Preliminary Ecological Appraisal / NVC survey

Land South of London Road,

Coldwaltham,

West Sussex

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EXECUTIVE SUMMARY

- Wildlife Splash Ltd was commissioned by the South Downs National Park Authority to carry out a Phase 1 ecological survey together with a Phase 2 grassland National Vegetation survey of Land South of London Road, Coldwaltham.
- The Phase 1 survey assesses broad habitats and the potential for the site to support rare and protected species, and the Phase 2 grassland survey assesses whether it would classify as a Habitat of Principal Importance under section 41 of the Natural Environment and Rural Communities Act (2006).
- The survey site is an area of agricultural land at Coldwaltham, West Sussex, which is under consideration as a housing allocation in the South Downs National Park Local Plan (Allocation Policy SD64). Information is required as to the ecological value of the site in order to determine the impacts that a proposed housing development would have upon habitats and species that may be present.
- The site is part of a field, which is approximately 8.1 ha in extent. The proposed development would result in the loss of approximately 2 ha or one quarter of this habitat. The London Road (A29) to the north, housing to the east and grassland to the south and west, immediately border the proposed housing footprint.
- A 2 km search area contains two statutory designated sites and five non-statutory designated sites. The most important site is the Arun Valley SAC, SPA, RAMSAR of which the Waltham Brooks SSSI forms part.
- The Waltham Brooks is situated approximately 160 m from the nearest edge of the proposed development footprint. This is an area of alluvial grazing marsh adjacent to the River Arun that is of national importance for wintering birds.
- No records for protected species or habitats of principal importance were returned for the field in a data search from the Sussex Biodiversity Records Centre. However the site was considered to have the potential to support Badger, birds, foraging bats, Dormouse, Great Crested Newt, Hedgehog and reptiles.
- No signs of Badger sett building or foraging activity were found in and around the site and so further surveys are not considered to be necessary.
- No bat roosts will be impacted by the proposed development, though there may be a flight line along the north west site boundary where the proposed entrance is to be sited. Should there be plans to remove more than a small section of this hedgerow, or to increase light levels along this boundary feature then surveys for commuting bats would be required.
- In order to comply with legislation, any development involving the removal of part of the hedgerow must be taken outside the bird-breeding season (March to August inclusive). If any work involving such clearance were scheduled to take place between the beginning of March and the end of August, a survey to check for nesting birds would be required. No vegetation can be cleared whilst a nest is occupied.

- Although no ground nesting species were using the field at the time of the survey, there is the potential for this to occur. As such, it is recommended that during the winter prior to development the grass be cut short and maintained at a short sward in order that it would be unsuitable for Skylarks.
- No records or evidence of Dormouse was found in the vicinity however, as a precautionary measure, should woody vegetation require removal in order to enlarge the entrance to the site, then a suitably qualified ecologist would be required to search that area for the presence of Dormouse nests (summer breeding and winter hibernation) prior to this removal.
- The site is sub-optimal for Great Crested Newt, however, as there is potential foraging habitat and given the optimal habitat and potential breeding sites to the south, the likely presence of this species should be assessed in the form of assessing the suitability of water bodies within the accepted 500 m dispersal distance for breeding Great Crested Newts.
- The habitat, though with a high cover of flowering plants, is likely to support only a limited number of invertebrates, most of which are likely to be the more widespread and common species. Further surveys are not considered necessary.
- A Slow Worm was found outside the development footprint, along the south east boundary of the meadow. In order to ascertain population sizes and whether reptiles would represent a constraint to any potential development of this site surveys are recommended.
- Reptile surveys should preferably be carried out in April-June and/or September. These surveys involve the placement of 'refugia' in the suitable habitat. Refugia are sheets of roofing felt and corrugated metal that are used by reptiles for basking and sheltering under. The refugia are usually checked seven times on different days in suitable weather conditions.
- The NVC assessment found the meadow community to be most similar to the National Vegetation Community MG6b *Lolium perenne-Cynosurus cristatus* grassland, *Anthoxathum odoratum* sub-community. MG6b is a semi-improved grassland type.
- The UK BAP S41 Habitat of Principal Importance 'lowland meadows' includes three specific types of unimproved neutral grassland based on the National Vegetation Classification (Rodwell, 1992). These are MG3 *Anthoxanthum odoratum-Geranium sylvaticum* grassland, MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland and MG5 *Cynosurus cristatus-Centaurea nigra* grassland.
- The assemblage found at Land South of London Road, Coldwatham does not fit any of these communities and therefore does not qualify as lowland meadow S41 Habitat of Principal Importance.
- A number of suggested enhancements would attain considerable net gains in biodiversity across the site such as increasing the number of niches for invertebrates and nesting opportunities for birds, improving the habitat quality for reptiles and habitat connectivity and corridors from the north of the site to the south of the site thus benefiting Dormice, bats, other mammals and reptiles.
- As the grassland is in Higher Level Stewardship and no longer receiving nutrient inputs, it is recommended it be converted from a semi-improved grassland type to lowland meadow Habitat of Principal Importance. This would be in keeping with the objectives of the Sussex lowland meadow Habitat Action Plan.

- It is recommended that native hedgerows be planted around the existing housing, around the proposed housing and that the hedgerow to the south west of the site be restored by infilling gaps. This will create approximately 750 m of new hedgerow planting and corridors from the woodland to the north west of the site to woodland to the south west of the site.

- Hedgerows provide 'edge' habitat that, with a sufficient buffer (margin) and associated ecotones, would support a far higher diversity of invertebrates than the field and provide cover for a range of small mammals and reptiles. Hedgerows also provide shelter and still air on the leeward side for invertebrates to warm and become active and forage. They provide nesting for many farmland birds and corridors for bats, Dormice and reptiles.

- The field currently has only a limited number of niches for invertebrates. The addition of flowers with a long corolla would support some of the rarer long-tongued bumblebees and the hawk-moths. Increasing plant species richness would increase the number of food plants for invertebrates and planting hedgerows, mowing (pathways for the public) and subsequent trampling would create ecotones, bare ground and shelter, again ideal for invertebrates.

- The incorporation of artificial nest and roost sites into buildings would lead to an increase in local bird and bat populations that can use the surrounding good quality habitat for foraging. Artificial nest boxes can be targeted at specific species that are declining such as Swifts and House Sparrows. A Barn Owl box can be placed on one of the notable Oak trees at the southern end of the field.

- It has been demonstrated that, from an ecological prospective, this development would not impact on the nearby Waltham Brooks / Arun Valley site due to the nature of the site being very different i.e. dry meadow rather than wetland grazing marsh. The application site is not suitable for waders and wildfowl, nor does it support any ditches with associated rare plants and invertebrates.

- In conclusion, it is considered that the proposed enhancements will greatly outweigh the negative impact of losing a relatively small area of semi-improved grassland and will result in significant net gains in biodiversity.

1 INTRODUCTION

Background to the study

1.1 Wildlife Splash Ltd was commissioned by the South Downs National Park Authority to carry out a Phase 1 ecological survey together with a Phase 2 grassland National Vegetation survey of Land South of London Road, Coldwaltham.

1.2 The survey site is an area of agricultural land at Coldwaltham, West Sussex, which is under consideration as a housing allocation in the South Downs National Park Local Plan (Allocation Policy SD64).

1.3 Information is required as to the ecological value of the site in order to determine the impacts that a proposed housing development would have upon habitats and species that may be present.

Aims

1.4 The aims of this survey are as follows:

- To undertake a Phase 1 survey in order to assess the site for the potential to support protected and notable species.
- To complete a Phase 2 survey of the grassland type within the National Vegetation Classification (NVC) framework in order to establish whether the community is a S41 Habitat of Principal Importance.
- To propose a number of ecological enhancements for the habitat within and around the development footprint (within the site red line boundary) and, in doing so, to attain significant net gains in biodiversity.

Study area

1.5 The proposed development site is housing, comprising twenty-five to thirty houses, to be sited at the south western end of Coldwaltham adjacent to the existing housing at Brookview and Brookland Way. Coldwaltham is a historic village in West Sussex within the Arun Valley and the South Downs National Park.

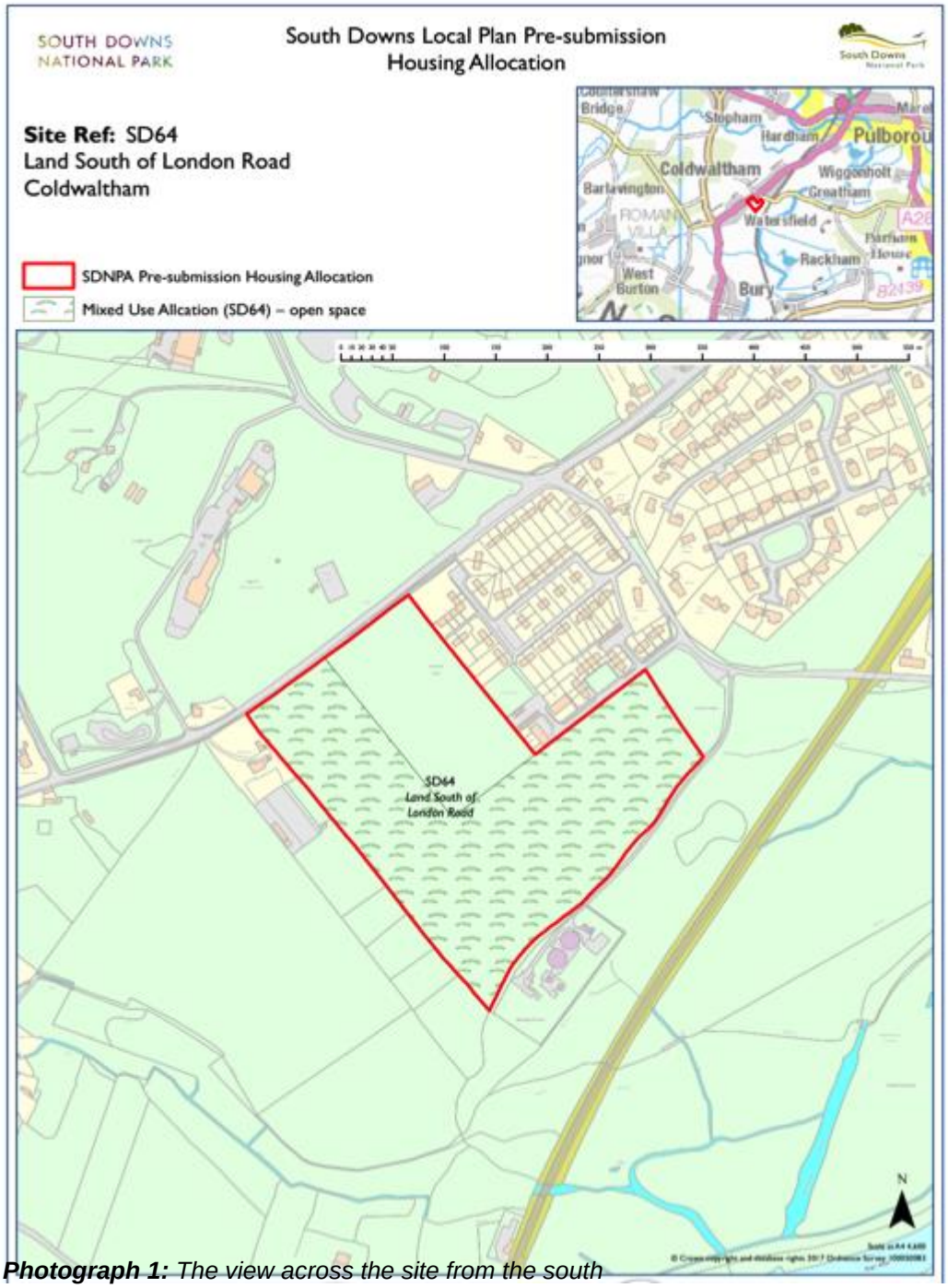
1.6 The development footprint is set within a field that is approximately 8.1 ha in extent. The proposed development would result in the loss of approximately 2 ha or one quarter of this habitat (Figure 1). The development footprint is surrounded by grassland to the south east and south west, housing to the north east and a hedgerow along the A279 London Road to the north.

1.7 The entire field (comprising the red line boundary shown in Figure 1), is bound by an outgrown hedgerow to the south east with notable Oaks and Hazel coppice stools, a gappy hedgerow to the west, an overgrown hedgerow to the north west (adjacent to the London Road) and housing

to the north east and part of the north west boundary. Views across the entire site are shown in Photographs 1 and 2.

1.8 The greater landscape is one of pockets of woodland, pasture and arable land linked and separated by copses, overgrown hedgerows and tree lines. A significant area of floodplain grassland with associated ditches and ponds lies to the south of the site forming part of the Mid Arun Valley.

FIGURE 1: The location of land south of London Road, Coldwaltham



Photograph 1: *The view across the site from the south*

Photograph 2: *The view across the site from the north*

2 METHODS

Desktop biodiversity survey

2.1 Background information additional to the field survey, regarding the present and historical ecological interest of the site was requested from the Sussex Biodiversity Records Centre. In addition a 2 km search area was investigated for statutory and non-statutory designated sites.

Habitat surveys

Phase 1 habitat survey

2.2 A suitably qualified ecologist undertook a Phase 1 Habitat survey and National Vegetation Classification survey at Coldwaltham on the 23rd May 2018. The survey followed the standard methodology (JNCC, 2010). In summary, this comprised walking over the survey area and recording the habitat types, species and boundary features present.

Phase 2 NVC survey

2.3 Quadrat data (2m x 2m) were collected from representative stands of homogenous vegetation according to methods that are standard for the identification of NVC vegetation types (Rodwell 1991, 1992, 1995, 2000), i.e. Domin-scale estimates of cover for the species present. The whole meadow comprises homogenous vegetation throughout, and therefore five quadrats were placed across the proposed development area in order to ascertain the community type.

2.4 The Domin-scale represents estimates of cover by numbers as given below.

TABLE 1: DOMIN-scale cover estimates

Cover %	DOMIN value
< 4 % few individuals	1
< 4 % several individuals	2
< 4 % many individuals	3
4 – 10 %	4
11 – 25 %	5
26 – 33 %	6
34 – 50 %	7
51 – 75 %	8
76 – 90 %	9
90 – 100 %	10

2.5 This is a classification system that divides all mainland UK vegetation-types into a series of named and well-described ‘communities’, so that, for example, the whole range of variation in

UK grasslands is covered by 48 communities, each with on average about three sub-communities, giving around 150 classificatory units.

2.6 The quadrat data were initially analysed using the programme MATCH (Malloch, 1999). For each (sub-) community sampled, data from quadrats were combined in the programme to obtain frequency data for each species in each sampled area. The frequency of a species is defined as the number of quadrats (out of the total sampled) in which a species is noted. Where the total number of quadrats is more than or less than five, the MATCH programme adjusts the ratios accordingly.

2.7 The MATCH programme mathematically compares the collected data with diagnostic data taken from Rodwell et al. (1991 *et seq*). Coefficients of similarity are calculated and a list of the NVC (sub-) communities that are most similar to the test data are displayed, together with the value of the coefficient. This enables the user to draw up a short-list of possible (sub-) communities, which can then be considered in more detail by consulting Rodwell et al. (1991 *et seq*.), before a final identification is made. Consequently, the NVC section of this report displays the top five matches for the data set, to allow the most likely possibilities to be considered in more detail.

2.9 Additionally, subjective estimates of the relative abundance of all species recorded were added to a plant species list using a modified DAFOR scale. The DAFOR scale ranks species according to their relative abundance in a given parcel of land as follows: d – dominant, a – abundant, f – frequent, o – occasional, r – rare. In addition, the following prefixes are used: l – locally, v – very.

2.10 Plant nomenclature in this report follows Stace (2010) for native and naturalised species of vascular plant. For flowering plants the scientific name is given once and then not repeated again.

Protected species surveys

2.11 A protected species scoping survey was carried out in conjunction with the Phase 1 Habitat survey. The site was assessed for its suitability to support protected species, in particular Badger *Meles meles*, bats, birds, Dormice *Muscardinus avellanarius*, Great Crested Newt *Triturus cristatus*, reptiles, invertebrates and other species of conservation importance that could be impacted by the proposed development and pose a planning constraint.

2.12 The Phase 1 scoping survey does not assess the presence or absence of species, but is used to assess the potential for habitat to support them. Where clear and recent evidence of a species or the species is seen, this is reported.

3 RESULTS

DESKTOP BIODIVERSITY SURVEY

General

3.1 The Sussex Biodiversity Records Centre (SxBRC) provided the following information regarding the present and historical ecological data that may be relevant to the site. Other data collated covers a standard 2km search area and includes the following:

- Protected Species; Biodiversity Action Plan (BAP) species and species rare to Sussex; and
- Sites that are of local or national importance.

Protected Species

Amphibians

3.2 No records were returned for amphibians within the relevant area.

Bats

3.3 Records for the following bat species have been returned from the data search:

- Soprano Pipstrelle *Pipistrellus pygmaeus*
- Serotine *Eptesicus serotinus*

Both species have one record (1997) of a roost site in Besley Farm, Watersfield.

Birds

3.4 A total of 191 species of birds have been recorded in the search area of which 74 are notable due to various statuses such as Birds of Conservation Concern (BoCC) red or amber listed species, Schedule 1 species or uncommon in the county.

3.5 The majority of notable species have been recorded at Coldwaltham Brooks and Waltham Brooks.

3.6 No records were returned for any bird species within the application site.

Reptiles

3.13 Records were not returned for any reptile species.

Invertebrates

3.14 A total of 24 species of invertebrate have been recorded in the area that are either on the Sussex Rare Species Inventory or are Nationally Scarce / Rare / Biodiversity Action Plan species.

3.15 The majority of these species have been recorded in the nearby reserves with the exception of the White Admiral *Limenitis camilla* and the Brown Hairstreak *Thecla betulae*, that have been recorded around Coldwaltham. The White Admiral is a woodland butterfly and the Brown Hairstreak is reliant on Blackthorn as the foodplant for the caterpillar.

UK BAP Species of Principal Importance

3.16 West European Hedgehog *Erinaceus europaeus* has been recorded at an unspecified location in Coldwaltham in 2005.

Notable plants

3.17 Records have been returned for just over 50 rare plants in the area with a particular bias to wetland and aquatic species and those associated with acidic soils.

3.18 The resolution of the desktop biodiversity survey was not sufficient to have found any species within the site, though the habitat, being dry neutral grassland, is not right for the majority of species on the list. There are just a few species on the list that occur in neutral grassland such as Bitter-vetch *Lathyrus linifolius,* Common Cudweed *Filago vulgaris* and Crosswort *Cruciata laevipes*.

Non-native invasive plant species

3.19 Records for 10 non-native invasive species have been returned in the search, however none are present within the site.

Sites of local or national importance

3.20 A 2 km search area contains two statutory designated sites and five non-statutory designated sites.

Statutory designated sites

Waltham Brooks SSSI (48.6 ha)

3.21 The northern water meadows of the Waltham Brooks SSSI are approximately 160 m to the south east of the proposed development footprint nearest boundary.

3.22 This is an area of alluvial grazing marsh adjacent to the River Arun that is of national importance for wintering birds. The site represents one of a few surviving areas of grazing marsh in West Sussex; the marsh and the ditches which dissect it support a species-rich community of aquatic plants, including one nationally rare species.

3.23 Waltham Brooks forms part of the Arun Valley protected area.

Arun Valley SAC, SPA, RAMSAR (530 ha)

3.24 The Arun Valley consists of three SSSIs in an area of wet meadows on the floodplain of the River Arun between Pulborough and Amberley, subject to occasional flooding, dissected by a network of ditches, several of which support rich aquatic flora and invertebrate fauna.

3.25 The site is of outstanding ornithological importance for wintering waterfowl and breeding waders. It supports seven wetland invertebrate species that are listed as threatened in Britain, one of which is endangered, and there are four nationally rare and four nationally scarce plant species.

Non-statutory Designated Sites

3.26 Sites of Nature Conservation Importance (SNCI), now called Local Wildlife Sites (LWS), are non-statutory designations, which are identified at a county level. They typically form a network of sites that are recognised of being of conservation importance locally and are often included in Local Authority development plans.

Arun Valley Watersfield to Arundel (793 ha)

3.27 The north part of this LWS is approximately 500 m to the south west of the site. It complements the SSSI's of the Arun Valley. It comprises a system of improved and unimproved flood meadows dissected by ditches which are botanically rich. It is an important area for breeding birds, dragonflies, water beetles, snails and plants

Alban Head Playing Field & adjacent grasslands (18.95 ha)

3.28 Located 800 m to the west and comprising acid grassland with notable short turf flora associated with sandy soils and a number of Red Data Book plants.

Coldwaltham Meadow (1.04 ha)

3.29 Coldwaltham Meadow is located approximately 700 m to the north east of the site. It comprises an unimproved neutral grassland meadow with high botanical and entomological interest.

Horncroft Farm Pasture (7.64 ha)

3.30 Approximately 1.7 km to the north west and comprising a species rich grassland mosaic of acid grassland, rush pasture, fen and pond providing notable botanical interest.

Watts Farm Meadow (3.65 ha)

3.31 This linear site is approximately 400 m to the south west and is neutral species rich grassland and scrub dissected by a stream of botanical interest.

FIELD SURVEY

Habitats within the development footprint

3.32 The survey results are presented in the form of a phase 1 habitat map (Appendix 1) with the associated target notes (Appendix 2). A botanical species list is given in Appendix 4.

Grassland

3.33 The proposed development footprint comprises part of a larger area of grassland currently managed as a meadow. The sward in the entire field is relatively consistent throughout with a sward height of approximately 40 cm and with a high cover of flowering plants. The dominant grasses are Sweet Vernal-grass *Anthoxanthum odoratum,* Red Fescue *Festuca rubra* and Yorkshire-fog *Holcus lanatus*.

3.34 The flowering plants are dominated by abundant Yarrow *Achillea millefolium* throughout with other species frequent within the sward including Ribwort Plantain *Plantago lanceolata*, Bulbous Buttercup *Ranunculus bulbosus*, Ox-eye Daisy *Leucanthemum vulgare* and Red Clover *Trifolium pratense*.

3.35 Less frequently occurring grasses and flowering plants include Perennial Rye-grass *Lolium perenne*, Crested Dog's-tail *Cynosurus cristatus*, Common Mouse-ear *Cerastium fontanum*, Lesser Stitchwort *Stellaria graminea* and Common Cat's-ear *Hypochaeris radicata*.

3.36 The proportion of rough grassland species and ruderals is very low with a scatter of ruderals such as Creeping Thistle *Cirsium arvense*, Broad-leaved Dock *Rumex obtusifolius* and Common Nettle *Urtica dioica*. The concentration is slightly higher along the field edges.

Hedgerow

3.37 An outgrown and overgrown hedgerow bounds the north west field margin along the road. Woody species include Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre* and Spindle *Euonymus europaeus.* It has an interrupted rough margin of Bramble *Rubus fruticosus,* Bracken *Pteridium aquilinum*, nettles and tall grasses.

Scrub

3.38 Very small pockets of Bramble scrub are along the field margins adjacent to the fence-line and the hedgerow.

Additional habitats within the entire site boundary

3.39 The greater field area is very similar in species composition, abundance and frequency to the grassland within proposed builidng footprint being under the same management. However, the area at the top of the field, in the north west part, has a higher proportion of grasses with a more vigorous growth.

3.40 The south east field boundary has several notable Oaks *Quercus robur* and a line of notable Hazel *Corylus avellana* coppice stools. These shrubs and trees have features that are of importance to wildlife such as splits and cracks in the Oaks and dense branching full of leaf litter in the Hazel.

3.41 A gappy hedgerow separates the meadow along the south west boundary from a dwelling and horse paddocks.

Notable plants

3.42 No notable plant species were recorded from the site.

Protected species

3.43 The site has the habitat to potentially support nesting birds, foraging bats, foraging Badger, UK BAP species such as Hedgehog, some species of reptile and invertebrates. It is also possible that Dormouse and Great Crested Newt may be in the vicinity.

Badger

3.44 No evidence of Badger sett building activity was observed within the proposed development footprint or the wider area.

3.45 No mammal runways or Badger foraging signs were observed within the development footprint or the site boundary. A search was made of the hedge banks adjacent to the field for Badger setts and none were found.

Birds

3.46 The field, if uncut and ungrazed as observed, has the potential to support ground-nesting birds such as Skylark *Alauda arvensis*. The entire field was walked in a zig-zag manner in order to ascertain whether any Skylarks were breeding on site and none were disturbed.

3.47 Other nesting birds would be restricted to the hedgerow along the site boundary to the south. Areas of scrub are too small to support nesting birds.

3.48 The field provides adequate foraging for birds although none were seen within the grassland during the survey. This may be due to the lack of nearby cover and the much greater areas of good quality forage in the surrounding wildlife sites.

3.49 Birdsong heard during the survey was from Chaffinch *Fringilla coelebs*, Blackbird *Turdus merula* and Robin *Erithacus rubecula* and associated with the row of notable trees and coppice stools to the north east. Great tits *Parus major* were heard along the hedgerow bounding the south east.

Bats

3.50 There are no potential roost sites for bats within the development site footprint. Potential roost sites are restricted to the notable Oaks along the south east boundary of the field, although these have not been assessed as there will be no impact on roosting bats.

3.51 Foraging opportunities for bats are limited, when compared to the rich foraging opportunities in the greater area of the grazing marsh.

3.52 Bat foraging is most likely to occur on the lower land within the site boundary adjacent to the line of notable Oaks and Hazel. This is an area of still area and a higher proportion of small flies.

3.53 The hedgerow along the north west site boundary may be used as part of a flight line for commuting bats.

Dormouse

3.54 Given the pockets of woodland in the surrounding area, there is the possibility that Dormouse, if in the area, could be using the hedgerow bounding the north west of the site and the hedgerow outside the development footprint to the south east.

Great Crested Newt

3.55 There is sub-optimal habitat within the development footprint for Great Crested Newt. The grassland provides suitable foraging habitat for Great Crested Newt but refuges are lacking. There are, however, potential refuges in the hedgerows and the gardens.

3.56 Great Crested Newt has been recorded on the east side of the Arun around Wiggonhold (National Biodiversity Network) and is known to be in the Pulburough Brooks. The Coldwaltham Brooks also has habitat that may be suitable for this species.

Hedgehog

3.57 The long grassland and its woody margins with areas of scrub and rougher grassland provide ideal shelter and forage for Hedgehogs.

Invertebrates

3.58 Grasslands managed as meadows are of importance to invertebrates as they provide a good source of nectar and pollen for bees and butterflies as well as tall vegetation suitable for some groups such as the grasshoppers and crickets.

3.59 A number of invertebrates were observed during the two site visits including Common Carder Bee *Bombus pascuorum*, Honey Bee *Apis mellifera*, Small White *Pieris rapae* and Holly Blue *Celastrina argiolus.*

Reptiles

3.60 Areas of long rough grassland provide ideal foraging habitat for reptiles such as Slow Worm *Anguis fragilis* and Common Lizard *Zootoca vivipara.*

3.61 Cover and save refuges in the form of scrub is limited to the very small patches of scrub along site boundaries as shown in Photograph 3.

Photograph 3: *Small pockets of scrub along the boundary with the housing*

3.62 A male Slow Worm was found basking under a piece of roofing felt (left from a previous survey) outside the proposed development footprint along the south east field boundary, showing that reptiles are in the vicinity and likely using the site.

NVC survey

3.63 According to the Match programme (Table 2), the grassland is most similar to the NVC types **MG6c *Lolium perenne-Cynosurus cristatus* grassland, *Anthoxantum odoratum* sub-community, MG7e *Lolium perenne-Plantago lanceolata* grassland** and several communities from **MG5 *Cynosurus cristatus-Centaurea nigra* grassland,** with all having relatively similar coefficients of similarity. Each will be discussed below.

TABLE 2: MATCH results

NVC	Community	Coefficient of similarity
MG6b	*Lolium perenne-Cynosurus cristatus* grassland, *Anthoxanthum odoratum* sub-community	60.5
MG7e	*Lolium perenne-Plantago lanceolata grassland*	58.8
MG5	*Cynosurus cristatus-Centaurea nigra* grassland	58.6
MG5a	*Cynosurus cristatus-Centaurea nigra* grassland, *Lathyrus pratensis* sub-community	56.6
MG5b	*Cynosurus cristatus-Centaurea nigra* grassland, *Galium verum* sub-community	55.9

3.64 The **MG6b *Lolium perenne-Cynosurus cristatus* grassland, *Anthoxathum odoratum* sub-community** is the major permanent pasture in the lowlands and tends to be the richest sub-community in this group.

3.65 Crested Dog's-tail, Perennial Rye-grass and Red Fescue, usually dominate the community. However, at Coldwaltham Meadow Red Fescue shares dominance with Sweet Vernal-grass and Yorkshire-fog. This is likely due to the cessation of agricultural inputs in the form of fertiliser.

3.66 Within this sub-community flowering plants are frequent and can sometimes form a high collective cover value as observed.

3.67 When checked against the NVC species lists (Rodwell 1992), the vast majority of species contributing to the community at Coldwaltham had very similar frequencies to that within the expected range.

3.68 According to the NVC checklist data (Rodwell 1992) this community supports an average of 14 species per quadrat as observed in the field data found at Coldwaltham.

3.69 The **MG7e *Lolium perenne-Plantago lanceolata* grassland** is a species poor grassland type sown as highly productive leys. This community is usually always grass-dominated with a scatter of widespread and common herbaceous species.

3.70 The MG7e sub-community is a more mature community whereby Perennial Rye-grass loses its dominance and is replaced by other species such as Yorkshire-fog, Cock's-foot and, to a lesser extent Red Fescue. The most frequently occurring herbaceous species is Ribwort Plantain *Plantago lanceolata* with a scatter of other common species such as Dandelion *Taraxacum officinale* agg., clovers and Common Mouse-ear.

3.71 This community supports an average of 10 species per quadrat (Rodwell 1992), which is lower than observed. Other community attributes such as the dominance of grasses; a low cover of herbaceous species and evidence of recent sowing or agricultural improvement do not fit.

3.72 **MG5 *Cynosurus cristatus-Centaurea nigra* grassland** is a herb-rich grassland that may form a tight, low-growing sward or a lush meadow. It tends to have a high range of grasses, none of which is dominant, but the most notable feature of this grassland type is the variety and abundance of herbaceous species.

3.73 The community at Coldwaltham has species in common with this community, however, it lacks the range of species that would be expected in an 'unimproved' meadow, together with less common species that would be present in the absence of the application of fertilizer. No such species were found in the Coldwaltham Meadow

3.74 Moreover, the MG5 community tends to be species rich with the baseline surveys (Rodwell 1992) giving an average species count of 23 per quadrat. This is far higher than the average of 14.4 spcies found at Coldwaltham.

3.75 The community at Coldwaltham superficially resembles the MG5 lowland meadow community due to the high cover of flowering plants, but lacks the community dominants, the species richness that would be expected (both herbaceous and grasses) and the presence of uncommon species and those indicative of a history of no agricultural improvement.

3.76 The Coldwaltham community is found to be most similar to the MG6b community due to the similarity of species, the number of species per quadrat, the abundance and frequency of widespread and common species, the lack of species indicative of no agricultural inputs and the lack of less common old meadow species.

3.77 The assemblage found is not particularly species rich and the species assemblage would strongly suggest some form of agricultural improvement, in the form of the addition of fertiliser, in the past.

4 EVALUATION

Habitats

Grassland

4.1 The UK BAP Habitat of Principal Importance 'lowland meadows' includes three specific types of unimproved neutral grassland based on the National Vegetation Classification (Rodwell, 1992). These are MG3 *Anthoxanthum odoratum-Geranium sylvaticum* grassland, MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland and MG5 *Cynosurus cristatus-Centaurea nigra* grassland.

4.2 However, comparison of the grassland survey results against the NVC community lists and site attributes indicates a strong correlation with MG6b *Lolium perenne-Cynosurus cristatus grassland, Anthoxanthum odoratum sub-community.*

4.3 Moreover, the JNCC Common Standards Monitoring Guidance for priority habitat lowland grasslands of the NVC type MG5 gives a list of indicator species, a number of which would be present as follows: Agrimony *Agrimonia eupatoria*, Lady's Mantle *Alchemilla* spp., Wood Anenome *Anemone nemorosa*, Common Knapweed *Centaurea nigra*, Dropwort *Filipendula vulgaris*, Lady's Bedstraw *Galium verum*, Dyer's Greenweed *Genista tinctoria*, Bitter Vetch *Lathyrus linifolius*, Rough Hawkbit *Leontodon hispidus*, Lesser Hawkbit *Leontodon saxatilis*, Common Bird's-foot-trefoil *Lotus corniculatus*, Burnet Saxifrage *Pimpinella saxifraga*, Milkworts *Polygala* spp., Tormentil *Potentilla erecta*, Cowslip *Primula veris*, Salad Burnet *Poterium sanguisorba*, Betony *Betonica officinalis*, Saw-wort *Serratula tinctoria*, Pepper Saxifrage *Silaum silaus*, Devil's-bit Scabious *Succisa pratensis.*

4.4 For lowland meadow habitat assessments a number of these species should be frequent or occasional within the sward. However, the only species found from this list was Common Bird's-foot-trefoil which was recorded as 'rare' within the sward.

4.5 Additionally, no scarce or declining plant species were recorded on site, which are typically present in lowland meadows. The lowland meadow Habitat of Principal Importance is characterised as being 'unimproved', though the MG6b grassland found is likely to have undergone agricultural improvement in the past due to the species assemblage present.

4.6 Due to the species assemblage, the NVC results and the evaluation undertaken, the Coldwaltham Meadow cannot be considered a Habitat of Principal Importance under Section 41 of the Natural Environment and Rural Communities Act 2006.

Hedgerows

4.7 The UK Biodiversity Action Plan (2007) defines a hedgerow as any boundary line of trees or shrubs over 20 metres long and less than 5 metres wide, and where any gaps between the trees or shrub species are less than 20 metres wide.

4.8 All hedgerows consisting predominantly (i.e. 80% or more cover) of at least one woody UK native species are covered by this Habitat of Principal Importance.

4.9 It is understood that boundary features will not be impacted by the proposed development.

Scrub

4.10 Bramble scrub is a widespread and common habitat appearing in along field edges, corners and alongside hedgerows where grazing and cutting is less intensive. This habitat is of no conservation importance.

Protected species

Foraging bats

4.11 All species of bat present in the UK receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended).

4.12 The meadow as a whole provides foraging habitat for bats, though foraging is more likely to be along the more sheltered south east boundary of the meadow. This is outside the potential development footprint.

4.13 There may, however, be a flight line along the north west site boundary where the entrance is to be sited.

4.14 Should there be more than any minor changes to this boundary feature or an increase light levels along this boundary feature then surveys for commuting bats would be required.

Badger

4.15 As no signs of Badger were found within or around the entire meadow, the development footprint or the adjoining areas further surveys will not be required.

Birds

4.16 Breeding birds are protected by the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to intentionally kill, injure or take the birds or their eggs, or to intentionally destroy or disturb a nest, when it is in use or being built.

4.17 There will be a loss of a relatively small area of foraging habitat with the propsed development and potentially the loss of a small area of nesting habitat should the entrance to the site be enlarged.

4.18 No ground nesting bird species were found using the meadow, though this does not mean that this will not occur in future seasons.

Further surveys

4.19 In order to comply with legislation, any development involving the removal of part of the hedgerow must be taken outside the bird-breeding season (March to August inclusive). If any work involving such clearance were scheduled to take place between the beginning of March and the end of August, a survey to check for nesting birds would be required. No vegetation can be cleared whilst a nest is occupied.

4.20 Although no ground nesting species were using the meadow at the time of the survey there is the potential for this to occur. As such, it is recommended that during the winter prior to development the grass be cut short and maintained at a short sward in order that it would be unsuitable for Skylarks.

4.21 Should this not be achieved than, as with the hedgerow, a survey to check for nesting birds would be required if clearance were scheduled to take place between the beginning of March and the end of August.

Dormouse

4.22 Dormice receive full protection under The Conservation of Habitats and Species Regulations 2010, and the Wildlife and Countryside Act 1981 (as amended). Dormouse is a UKBAP Priority Species and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act (2006). The UK holds 25 % of world population of Dormice.

4.23 No signs of Dormouse were found in the hedgerow to the north of the site, however, this does not confirm absence.

4.24 The hedgerow, could potentially support a low population of Dormice, and this species frequently disperses along such woody corridors.

Further surveys

4.25 Given that the impact of the proposed development is extremely low and a lack of records for this species further surveys for Dormice are considered necessary.

4.26 However, as a precautionary measure, should woody vegetation require removal in order to enlarge the entrance to the site, then a suitably qualified ecologist would be required to search that area for the presence of Dormouse nests (summer and hibernation) prior to this removal.

Great Crested Newt

4.27 Great Crested Newts are fully protected by both the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. The species is a European Protected Species, a UKBAP Priority Species and has been adopted as a Species of Principal Importance in England under Section 41 of the NERC Act (2006).

4.28 Although the site is considered sub-optimal for this species due to a lack of refuges, there area potential refuges in the surrounding gardens and the hedgerows. Moreover, given the presence of potentially ideal habitat to the south, likely presence of this species should be assessed.

4.29 There are several ditches and water bodies within the accepted dispersal distance to the south west and to the south east which could potentially support breeding Great Crested Newt, and, as such surveys are recommended.

Further surveys

4.30 Great Crested Newt surveys usually start with a Habitat Suitability Index (HSI) of any ponds or suitable bodies of water within 500 m of the site boundary that could be used by this species for breeding and are not separated by significant barriers to dispersal.

4.31 Should these water bodies prove unsuitable for breeding Great Crested Newts then further surveys would not be necessary.

Hedgehog

4.78 Hedgehog is a UKBAP Priority Species and has been adopted as Species of Principal Importance in England under Section 41 of the NERC Act (2006).

4.32 The development will remove an area of potential Hedgehog foraging habitat and part of a corridor leading to other areas of foraging / hibernating habitat.

Further surveys

4.33 Precautions in order to ensure that no Hedgehogs are harmed during any development should be taken.

Invertebrates

4.34 The habitat, though with a high cover of flowering plants, is likely to support only a limited number of invertebrates through their life cycle, most of which are likely to be the more widespread and common species.

4.35 The meadow lacks a high plant diversity with higher diversity supporting higher numbers of species. Moreover, for invertebrates, physical structure is as important as plant species composition with structural variation providing a succession of different micro-climates.

4.36 Structural diversity for invertebrates includes a range of sward heights, 'edge' habitat, banks, and areas of bare ground for hunting and basking such as footpaths and tracks.

4.37 The impact of the development on invertebrates is considered to be negligible as there is abundant ideal habitat in the wider area. The loss of some nectar-rich habitat will be compensated by an increase in hedgerows with nectar-rich species and an increase in the variety of plant types in the remaining grassland facilitating access to nectar for some less common species.

Reptiles

4.38 Reptiles are protected under the Wildlife and Countryside Act of 1981 (and as amended), making it an offence to intentionally kill, injure, sell or advertise to sell any of the native species of reptile in the UK.

4.39 All reptiles are UKBAP Priority Species and have been adopted as Species of Principal Importance in England under Section 41 of the NERC Act (2006).

4.40 As a Slow Worm was found outside the development footprint, along the south east field boundary, in order to ascertain population sizes and whether reptiles would represent a constraint to any potential development of this site surveys are recommended.

Further surveys

4.41 Reptile surveys should preferably be carried out in April-June and/or September. These surveys involve the placement of 'refugia' in the suitable habitat. Refugia are sheets of roofing felt and corrugated metal that are used by reptiles for basking and sheltering under. The refugia are usually checked seven times on different days in suitable weather conditions.

5 ENHANCEMENT OF THE SURROUNDING HABITAT

Meadow

The current meadow

5.1 A suite of species that are widespread and common in the British lowlands currently dominates the grassland.

5.2 Past management has resulted in the loss of species diversity and the less common species associated with old grasslands. However, the field is now in a stewardship and shows no evidence nutrient enrichment in recent years.

5.3 The north west part of the field appears to have a slightly deeper and richer soil evidenced by more vigourous growth of grasses and ruderals.

5.4 Species rich grassland is in the area with Coldwaltham Meadow to the north east and Watts Farm Meadow to the south west. The remaining grassland would be larger than both of these sites and, if restored to lowland meadow, would contribute, as a stepping stone, to this grassland resource.

5.5 The objectives of the Sussex lowland meadow HAP are (amongst others) to:

- Maintain the current extent of lowland meadows in Sussex;
- Re-establish 41 ha of grassland of wildlife value from arable or improved grassland by 2015.

This has not been achieved and the conversion of semi-improved grassland to lowland meadow will benefit this objective.

Meadow enhancement

5.6 In order to enhance the grassland a seed mix can be sown into the existing sward. This is best done after the grassland has been cut in late August or September as this is the time when the majority of the species being sown would germinate naturally, and those seeds that require a period of chilling over winter to trigger germination in the spring are also favoured.

5.7 The seed mix would include the hemi-parasite Yellow Rattle *Rhinanthus minor*, particularly in the north west part of the site where grass growth appears to be more vigorous. This species is a partial parasite on grasses and so reduces their growth thus allowing other species to compete more successfully.

5.8 The list given will increase species richness and move the community to *MG5 Cynosurus cristatus-Centaurea nigra grassland.*

TABLE 3: Lowland meadow suggested species list

English Name	Latin Name	Comment
Agrimony	*Agrimonia eupatoria*	
Autumn Hawkbit	*Leontodon autumnalis*	
Betony	*Betonica officinalis*	
Common Bird's-foot-trefoil	*Lotus corniculatus*	Although present it is rare within the sward
Common Knapweed	*Centaurea nigra*	
Dyer's Greenweed	*Genista tinctoria*	
Cat's-ear	*Hypochaeris radicata*	
Lady's Bedstraw	*Galium verum*	
Meadow Vetchling	*Lathyrus pratensis*	
Pepper-saxifrage	*Silaum silaus*	
Pignut	*Conopodium majus*	
Saw-wort	*Serratula tinctoria*	
Sneezewort	*Achillea ptarmica*	
Yellow-rattle	*Rhinanthus minor*	

Meadow Management

5.9 The field would benefit from traditional meadow management which is a cut in the late summer after flowering and seed set followed by grazing of the aftermath. This churns the soil, tramples in the seeds and provides small bare patches and niches providing safe sites for germination. It is also beneficial to a range of invertebrates.

5.10 Maintaining mown pathways through the meadow during the summer will encourage people to use the open space. Additionally, an appropriate area can be mown to encourage people to picnic.

5.11 The shorter mown grassland will increase the value of the meadow for invertebrates giving basking and hunting opportunities, particularly if the pathway eventually becomes a well-trodden track.

Hedgerows

The current hedgerows

5.12 There is just one hedgerow bounding the development footprint along the northern site margin. Two other hedgerows are around the larger extent of the meadow; one is an outgrown hedgerow along the south east site margin (full of notable woody species). The hedgerow along the south west margin of the meadow is gappy.

5.13 The current housing is not surrounded by any hedgerows and therefore stands out from the surroundings as shown in Photograph 4.

Photograph 4: *Housing, unmasked by features such as trees and hedgerows*

Hedgerow importance

5.14 Hedgerows provide nesting habitat for a wide range of birds and, in some areas, the number of potential nest sites limits populations. Approximately 21 UKBAP Priority Species are associated with hedgerows, and for 13 of these, hedgerows are a primary habitat. Similarly, as many as 16 out of the 19 birds used by Government to assess the state of farmland wildlife are associated with hedgerows, with 10 using them as a primary habitat (Hedgelink 2018).

5.15 Hedgerows provide 'edge' habitat that, with a sufficient buffer (margin) and associated ecotones, would support a far higher diversity of invertebrates than open ground in the centre of the field. Hedgerows also provide shelter and still air on the leeward side for invertebrates to warm and become active and forage.

5.16 Hedgerows are corridors through the landscape for many species that may require cover from predators. The dark shadow at night-time hides foraging and commuting bats from predators such as owls and a scrubby interface provides cover and protection for a range of groups such as reptiles and Hedgehogs.

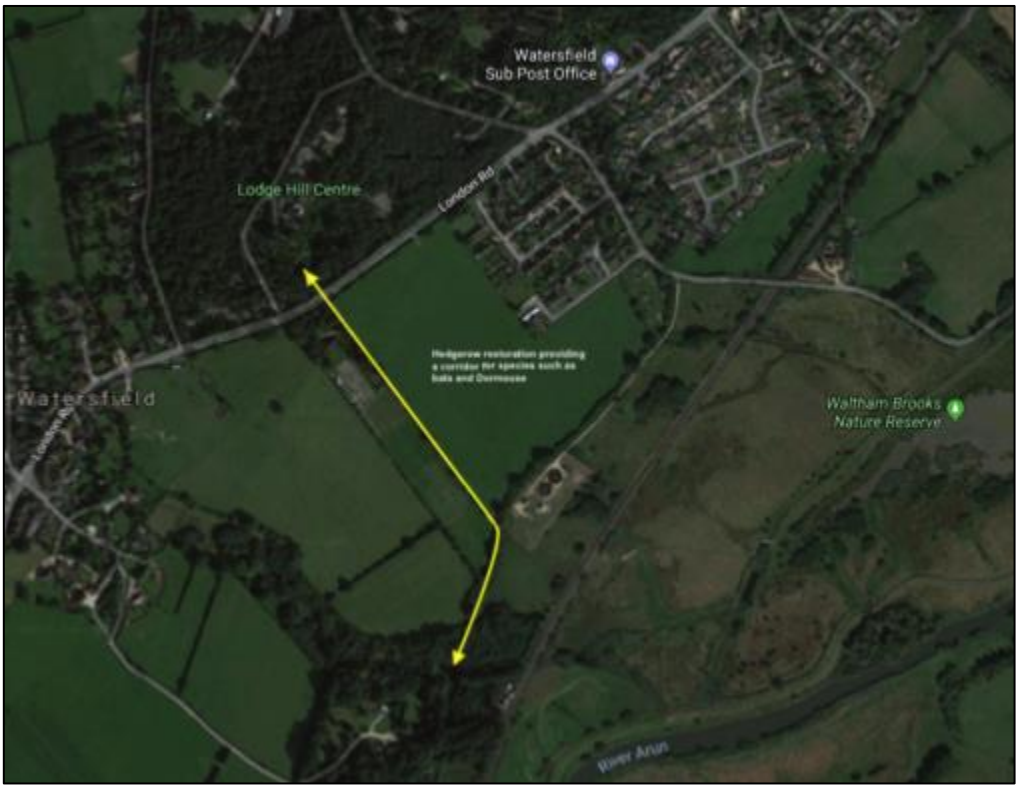
5.17 Dormice use hedgerows to disperse across a landscape. Without the connectivity of hedgerows they are isolated and prone to chance events that may cause a localised extinction.

Hedgerow creation

5.18 The restoration of the gappy hedgerow along the south west boundary of the field will provide a continuous corridor from woodland to the north of the field to woodland to the south west of the field (Figure 2) . This would be of immense value to dispersing Dormice if they are in the area. It

would also provide a safe corridor (flight line) for commuting bats to the north of the site accessing the rich foraging grounds of Waltham Brooks.

FIGURE 2: Hedgerow restoration providing a corridor for mammals



5.19 A hedgerow to replace the metal fencing around the existing housing, including the south east facing edge of the housing, will vastly increase the potential for nesting birds, invertebrates and reptiles. Moreover a hedgerow around the new housing will further achieve this and, in total, this will amount to approximately 750 m of new hedgerow creation.

5.20 The hedgerows will comprise native species, with a mixture of properties such as berries, nuts, nectar, thorns and dense foliage. A suitable list of species is given in Table 4 below.

TABLE 4: Hedgerow suggested species

English Name	Latin Name	Comment
Blackthorn	*Prunus spinosa*	Protection for nesting birds
Common Dog Rose	*Rosa canina*	
Crab Apple	*Malus sylvestris*	
Dogwood	*Cornus sanguinea*	
Field Maple	*Acer campestre*	
Guelder-rose	*Viburnum opulus*	
Honeysuckle	*Lonicera periclymenum*	Good for bees and moths
Hawthorn	*Crataegus monogyna*	Protection for nesting birds
Holly	*Ilex aquifolium*	Protection for nesting birds and winter cover
Pedunculate Oak	*Quercus robur*	
Yew	*Taxus baccata*	Winter cover / dense foliage
Common Comfrey	*Symphytum officinale*	Sow along base of hedge lines
Hedge Woundwort	*Stachys sylvatica*	Sow along base of hedge lines

Hedgerow management

5.21 Subsequent hedgerow management is important in order to maximise the biodiversity potential for all groups.

5.22 When cutting the field a margin of vegetation of ideally 1 – 2 m wide should be left allowing a margin Bramble grading into tall herbaceous vegetation to develop.

5.23 Hedgerows should be trimmed in January or February to avoid the destruction of birds' nests (present from March to August) and to allow any berry crop to be used by wintering birds (September to December).

5.24 Hedgerows should be trimmed on a two or three year rotation, rather than annually, to ensure that thick nesting cover is available, and to boost the berry crop that generally develops on second-year growth.

Nectar and niche provision

Currently

5.25 The flowering plant species currently in the meadow are those with an open structure or those with a short corolla. This results in a wide number of generalists being able to access the nectar and therefore lots of completion for the less common long-tongued bumblebees and hawk-moths.

New species

5.26 The addition of species with a longer corolla such as Betony *Betonica officinalis*, Common Comfrey *Symphytum officinale,* Hedge Woundwort *Stachys sylvatica* and Honeysuckle *Lonicera periclymenum* (a plant specifically for hawk-moths) will provide a welcome nectar source for such species.

5.27 Additionally, an increase in the range of flowering plant species will result in far more niches for invertebrates and encourage specialist invertebrates that may be reliant on a particular, less common plant species.

5.28 Proposed pathways, hedgerows and short-term grazing will also vastly increase the number of niches available for invertebrates.

Artificial nest sites

Currently

5.29 The potential housing development is surrounded by an adjacent meadow that, with enhancements, will be extremely species rich. Additionally, a large expanse of good quality wetland habitat is to the south. An increase in nest sites will lead to an increase in local bird and bat populations that can use these areas for foraging. Artificial nest boxes provide nesting and roosting sites for a wide range of birds and bats, including species that are declining in numbers such as Swifts and House Sparrows.

The creation of nest and roost sites

5.30 Nest boxes can be incorporated into new developments relatively easily and at little cost. It is suggested that boxes be incorporated into the builidngs facing the meadow. They can be placed under eaves and on walls. It is also recommended that bat bricks and boxes be incorporated into the fabric of the buildings.

5.31 There are several notable Oaks along the south east boundary of the meadow. It is recommended that a Barn Owl box be fitted to one of these trees due to the large area of high quality foraging opportunities in the vicinity for such birds of prey.

6 CONCLUSION

Planning policy

6.1 The National Planning Policy Framework (2012) in paragraph 109 states that:

> 'The planning system should contribute to and enhance the natural and local environment by' (amongst other statements):
>
> > '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'

Impact on adjacent site

6.2 Although an area of herbaceous rich semi-improved grassland will be lost to development, it is considered that the loss will have no impact on the adjacent valuable wildlife site. This is due to several factors as follows:

- The site is a very different habitat from the adjacent wetland grazing marsh of Waltham Brooks and the Arun Valley. The grazing marsh is notified for its outstanding ornithological importance for wintering waterfowl and breeding waders. It supports a number of nationally rare wetland invertebrate species and rare plants associated with wetland habitat.
- The meadow fails to provide an extension of habitat for the species for which the Arun Valley and Waltham Brooks are notified. The dry meadow habitat is likely to support foraging farmland birds and potentially ground nesting farmland birds. It has no wetland habitat.
- The meadow is not unimproved lowland meadow. The plant species found within the meadow are all widespread and common species in the lowlands and often sown as a species rich sward on verges.
- The site offers potential foraging for reptiles and amphibians such as Great Crested Newt but this is very much limited by the absence of refuges in the form of dense scrub, stone or logs to shelter beneath, and, in the case of amphibians, to retain moisture.
- No existing wildlife corridors will be impacted, moreover, corridors will be enhanced and created linking areas of woodland to the north and south for species such as bats and Dormouse and enhancing corridors for bats commuting to the Waltham Brooks from the north.

- The proposed development will result in the creation of 750 m of new hedgerow creating multiple territories and nesting sites for farmland and garden birds.
- The proposed development will also provide nesting opportunities for bats and birds such as House Sparrow and Barn Owl, in close proximity to excellent foraging opportunities.
- The development will ensure the retention of the remainder of the meadow into perpetuity. It will be uplifted to a species rich lowland meadow Habitat of Principal Importance and its potential to support a wider range of invertebrates will be increased.

Conclusion

6.3 It has been demonstrated that, from an ecological prospective, this development would not impact on the nearby Waltham Brooks / Arun Valley site due to the nature of the site being very different i.e. dry meadow rather than wetland grazing marsh. The site is not suitable for waders and wildfowl, nor does it support any ditches.

6.4 The site lacks an assemblage of notable plant species and it has been demonstrated that the proposed development would not remove a Section 41 Habitat of Principal Importance.

6.5 The site lacks the species diversity and range of niches that would support a good assemblage of less common invertebrates.

6.6 The presence of reptiles and Great Crested Newt is to be established, though it is probable that the former is in very low numbers and the latter is not present.

6.7 It has been demonstrated that enhancements could vastly increase the number of niches for invertebrates, nesting opportunities for birds and habitat quality for reptiles.

6.8 It has been demonstrated that enhancements, in the form of hedgerows, would increase habitat connectivity and corridors from the north of the site to the south of the site. This has increasingly been a focus for planning and action, culminating in the national 'Making Space for Nature' Lawton report (2010).

6.9 In conclusion, it is considered that the proposed enhancements will greatly outweigh the negative impact of losing a relatively small area of semi-improved grassland. The proposed enhancements will result in significant net gains in biodiversity.

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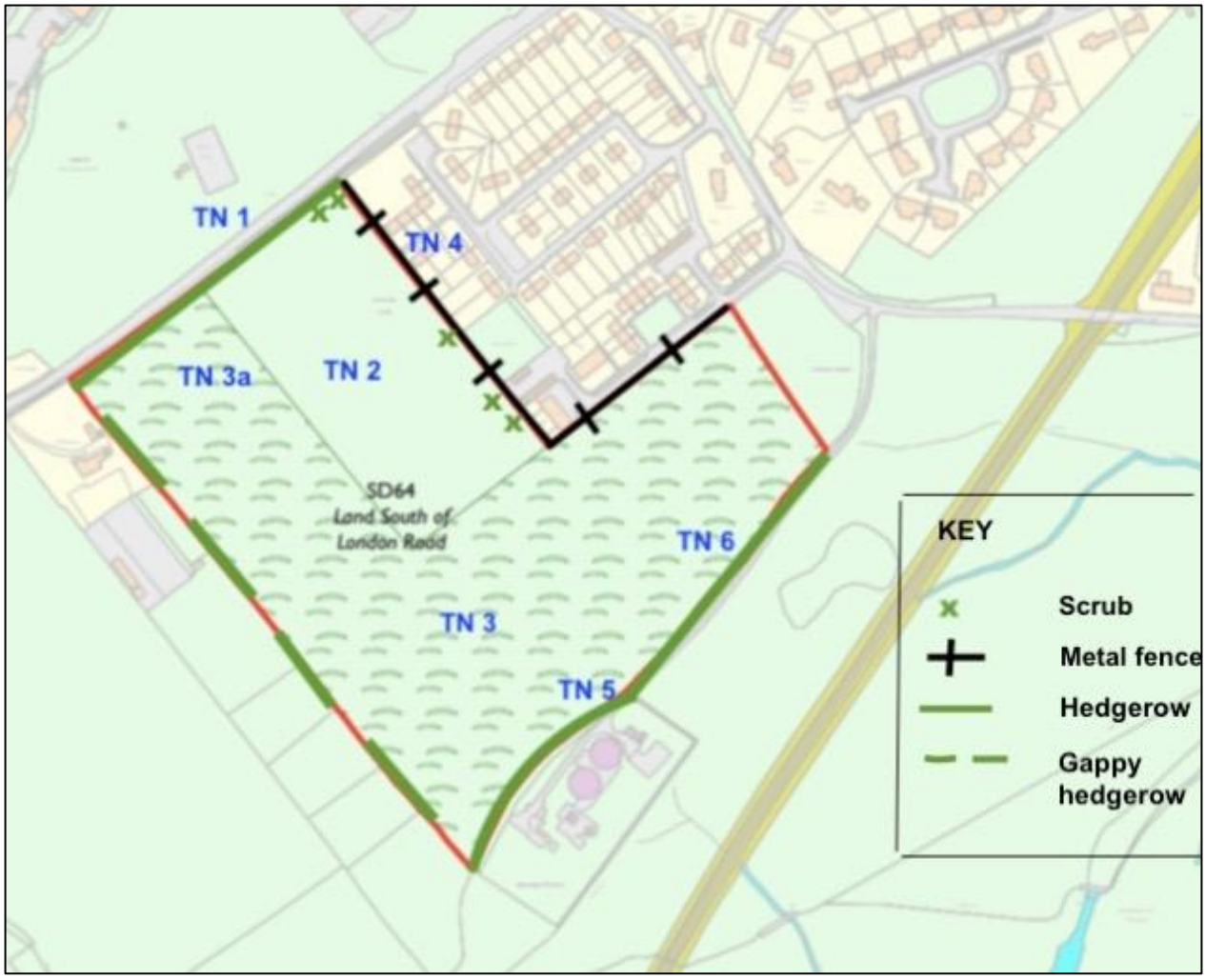
APPENDIX 1

Phase 1: Habitat Map



APPENDIX 2

Target Notes

Target Note 1. An outgrown and overgrown hedgerow bounding the north-west field margin along the road with Hawthorn *Crataegus monogyna*, Blackthorn *Prunus spinosa*, Field Maple *Acer campestre* and Spindle *Euonymus europaeus.* It has a rough margin of Bramble *Rubus fruticosus,* Bracken *Pteridium aquilinum*, nettles *Urtica dioica* and tall grasses.

Target Note 2. A meadow with a sward height of approximately 40 cm with a high cover of flowering plants. The dominant grasses are Sweet Vernal-grass *Anthoxanthum odoratum,* Red Fescue *Festuca rubra* and Yorkshire-fog *Holcus lanatus*. The high cover of flowering plants is dominated by Yarrow *Achillea millefolium* and other species that are frequent within the sward include Ribwort Plantain *Plantago lanceolata*, Bulbous Buttercup *Ranunculus bulbosus*, Ox-eye Daisy *Leucanthemum vulgare* and Red Clover *Trifolium pratense*.

Target Note 3. The greater field area is very similar though the area at the top of the field (Target Note 3a) has a higher proportion of grasses with a more vigorous growth.

Target Note 4. Fence lines around the current housing with small patches of Bramble *Rubus fruticosus*, rough grassland and associated species such as Green Alkanet *Pentaglottis sempervirens,* Common Nettle *Urtica dioica* and White Dead-nettle *Lamium album*.

Target Note 5. The southern boundary of the entire field is has several notable Oaks Quercus robur and a line of notable Hazel *Corylus avellana* coppice stools. These shrubs and trees have features that are of importance to wildlife such as splits and cracks in the Oaks and dense branching full of leaf litter in the Hazel.

Target Note 6. A mature male Slow Worm *Anguis fragilis* found under a reptile mat that has been left from a previous survey.

APPENDIX 3

NVC Results

Species	Q1	Q2	Q3	Q4	Q5	Abundance	Frequency
Achillea millefolium	9	8	4	8	3	3 - 9	V
Anthoxanthum odoratum	7	7	7	7	7	7	V
Festuca rubra	4	7	7	7	7	4 - 7	V
Holcus lanatus	6	3	8	6	7	3 - 8	V
Plantago lanceolata	2	4	4	3	4	2 - 4	V
Ranunculus bulbosus	4	4	2	4	3	2 - 4	V
Taraxacum sect. *Ruderalia*	2	3	1	2	-	1 – 3	IV
Trifolium pratense	4	2	4	-	2	2 - 4	IV
Bromus hordeaceus subsp. *hordeaceus*	-	2	-	2	1	1 - 2	III
Leucanthemum vulgare	-	4	3	-	2	2 - 4	III
Rumex acetosa	5	-	6	-	3	3 - 6	III
Cerastium fontanum	-	3	-	1	-	1 - 3	II
Dactylis glomerata	-	1	-	-	1	1	II
Lolium perenne	-	1	-	-	3	1 - 3	II
Luzula campestris	-	4	2	-	-	2 - 4	II
Poa pratensis	1	2	-	-	-	1 - 2	II
Trifolium dubium	-	4	-	-	3	3 - 4	II
Trifolium repens	2	-	-	6	-	2 - 6	II
Agrostis capillaris	-	-	-	2	-	2	I
Agrostis stolonifera	2	-	-	-	-	2	I
Cynosurus cristatus	-	-	2	-	-	2	I
Hypochaeris radicata	3	-	-	-	-	3	I
Poa trivialis	-	-	-	2	-	2	I
Ranunculus acris	-	-	2	-	-	2	I
Rumex acetosella	1	-	-	-	-	1	I
Senecio jacobaea	-	1	-	-	-	1	I
Stellaria graminea	3	-	-	-	-	3	I
Veronica chamaedrys	-	-	-	-	2	2	I
Vicia sativa subsp. *segetalis*	-	1	-	-	-	1	I
Total species	**15**	**18**	**13**	**12**	**14**	**Mean**	**14.4**

Sample locations / quadrat grid references

Quadrat no.	Grid Reference
1	TQ 02079 16048
2	TQ 02032 16063
3	TQ 01969 16083
4	TQ 02012 16131
5	TQ 01945 16145

APPENDIX 4

Plant species recorded at Coldwaltham

English name	Latin name	Abundance
Grasses, sedges and rushes		
Barren Brome	*Anisantha sterilis*	lf
Cocksfoot	*Dactylis glomerata*	o
Common Bent	*Agrostis capillaris*	r
Creeping Bent	*Agrostis stolonifera*	vo
False Oat-grass	*Arrhenatherum elatius*	r / lf
Field Wood-rush	*Luzula campestris*	o
Hairy Sedge	*Carex hirta*	r
Perennial Rye-grass	*Lolium perenne*	vo
Red Fescue	*Festuca rubra agg*	a
Rough-stalked Meadow-grass	*Poa trivialis*	vo
Smooth Meadow-grass	*Poa pratensis*	o
Soft-brome	*Bromus hordeaceus subsp hordeaceus*	o
Sweet Vernal-grass	*Anthoxanthum odoratum*	a
Yellow Oat-grass	*Trisetum flavescens*	r
Yorkshire-fog	*Holcus lanatus*	a
Flowering plants		
Bladder Campion	*Silene vulgaris subsp vulgaris*	vr
Bluebell	*Hyacinthoides non-scripta*	r
Broad-leaved Dock	*Rumex obtusifolius*	r
Bulbous Buttercup	*Ranunculus bulbosus*	a
Common Bird's-foot-trefoil	*Lotus corniculatus*	r
Common Cat's-ear	*Hypochaeris radicata*	r
Common Mouse-ear	*Cerastium fontanum*	o
Common Nettle	*Urtica dioica*	lf
Common Ragwort	*Senecio jacobaea*	r
Common Sorrel	*Rumex acetosa* subsp. *acetosa*	o
Common Vetch	*Vicia sativa* subsp. *segetalis*	o
Creeping Thistle	*Cirsium arvense*	o
Curled Dock	*Rumex crispus*	o
Dandelion	*Taraxacum agg*	f
Dove's-foot Crane's-bill	*Geranium molle*	o
Garden Sorrel	*Oxalis sp.*	r
Germander Speedwell	*Veronica chamaedrys*	o
Green Alkanet	*Pentaglottis sempervirens*	r
Ground-elder	*Aegopodium podagraria*	r
Ground-ivy	*Glechoma hederacea*	r
Hairy Tare	*Vicia hirsuta*	o / lf
Lesser Stitchwort	*Stellaria graminea*	o
Lesser Trefoil	*Trifolium dubium*	f / la
Meadow Buttercup	*Ranunculus acris*	o / lf
Ox-eye Daisy	*Leucanthemum vulgare*	f
Red Clover	*Trifolium pratense*	f
Ribwort Plantain	*Plantago lanceolata*	f
Sheep's Sorrel	*Rumex acetosella*	vo

English name	Latin name	
Flowering plants contd.		
White Clover	*Trifolium repens*	o
White Dead-nettle	*Lamium album*	r
Yarrow	*Achillea millefolium*	a
Ferns		
Bracken	*Pteridium aquilinum*	lf
Woody species		
Blackthorn	*Prunus spinosa*	lf
Bramble	*Rubus fruticosus agg*	o / la
Field Maple	*Acer campestre*	lf
Hawthorn	*Crataegus monogyna*	lf
Ivy	*Hedera helix*	r
Spindle	*Euonymus europaeus*	r

LEGISLATION

The Wildlife and Countryside Act 1981 (as amended)

Schedule 1

*A*pplies to all wild birds where it is an offence:

6.1 to take, damage or destroy a nest whilst it is being built or in use

6.2 to kill, injure or take any wild bird (subject to certain exceptions)

6.3 to take or destroy the egg of any wild bird.

It is also an offence to disturb any wild bird listed on Schedule 1 of the Wildlife & Countryside Act 1981 (as amended)

- while it is nest building
- at a nest containing eggs or young
- to disturb the dependant young of any such bird.

Schedule 5

For animals fully protected under Schedule 5 which includes, the hazel dormouse, great crested newt, all bats, water voles, otters, smooth snake, sand lizard and natterjack toad. It is an offence:

- to intentionally kill or injure or take these species
- to intentionally or recklessly damage or destroy or obstruct access to any structure or place which a species uses for shelter or protection, at any time even if the animal is not present.
- to intentionally or recklessly disturb whilst it is occupying a place which it uses for shelter or protection.

Adder, grass snake, common lizard and slow worm are protected from being killed or injured and the white-clawed crayfish is protected from being taken.

Schedule 8

Specific species of plants listed in Schedule 8 are protected. It is an offence: to intentionally pick, uproot or destroy a wild plant listed in Schedule 8.

Schedule 9

Invasive non-native species are listed under Schedule 9. It is an offence:

- to plant or otherwise cause to grow in the wild.
- If soils are contaminated by invasive non native plant species it becomes classified as
- '*controlled waste*' under the Environmental Protection Act 1990 (England, Wales & Scotland),
- and must be disposed of accordingly.

The Conservation of Habitat and Species Regulations 2010

Schedule 2 applies to all European Protected Species (EPS), which included all bat species, great crested newts, dormice, otters, sand lizards, smooth snake and natterjack toad. The protection afforded is overlapping but separate from the Wildlife and Countryside Act 1981 (as amended).