from the Site and its suitability to support GCN is therefore not known. Pond P2 is beyond Maypole Road lane which may act as a barrier to newt movement, however it is a minor road therefore is not considered to be a significant barrier.
- 4.2.2 The areas of tall grassland and ruderal vegetation are suitable for GCN foraging and commuting however these areas are within horse paddocks therefore are likely to be regularly disturbed and grazed short reducing their suitability for GCN for extensive periods of time. The spoil/brash piles within the working yard area are also unlikely to be suitable for hibernating GCN as they are likely to be subject to regular disturbance. Taking into account the distance of the nearest pond to the Site (>200m), the sub-optimal intervening terrestrial habitat and the low quality terrestrial habitat onsite, it is considered unlikely that GCN would be moving between pond 2 and the Site.

- 4.2.3 It is recommended that the regular management of the grassland within the paddocks and working yard continues until works commence to prevent these habitats becoming suitable for GCN.

Reptiles

- 4.2.4 The tall ruderal and grassland vegetation provides suitable foraging and commuting habitat for reptiles, however these habitats are within the grazing paddocks or yard area therefore are likely to be heavily grazed and disturbed on a regular basis. Furthermore the Site is relatively isolated from suitable reptile habitat in the surrounding landscape. The desk study has shown that four species of common reptile are present in the wider landscape, however the nearest record of a reptile to the Site is from 970m to the south-west. Taking into account the regular disturbance reducing the suitability of the onsite habitats for reptiles and the unsuitable offsite habitats so the north-west, south-west and south-east it is unlikely that a viable population of reptile would be using habitats onsite for an extended period of time. No further surveys for reptiles are considered necessary.

- 4.2.5 It is recommended that the regular management of the Site continues up until the works on Site commence to prevent the habitats onsite becoming suitable for reptiles.

Bats - Trees

- 4.2.6 A bat tree assessment of all suitable trees has been undertaken. Of these, one tree has 'High' potential to support day roosting bats (T1) and one tree has 'Low' potential to support day roosting bats under the BCT guidelines. It is understood, under the outline proposals, these two trees will not be removed. However, residential houses may be constructed in the area surrounding T1 and the access road into the Site will be immediately to the west of T3, and any bat roosts within T1 and T3 could potentially be indirectly affected by any increase in artificial lighting and disturbance.
- 4.2.7 The BCT guidance for trees with 'High' potential is for three separate survey visits to be undertaken with at least one of these being a dawn re-entry survey. Our interpretation of this is that two emergence surveys can be adequate to address the survey questions but, where a negative result or further questions remain about a potential roost, a third survey may be required. Pre-dawn surveys can be particularly relevant where questions remain about bat emergence points.
- 4.2.8 Under guidance, no further surveys for trees with 'Low' potential are recommended. T3 has been assigned 'Low' potential due to ivy cover potentially concealing features in the main trunk of the tree therefore if the proposals are altered and this tree is to be removed, it is recommended that the ivy is cut at the base and allowed to die back in order to reveal any features in the trunk. The tree should then be inspected by an ecologist prior to felling and subject to a 'soft-felling' approach.

- 4.2.9 **If the proposals are altered so that T1 is to be removed, cut or illuminated by artificial lighting, it is recommended that evening emergence surveys are undertaken of this tree are undertaken.** A minimum of two evening emergence surveys would be required between May and August.
- 4.2.10 If any bats or evidence of bats are found in T1 an EPS licence from Natural England will be required to lawfully destroy the roost(s).
- 4.2.11 It is also understood that an arboricultural tree survey of all trees onsite has been undertaken and trees have been recommended for removal (March, 2017). These trees are identified as T2 and T4 to T14 in Table 1 and all were found to have negligible potential for a bat roost. No further surveys of T2 and T4 to T14 are necessary.

Bat - Habitat

- 4.2.12 The Site has been assessed to have 'Low' to 'Moderate' suitability for foraging and commuting bats (Collins, 2016). The Site largely consists of short-grazed grassland which provides sub-optimal foraging opportunities, however the boundary features are good for foraging and commuting bats and the Site area is likely to be relatively dark during the night-time at present due to the absence of on-Site artificial lighting. The desk study has shown that there at least eight species of bat and 14 bat roosts within the surrounding landscape therefore the Site has potential to be used by foraging and commuting bats.
- 4.2.13 Under the current proposals the treelines/hedgerows along the boundaries will be retained, albeit those trees recommended for removal along the south-western boundary and in the north of the Site. The total Site area is 1.71ha and the development area covers 1.4ha with the remaining 0.31ha to be dedicated landscaped open space. It is considered that the proposals will not have a detrimental impact on the local bat population if the boundary features are retained and enhanced; the greatest impact on bats in this instance will be an increase in artificial lighting in the area and measures to decrease these impacts have been provided below. No further surveys to assess bat activity levels are recommended.
- 4.2.14 The final proposals for the Site will need to be assessed but based on the current proposals the following measures are recommended to mitigate for the effects of the proposals. A sympathetic lighting strategy should be designed, including the following points which take into account best practice guidance (Bat Conservation Trust, 2014):
- There will be **no increase** in artificial lighting or along any of the boundary treelines and hedgerows;
 - Where lighting is necessary away from these areas, the following should be taken into account:
 - Do not provide excessive lighting. Use only the minimum amount of light needed for safety.

- Minimise light spill and eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal; flat cut-off lanterns are best.
- Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects can result in a reduction in insects in other areas, such as the woodland, which bats may be using for foraging.
- Lights should peak higher than 550nm or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb low-flying bat species.
- Reduce the height of any lighting columns, for example by using low bollard LED lighting; light at a low level reduces impact. Where necessary, higher mounting heights can allow lower main beam angles, which can assist in reducing glare.
- Limit the times that lights are on to provide some dark periods, and install movement sensors to limit the duration of lit periods.
- Avoid using reflective surfaces under lights.
- Avoid lighting of any newly provided bat roosting features such as bat boxes or tubes (see section 4.3).

4.2.15 Further measures to enhance the Site for bats have been provided in relation to the National Planning Policy Framework (see section 4.3).

Dormice

4.2.16 The Site does not have potential to support a viable population of dormice. The hedgerows and treelines do not contain a diversity of species suitable for dormouse nesting and foraging throughout the year and are not well connected to areas of suitable dormice habitat in the wider landscape. The desk study has provided one record of dormice from 2004 and 1.7km to the south of the Site. No further surveys are required for dormice.

Breeding Birds

4.2.17 The boundary treelines and hedgerows are suitable for breeding birds. All wild birds, including eggs and chicks, are protected against injury or killing and their nests are protected against damage or destruction when in use under the Wildlife and Countryside Act (1981). It is therefore recommended that any clearance of vegetation is undertaken outside of the breeding bird season, limiting this work to **September-February** inclusive. If these dates do not coincide with clearance work then it is recommended that the vegetation is checked by a suitably experienced ecologist before the works commence. If nests are found, works will need to be delayed until all of the chicks have fledged and the nest is no longer in use.

Mammals including Badger and Hedgehog

- 4.2.18 No signs of badger were recorded within the Site. No further surveys are required.
- 4.2.19 The Site provides suitable habitat for hedgehog. Hedgehogs are protected under the Wild Mammal (Protection) Act 1996 and it is a Species of Principal Importance under the NERC Act 2006. The spoil and brash piles within the Site should be dismantled carefully and by hand during the Spring, Summer or early Autumn months.

4.3 Recommendations with regard to NPPF

- 4.3.1 The National Planning Policy Framework (NPPF) sets out planning policies on the protection of biodiversity and geological conservation through the planning system. Section 11 of the National Planning Policy Framework sets out the Government's current planning policy in relation to conserving and enhancing the natural environment. The NPPF states that "the planning system should contribute to and enhance the natural and local environment by:
- Protecting and enhancing valued landscapes, geological conservation interests and soils;
 - Recognising wider benefits of ecosystem services;
 - Minimising impacts on biodiversity and providing 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".
- 4.3.2 Regarding NPPF and the enhancement of the Site to benefit local wildlife, it is recommended that the general measures detailed below are included in the scheme to maintain and enhance biodiversity.

Landscaping

- The hedgerows and treelines along the boundaries of the Site currently have no understorey and should be plug planted with native tree and shrub species including hornbeam *Carpinus betulus*, hawthorn, blackthorn *Prunus spinose*, rowan *Sorbus aucuparia*, wild service-tree *Sorbus torminalis*, spindle *Euonymus europaeus*, hazel, field maple, dog-rose *R. canina*, guelder rose *Viburnum opulus*, traveller's joy *Clematis vitalba* and honeysuckle *Lonicera periclymenum* which all benefit small mammals and birds. Horse proof fencing should also be installed to prevent this understorey from being under-grazed by horses from adjacent paddocks.
- It is recommended that a range of nectar rich plants are considered for any landscape planting around the gardens of the new properties and in the landscaped open space area. This would benefit local wildlife by providing more nest building opportunities and food sources for small mammals, birds and invertebrates. Species such as lavenders, heathers and honeysuckles are good nectar sources for bumblebees and other insects, and honeysuckle can also be used by birds to forage and nest in. A list

of nectar rich species for bumblebees prepared by the RHS is given in Appendix 1. Flowering plants should be made available for as long as possible through the year by planting a combination of plants which flower during spring, summer and late summer. A 1m wide margin of long-grass should be retained along the base of the boundary features to provide a commuting route and foraging opportunities for invertebrates and small mammals.

- It is recommended that where possible the design of the scheme includes other features that can improve the habitat connectivity for species and enhance the biodiversity of the area. Options include a wildlife pond, areas of fruit trees/orchard and areas of long grass.

Birds

- Nest boxes should be incorporated into the outside of the new dwellings for threatened bird species such as house sparrow *Passer domesticus*. House sparrow is on the BTO's Birds of Conservation Concern 'Red List'. Ready-made wooden or woodcrete colonial boxes are widely available, such as *Schwegler 1SP Sparrow Terrace* or similar. They should be installed during the construction process in groups beneath the eaves of the buildings and they should be placed out of direct sunlight, preferably on the eastern elevations and at least 3m above ground level. They should not be placed directly above any windows or doors. At least one box should be installed on each dwelling.
- Three general purpose bird boxes should be installed on the eastern elevations of mature or semi-mature boundary trees. A suitable example would be the 1N Schwegler Deep Nest Box. This bird box enhances breeding success as it provides protection from predation for a range of small birds. Species such as robins would be particularly attracted to this box if it is placed approximately 1 – 1.5m above the ground in a moist, shady area.

Bats

- Provision of bat roosting features in new buildings. These can be in the form of dedicated bat boxes that can be fitted to internal wall cavities or externally mounted boxes (available from NHBS). These boxes would be positioned close to the eaves or gable apex on the southern and and/or western elevations (boxes on the northern side can also be used to provide hibernation sites).

Hedgehog

- Any closeboard fencing installed would need to be fitted with minimum 12cm square gaps to allow continued movement of hedgerows through the landscape.

5.0 CONCLUSIONS

- 5.1 An Extended Phase 1 Habitat Survey has been undertaken at land off North End road in Yapton, East Sussex. No rare or endangered botanical species or habitats have been identified.

Bats - trees

- 5.2 One tree (T1) has been assessed to have 'High' potential for day roosting bats and one tree (T3) has been assessed to have 'Low' potential for day roosting bats. If the proposals change and will result in the loss or cutting of T1, or there will be an increase in artificial lighting on this tree as a result of the development, further surveys are required. A minimum of two evening emergence surveys would be required during the core bat maternity period (May – August).

- 5.3 Regarding T3, no further surveys are required for trees with 'Low' potential, however if this tree is to be cut or removed then it is recommended that the ivy is cut at the base and the tree is inspected by a suitability experience ecologist prior to any works taking place.

Bats - Habitat

- 5.4 A sensitive lighting strategy has been outlined and this should be followed. There should be no increase in artificial lighting alongside the treelines/hedgerows along the boundaries or in the vicinity of T1.

Other Protected Species

- 5.5 No further surveys for GCN, reptiles, dormice or badgers have been recommended. Recommendations to continue the regular management of the grassland in relation to reptiles and GCN and the clearance of spoil piles and vegetation in relation to hedgehogs and breeding birds have been made.

NPPF

- 5.6 Recommendations have been made in regard to enhancing the Site's biodiversity in accordance with NPPF. These include species-rich plug planting with the existing treelines/hedgerows, generous native planting and the installation of bird and bat boxes.

REFERENCES

Bat Conservation Trust (2014). *Artificial lighting and wildlife*. Interim Guidance: Recommendations to help minimise the impact artificial lighting.

Collins J (ed.) 2016. *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edition) Bat Conservation Trust, London

Harris, S. (June 2017). *Street Buildings North End Road Yapton*. Report of Preliminary Ecological Bat Survey.

JNCC (Joint Nature Conservation Committee) 2004. *The Bat Workers Handbook*. JNCC, Peterborough.

JNCC (Joint Nature Conservation Committee) 2003. *Handbook for Phase I Habitat Survey. A technique for Environmental Audit*. JNCC, Peterborough.

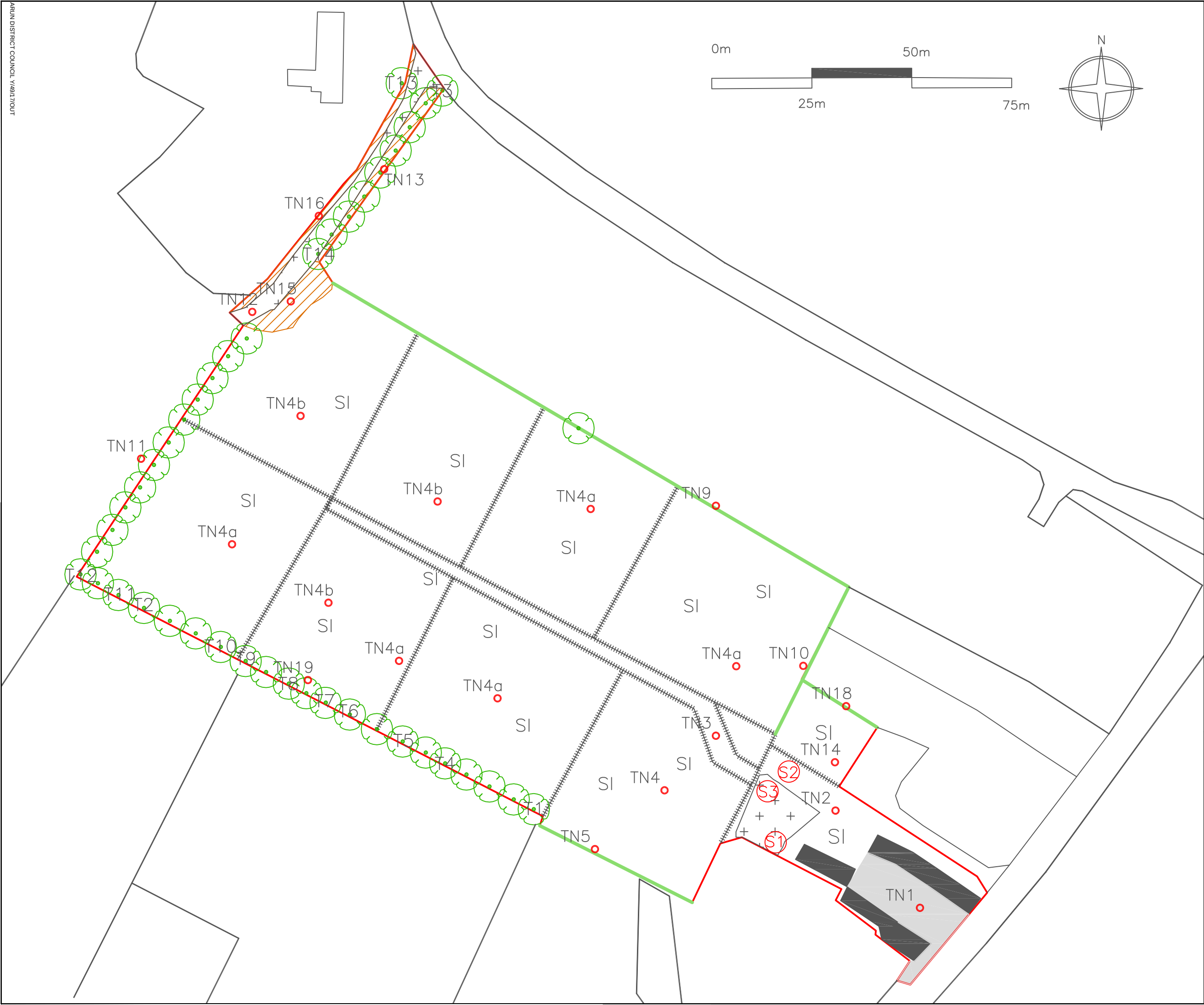
Natural England. 2016. MAGIC website. Available from: <http://magic.defra.gov.uk/>. August 2017

Oldham, R.S., Keeble, J., Swan, M.J.S., and Jeffcote, M. 2000. *Evaluating the Suitability of Habitat for the Great Crested Newt (Triturus cristatus)*. Herpetological Journal, Vol. 10, pp. 143-155.

Rodwell, J. March 2017. *Street Buildings, North End Road, Yapton, Arundel BN18 0DT*. Arboricultural Report.

Rose, F. 2006. *The Wild Flower Key*. Frederick Warne, London.

Stace, C. 2010. *New Flora of the British Isles. 3rd Edition*. Cambridge University Press.



Key

- Site Survey Area
- Tree
- Semi-Improved Grassland
- Tall Ruderal
- Spoil
- Species Poor Hedge
- Fence
- Building
- Hard Standing
- Target Note 1

revision	description	date	checked by

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Project:

North End road, Yapton

Title:

Phase 1 Plan

status		drawing no. Figure 1			
scale	size	date	drawn	checked	
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Figure_1.dwg

Figure 2. Annotated Photographs



Garden to the north-east of the Site, TN18



View of the Site from the south-east with horse paddocks (TN3, TN4a and TN4b)



Access track in north of the Site, TN12



Ungrazed horse paddock, TN4



Working yard area in south-east with hardstanding and buildings (TN1 & TN2)



North-western boundary, TN11



South-western boundary, TN19



Horse-grazed paddock, TN4a

Appendix 1 – Bat Legislation

All British bat species receive legal protection in the United Kingdom. The Wildlife and Countryside Act 1981 (WCA) (as amended) transposes into UK law the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention). The 1981 Act was recently amended by the Countryside and Rights of Way (CROW) Act 2000 and the more recent Habitats Regulations amendments (2010). All British bat species are listed under Schedule 5 of the 1981 Act, and is therefore subject to the provisions of Section 9, which makes it an offence to:

- Intentionally kill, injure or take a bat [Section 9(1)];
- Possess or control any live or dead specimen or anything derived from a bat [Section 9(2)]
- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection [Section 9(4)(b)];
- Intentionally or recklessly obstructs access to any structure or place which a bat uses for shelter or protection [Section 9(4)(c)]
- Sell, offer for sale, possess or transport for the purpose of sale or publish advertisements to buy or sell a bat [section 9(5)]

Bats are also included on Annex IV of Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora (known as the Habitats Directive). As a result of the UK ratifying this directive, all British bats are protected under The Conservation of Habitats and Species Regulations 2010 (The Conservation Regulations). Annex IV of the Habitats Directive requires member states to construct a system of protection as outlined in Article 12, this is done through Part 3 of the Regulations whereby Regulation 41 makes it an offence to:

- Deliberately capture, kill or injure a bat [Regulation 41(1)(a)];
- Deliberately disturb a bat in such a way as to be likely to significantly affect i) the ability of any significant group of animals of that species to survive, breed or rear or nurture their young, OR ii) the local distribution of that species. [Regulation 41(1)(b) and 41(2)];
- Damage or destroy a breeding site or resting place of a bat [Regulation 41(1)(d)].

Under the law, a roost is any structure or place used for shelter or protection. This could be any structure, for example, any building or mature tree. Bats use many roost sites and feeding areas throughout the year. These vary according to bat age, condition, gender and species, as well as season and weather. Since bats tend to re-use the same roosts for generations, the roost is protected whether the bats are present or not.

In addition, four species, the two horseshoes, barbastelle and Bechstein's are included within Annex II of the Habitats Directive for which Member States are required to designate Special Areas for Conservation (SAC's) for their protection.

The UK is a signatory to the Agreement on the Conservation of Bats in Europe, established under the Bonn Convention. The Fundamental Obligations of Article III of this Agreement require the protection of all bats and their habitats, including the identification and protection from damage or disturbance of important feeding areas for bats.



RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

SHORT GRASS, UP TO 15CMS

Ajuga reptans <i>bugle</i>	H
Bellis perennis <i>daisy</i>	H
Campanula rotundifolia <i>common harebell</i>	H
Hippocrepis comosa <i>horseshoe vetch</i>	H
Lotus corniculatus <i>bird's foot trefoil</i>	H
Potentilla anserina <i>silverweed</i>	H
Potentilla erecta <i>tormentil</i>	H
Potentilla reptans <i>creeping cinquefoil</i>	H
Primula veris <i>common cowslip</i>	H
Prunella vulgaris <i>selfheal</i>	H
Ranunculus repens <i>creeping buttercup</i>	H
Sanguisorba minor <i>salad burnet</i>	H
Taraxacum officinale <i>dandelion</i>	H
Thymus polytrichus <i>wild thyme</i>	H
Thymus pulegioides <i>large thyme</i>	H
Trifolium pratense <i>red clover</i>	H
Trifolium repens <i>white clover</i>	H
Veronica chamaedrys <i>germander speedwell</i>	H

HEDGES, SHRUB BORDERS AND WOODLAND EDGE

Acer campestre <i>field maple</i>	S or T
Alliaria petiolata <i>garlic mustard</i>	Bi
Allium ursinum <i>ramsons</i>	B
Aquilegia vulgaris <i>common columbine</i>	H
Ballota nigra <i>black horehound</i>	H
Berberis vulgaris <i>barberry</i>	S
Bryonia dioica <i>white bryony</i>	H/C
Buxus sempervirens <i>common box</i>	S

HEDGES, SHRUB BORDERS AND WOODLAND EDGE (cont.)

Campanula trachelium <i>nettle-leaved bellflower</i>	H
Clematis vitalba <i>old man's beard/traveller's joy</i>	C
Clinopodium vulgare <i>wild basil</i>	H
Cornus sanguinea <i>common dogwood</i>	S
Crataegus monogyna <i>common hawthorn</i>	S or T
Cytisus scoparius <i>common broom</i>	S
Digitalis purpurea <i>common foxglove</i>	Bi
Euonymus europaeus <i>spindle</i>	S
Fragaria vesca <i>wild strawberry</i>	H
Frangula alnus <i>alder buckthorn</i>	S
Galium mollugo <i>hedge bedstraw</i>	H
Galium odoratum <i>sweet woodruff</i>	H
Galium verum <i>lady's bedstraw</i>	H
Geranium robertianum <i>herb robert</i>	A/Bi
Geum urbanum <i>wood avens</i>	H
Hedera helix <i>common ivy</i>	C
Helleborus foetidus <i>stinking hellebore</i>	H
Hyacinthoides non-scripta <i>bluebell</i>	B
Ilex aquifolium <i>common holly</i>	T
Lamium album <i>white deadnettle</i>	H
Lamium galeobdolon <i>yellow archangel</i>	H
Ligustrum vulgare <i>wild privet</i>	S
Lonicera periclymenum <i>common honeysuckle</i>	C
Malus sylvestris <i>crab apple</i>	T
Malva sylvestris <i>common mallow</i>	H
Myosotis sylvatica <i>wood forget-me-not</i>	H
Primula vulgaris <i>primrose</i>	H
Prunus avium <i>wild cherry/gean</i>	T
Prunus padus <i>bird cherry</i>	T
Prunus spinosa <i>blackthorn/sloe</i>	S

Natural England states: You can legally collect small quantities of wildflower seed for your own use, but you must get permission from the land's owner, tenant or other authority, as necessary. Although seed collecting is allowed, you should not dig up native plants – many rare species are protected by law. You can collect seed of even rare plants, but cannot sell/trade seed or progeny.

KEY

T = tree; **S** = shrub; **C** = climber; **B** = bulbs and corms; **A** = annual; **Bi** = biennial; **H** = herbaceous perennial

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

HEDGES, SHRUB BORDERS AND WOODLAND EDGE (cont.)

Ranunculus ficaria <i>lesser celandine</i>	H
Rhamnus catharticus <i>Purging buckthorn</i>	S
Rosa canina <i>Dog rose</i>	S
Rosa rubiginosa <i>sweet briar</i>	S
Rubus fruticosus <i>blackberry</i>	S
Salix atrocinerea <i>grey willow</i>	S - male forms best
Salix caprea <i>goat willow</i>	S - male forms best
Sanicula europaea <i>sanicle</i>	H
Sedum telephium <i>orpine</i>	H
Silene dioica <i>red campion</i>	H
Silene latifolia subsp. <i>alba</i> <i>white campion</i>	H
Smyrniolum olusatrum <i>alexanders</i>	Bi
Sorbus aria <i>common whitebeam</i>	T
Sorbus aucuparia <i>rowan/mountain ash</i>	T
Sorbus torminalis <i>wild service tree</i>	T
Stachys officinalis <i>betony</i>	H
Stellaria holostea <i>greater stitchwort</i>	H
Symphytum officinale <i>common comfrey</i>	H
Teucrium scorodonia <i>wood sage</i>	H
Tilia cordata <i>small-leaved lime</i>	T
Viburnum lantana <i>common wayfaring tree</i>	S
Viburnum opulus <i>guelder rose</i>	S
Vicia cracca <i>common tufted vetch</i>	H
Vicia sativa <i>common vetch</i>	H

DISTURBED GROUND

Agrostemma githago <i>corncockle</i>	A
Anchusa arvensis <i>bugloss</i>	A
Anthemis arvensis <i>corn chamomile</i>	A
Anthemis cotula <i>stinking chamomile</i>	A
Centaurea cyanus <i>cornflower</i>	A
Cichorium intybus <i>chicory</i>	H
Dipsacus fullonum <i>common teasel</i>	Bi
Echium vulgare <i>viper's bugloss</i>	Bi
Glebionis segetum <i>corn marigold</i>	A
Iberis amara <i>wild candytuft</i>	A
Lamium amplexicaule <i>Henbit deadnettle</i>	A
Matricaria recutita <i>scented mayweed</i>	A

DISTURBED GROUND (cont.)

Mentha arvensis <i>corn mint</i>	H
Myosotis arvensis <i>field forget-me-not</i>	A/H
Myosotis arvensis <i>Common forget-me-not</i>	A
Onopordum acanthium <i>cotton thistle</i>	Bi
Papaver dubium <i>long-headed poppy</i>	A
Papaver rhoeas <i>common poppy</i>	A
Sinapis arvensis <i>charlock</i>	A
Sonchus arvensis <i>perennial sowthistle</i>	H
Tussilago farfara <i>coltsfoot</i>	H
Verbascum thapsus <i>great mullein</i>	Bi

FLOWER BEDS

Calluna vulgaris <i>heather / ling</i>	S
Erica ciliaris <i>Dorset heath</i>	S
Erica cinerea <i>bell heather</i>	S
Erica tetralix <i>cross-leaved heath</i>	S

LONG GRASS, ABOVE 50CMS

Arctium minus <i>lesser burdock</i>	Bi
Carduus crispus <i>welted thistle</i>	Bi
Carduus nutans <i>musk thistle</i>	Bi
Chamaenerion angustifolium <i>rosebay willowherb</i>	H
Cirsium arvense <i>creeping thistle</i>	H
Cirsium vulgare <i>spear thistle</i>	Bi
Conopodium majus <i>pignut</i>	H
Cynoglossum officinale <i>hound's tongue</i>	H
Daucus carota <i>wild carrot</i>	Bi
Geranium pratense <i>meadow cranesbill</i>	H
Heracleum sphondylium <i>hogweed</i>	Bi
Hypericum perforatum <i>perforate St John's wort</i>	H
Knautia arvensis <i>field scabious</i>	H
Lathyrus pratensis <i>meadow vetchling</i>	H
Pastinaca sativa <i>wild parsnip</i>	Bi
Succisa pratensis <i>devil's bit scabious</i>	H
Tanacetum vulgare <i>tansy</i>	H

KEY

T = tree; S = shrub; C = climber; B = bulbs and corms; A = annual; Bi = biennial; H = herbaceous perennial

RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

LONG GRASS, ABOVE 50CMS (cont.)

Thalictrum flavum <i>meadow rue</i>	H
Tragopogon pratensis <i>goat's beard</i>	Bi
Verbascum nigrum <i>dark mullein</i>	Bi/H

MEDIUM HEIGHT GRASS, UP TO 50CMS

Achillea millefolium <i>common yarrow</i>	H
Achillea ptarmica <i>sneezewort</i>	H
Agrimonia eupatoria <i>agrimony</i>	H
Anthyllis vulneraria <i>kidney vetch</i>	H
Armeria maritima <i>thrift/sea pink</i>	H
Blackstonia perfoliata <i>yellowwort</i>	A
Campanula glomerata <i>clustered bellflower</i>	H
Centaurea nigra <i>common knapweed/hardheads</i>	H
Centaurea scabiosa <i>greater knapweed</i>	H
Centaureum erythraea <i>common centaury</i>	Bi
Echium vulgare <i>viper's bugloss</i>	Bi
Erigeron acris <i>blue fleabane</i>	A/H
Filipendula vulgaris <i>dropwort</i>	H
Helianthemum nummularium <i>common rockrose</i>	H
Hypochaeris radicata <i>cat's ear</i>	H
Inula conyzae <i>ploughman's spikenard</i>	H
Leontodon autumnalis <i>autumn hawkbit</i>	H
Leontodon hispidus <i>rough hawkbit</i>	H
Leucanthemum vulgare <i>ox-eye daisy</i>	H
Linaria vulgaris <i>common toadflax</i>	H
Malva moschata <i>musk mallow</i>	H
Ononis repens <i>common restharrow</i>	H
Origanum vulgare <i>wild marjoram</i>	H
Pilosella officinarum <i>mouse-ear hawkweed</i>	H
Ranunculus acris <i>meadow buttercup</i>	H
Ranunculus bulbosus <i>bulbous buttercup</i>	H
Reseda lutea <i>wild mignonette</i>	Bi/H
Rhinanthus minor <i>yellow rattle</i>	A
Scabiosa columbaria <i>small scabious</i>	H
Silene vulgaris <i>bladder campion</i>	H
Solidago virgaurea <i>goldenrod</i>	H

PONDS, POND MARGINS AND WET SOILS

Alisma plantago-aquatica <i>water plantain</i>	H
Angelica sylvestris <i>wild angelica</i>	Bi
Butomus umbellatus <i>flowering rush</i>	H
Caltha palustris <i>marsh marigold</i>	H
Cardamine pratensis <i>cuckoo flower/lady's smock</i>	H
Cirsium dissectum <i>meadow thistle</i>	H
Epilobium hirsutum <i>great willowherb</i>	H
Eupatorium cannabinum <i>hemp agrimony</i>	H
Filipendula ulmaria <i>meadowsweet</i>	H
Galium palustre <i>marsh bedstraw</i>	H
Geum rivale <i>water avens</i>	H
Hypericum tetrapterum <i>square-stalked St John's wort</i>	H
Iris pseudacorus <i>yellow iris</i>	H
Lotus pedunculatus <i>greater bird's-foot trefoil</i>	H
Lychnis flos-cuculi <i>ragged robin</i>	H
Lycopus europaeus <i>gypsywort</i>	H
Lysimachia nummularia <i>creeping Jenny</i>	H
Lysimachia vulgaris <i>yellow loosestrife</i>	H
Lythrum salicaria <i>purple loosestrife</i>	H
Mentha aquatica <i>water mint</i>	H
Menyanthes trifoliata <i>bogbean</i>	H
Myosotis scorpioides <i>water forget-me-not</i>	H
Nasturtium officinale <i>common watercress</i>	H
Nuphar lutea <i>yellow water lily</i>	H
Nymphaea alba <i>white water lily</i>	H
Oenanthe aquatica <i>fine-leaved water dropwort</i>	A/Bi
Oenanthe crocata <i>hemlock water dropwort</i>	H
Persicaria amphibia <i>amphibious bistort</i>	H
Persicaria bistorta <i>common bistort</i>	H
Polemonium caeruleum <i>Jacob's ladder</i>	H
Pulicaria dysenterica <i>common fleabane</i>	H
Ranunculus aquatilis <i>common water crowfoot</i>	A/H
Ranunculus flammula <i>lesser spearwort</i>	H
Ranunculus fluitans <i>river water crowfoot</i>	H
Ranunculus lingua <i>greater spearwort</i>	H
Ranunculus sceleratus <i>celery-leaved buttercup</i>	A
Sagittaria sagittifolia <i>arrowhead</i>	H
Sanguisorba officinalis <i>great burnet</i>	H
Scrophularia auriculata <i>water figwort</i>	H

KEY

ARUN DISTRICT COUNCIL - Y49/17/01/1
T = tree; S = shrub; C = climber; B = bulbs and corms; A = annual; Bi = biennial; H = herbaceous perennial



RHS PERFECT FOR POLLINATORS WILDFLOWER LIST

PONDS, POND MARGINS AND WET SOILS (cont.)

Scutellaria galericulata <i>common skullcap</i>	H
Stachys palustris <i>marsh woundwort</i>	H
Valeriana officinalis <i>common valerian</i>	H
Veronica beccabunga <i>brooklime</i>	H

SHINGLE/GRAVEL GARDEN

Cakile maritima <i>sea rocket</i>	A
Crambe maritima <i>sea kale</i>	H
Crithmum maritimum <i>rock samphire</i>	H
Eryngium maritimum <i>sea holly</i>	H
Glaucium flavum <i>yellow horned-poppy</i>	Bi/H
Sedum acre <i>siting stonecrop</i>	H
Sedum album <i>white stonecrop</i>	H
Silene uniflora <i>sea campion</i>	H

KEY

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