

Appendix 1.10 – Methodology for Ecology Assessments

1.1 Legislation and Policy background

1.1.1 There is a range of protection given to sites and species. Sites may be designated at local, national, European or global importance for nature conservation. Species may be protected by European-scale legislation or protected at varying levels of national protection. Further information is given in Appendix A to this methodology.

1.1.2 The Local Planning Authority has a policy to protect features of nature conservation value within its Local Plan. Other regulators have policies relating to the consents issued by them, and key documents taken into consideration for whilst undertaking this project include:

- Background Paper 5: Biodiversity
- Background Paper 6: Green Infrastructure
- Previous ecological survey information where available
- East Sussex Environment Strategy (2011)
- East Sussex Green Infrastructure Study (2014)
- Wealden Draft Green Infrastructure Strategy

1.2 Reporting standards

1.2.1 This report was written in compliance with British Standard 42020:2013 'Biodiversity — Code of practice for planning and development' and the Chartered Institute of Ecology and Environmental Management's (CIEEM) Code of Professional Conduct.

1.2.2 This report was prepared in accordance with the CIEEM 'Guidelines for Ecological Report Writing' as updated December 2015.

1.2.3 Assessment was undertaken against current legislation and planning policy, and in accordance with standard guidance. The assessment methodology used is reproduced in Appendix B to this methodology.

1.3 Acknowledgements

Permissions to access land

1.3.1 The sites are under the ownership of a large number of individuals and permission to access their land for survey is gratefully acknowledged.

Surveyor/staff competency

Core team	Experience (years)
Jo Parmenter CEnv MCIEEM MIEMA	25+
Ben Jervis MCIEEM	5+
Nick Aldus MCIEEM	12+
Site survey team	Experience (years)
Jodie Le Marquand	1+
Nicholas Trull	2+
Lewis Saunders	5+

Quality Assurance	Experience (years)
Jo Parmenter CEnv MCIEEM MIEMA	25+

Other contributors

1.3.2 We acknowledge the input of:

- Sussex Biodiversity Record Centre (SxBRC) for provision of data

1.4 Objectives of this appraisal

1.4.1 The aim of this report is to provide Wealden District Council with an overview of the ecological value of sites which could potentially be included in the Hailsham Area Action Plan, as described above. Detailed objectives are:

- Identify the habitats and species present or potentially present and evaluate their importance
- Provide an overview of green infrastructure and what could be important wildlife corridors within the survey areas
- Identify any ecological constraints to development
- Assess the potential impact of development
- Identify any opportunities available for integrating ecological features within the development
- Describe potential measures necessary to avoid impacts, reduce impacts or compensate for impacts so that there is no net harm to ecological features
- Propose ecological enhancements which may be suitable should the site be developed

1.5 Previous ecological studies

1.5.1 The following sites have previously had ecological studies undertaken during 2012 as part of Strategic Development Area assessments:

- 135/1310 – Land south of A271 and north of Harebeating Lane
- 197/1310 – Land east of Battle Road, to the rear of the Council Offices, south of Harebeating Lane
- 215/1310 – Poplar Cottage Farm, Amberstone
- 524/1310 – Land at Harebeating Nursery
- 120/1510 – Hindsland Fields (east), Eastbourne Road
- 236/3370 - Mornings Mill Farm
- 262/3000 – Park Farm (west), New Road
- 263/3000 – Park Farm (east), New Road
- 264/3000 – Park Farm, New Road
- 301/3000 – Danecroft Nursery, Station Road
- 534/3000 – Sussex Plants Ltd and adjoining land, Park Road Nurseries, Park Road
- 784/3000 – Land at Park Road

1.6 Duration of appraisal validity

1.6.1 The assessment, conclusions and recommendations in this appraisal are based on the studies undertaken, as set out in this report, and the stated limitations. This appraisal is based on the project as described and any changes to the project would need the appraisal to be reviewed. Unless otherwise stated, the assessment, conclusions and recommendations given assume that the site habitats will continue to be used for their current purpose without significant changes until development takes place. However, changes in use or management may occur between the time of the survey and proposals being implemented. Ecological features may change naturally at any time; for example, species may be lost from existing sites or colonise new areas. Our knowledge of the ecology of the site enables us to provide an estimate of the duration of the

validity of the surveys carried out and hence the applicability of this appraisal, so that any future need for review and update of this appraisal, or the surveys described within it, and the date by which such updates would become necessary, can be identified.

1.6.2 The table below sets out the duration of validity of each element of each information source. If the proposed development is delayed beyond the stated timescale, updated surveys or further investigations would be required.

Duration of validity of information source

Information source	Date undertaken	Duration of validity from date undertaken	Notes
Desk study	August-September 2016	1 year	Further data will likely become available within 1 year
Phase 1 habitat survey	August-September 2016	2 years	The habitats on site may change within 2 years, especially if there are changes to management
Protected species (including signs) identified on site	August-September 2016	1 year	Most protected species can occupy new areas within 1 year

2 Methodology

2.1 Desk study methodology

- 2.1.1 A desktop study for each individual site was undertaken in accordance with CIEEM guidance.
- 2.1.2 Sussex Biodiversity Record Centre (SxBRC) provided records of protected, rare and/or priority species and details of statutory and non-statutory designated sites within a 500m, 1km or 2km radius of the site boundaries.
- 2.1.3 The MAGIC Map website (DEFRA, 2016) was used to identify sites of European and national importance, ancient woodland and biodiversity action plan (BAP) (now Section 41) habitat within a 500m, 1km or 2km radius of the site boundaries.
- 2.1.4 The potential for protected, rare and/or priority species to be present on site has been considered in this assessment, taking into account the nature of the site and the habitat requirements of the species in question. Absence of records does not constitute absence of a species. Habitats on-site may be suitable to support other protected species that have not previously been recorded within the search area. Records of alien species, non-localised records (e.g. tetrad records) and records dated pre-1996 have not been described in detail, but are taken into account when considering likely species presence or absence.
- 2.1.5 Review of the relevant 1:25,000 Ordnance Survey map sheet identified waterbodies within 250m or 500m of the site, dependent upon site size and habitats present, to inform future requirement for great crested newt Habitat Suitability Index survey. Consideration was also given to the presence of ancient woodland and the green infrastructure of the local area.

Selection of search radius

- 2.1.6 Impacts on wildlife sites can be direct (landtake), or indirect (noise or visual disturbance from development and/or recreational pressure). Typically, even large developments would only create noise or visual disturbance impacts upon nearby for designated sites within 500m or at most 750m from that site; but may lead to significant recreational pressure where public access to the designated site exists, and a larger search area around developments likely to deliver in excess of 50 homes may be appropriate to allow such pressures to be taken into account. Small sites can only be developed to deliver a small number of homes and a small number of people, and consequently the search area to consider is very much lower.
- 2.1.7 The selected search radii were dependent upon the size of the site, the habitats present in the local area, any local barriers to movement of species and people, such as major roads or railways, and hence the probable 'zone of influence' it might have if developed; and were determined in advance of the desktop study for each individual site by a member of the core team.

Mapped output

- 2.1.8 Desktop data was mapped using GIS to allow analysis of protected species records in proximity to the survey site and to establish the presence or absence of protected wildlife sites within the hierarchy of international, national and locally designated sites of importance for biodiversity in the search area for each site.

Limitations to desk study methodology

- 2.1.9 Sussex Biodiversity Record Centre (SxBRC) provided their data subject to terms and conditions. The data provided must not be distributed or published for an external or public audience, for example within the appendix of a report. Local Planning Authorities may request a copy of the data from SxBRC either through their Service Level Agreement or as a data search. Consequently, records and site details are not presented here, although the data was considered in the assessment of potential impacts below.

- 2.1.10 The ecological assessment does not consider impacts upon the South Downs National Park, this being considered primarily a landscape designation; although any designated sites within the park boundary would be considered during ecological assessment.

2.2 Phase 1 habitat survey methodology

- 2.2.1 On completion of the desk top study for the individual sites, field surveys were undertaken.
- 2.2.2 The standard Phase 1 habitat survey methodology (JNCC, 2010) was followed. Phase 1 habitat survey is a standardised system for surveying, classifying and mapping wildlife habitats including urban areas. All field survey work was undertaken using a standard pro-forma incorporating a checklist of habitats to ensure a comprehensive assessment and consistency of approach.
- 2.2.3 Survey commenced with preliminary site habitat mapping based on OS map- and aerial-based imagery and identification of key on- and off-site features such as ponds, streams, woodlands or other possible habitats of potential biodiversity interest such as unimproved grassland. The preliminary mapping also identified any other obvious key features or habitats for detailed investigation on site.
- 2.2.4 JNCC survey methodology guidance for phase 1 habitat surveys requires the surveyor to produce habitat descriptions and descriptions of key features, including location of protected or BAP species observed opportunistically during survey, and/or the potential presence of these based on presence in nearby areas and the existence of suitable habitats of site.
- 2.2.5 The site surveyors verified the preliminary mapping and developed habitat descriptions for all habitat features present. Any specific features potentially of protected species importance, such as rubble piles and artificial refugia, were target noted.
- 2.2.6 Phase 1 survey methodology facilitates a rapid assessment of habitats and it is not necessary to identify every plant species on site, however detailed lists of most species within each habitat were compiled insofar as this was possible given the season.
- 2.2.7 The survey visit was also used to identify potential for protected, rare and/or priority species, for example, bats, mammals, amphibians and reptiles, to occur on, or in the vicinity of, the land parcels identified for potential development. Although the survey methodology is not intended for species survey, any protected, rare and/or priority species, or signs belonging to these species, which were incidentally seen during the survey were recorded.
- 2.2.8 Brief notes on habitat condition and management were also made during the Phase 1 survey visit.
- 2.2.9 The surveys were undertaken between the beginning of August 2016 and mid October 2016.

Limitations to Phase 1 habitat survey

- 2.2.10 A number of limitations were experienced during survey:
- Due to the large number of sites and client deadline, not all surveys were carried out in optimal weather conditions, i.e. dry and warm with clear skies.
 - Not all areas of every site were accessible due to factors such as aggressive livestock, pets or dense thorny vegetation. Where access restrictions were encountered, habitats were assessed from adjacent habitats. If this was also not possible, habitats were assessed based on aerial imagery alone.
 - The presence of uncommon spring-flowering plants, which would include many Ancient Woodland indicator species is unlikely to have been detected as surveys were undertaken during August and October.

- No attempts were made to assess the potential for trees to support roosting bats as trees were in full leaf at the time of survey. However, trees of sufficient maturity to warrant further investigation were noted.
- Protected species signs were recorded where encountered, however the work focussed on Phase 1 habitat survey and was not, and should not be taken to be, a comprehensive survey of protected species.

2.3 Evaluation of blue and green infrastructure

2.3.1 Aerial imagery, Ordnance Survey mapping (1:25,000 scale) and Environment Agency indicative flood mapping were used to identify 'blue' infrastructure local to the sites. This information helps to determine potential for wetland species to be present in suitable on-site habitat and also indicates whether site development might give rise to negative impacts on downstream habitats, including areas of nature conservation importance such as the Pevensey Levels.

2.3.2 Aerial imagery and the Green Infrastructure Study undertaken by Chris Blandford Associates in 2016 were similarly used to develop green infrastructure mapping to understand the relationship between individual sites and the green infrastructure of the sub-area.

2.3.3 The site level Green Infrastructure (GI) is described in the site report text, which is specific to each individual site. The sub-area chapters describes the GI context for each sub-area.

Limitations to blue infrastructure mapping

2.3.4 The mapping is largely based upon the Ordnance Survey 1:25,000 map series. Not all ponds and ditches present in the local area are shown on this map series.

2.4 Assessment methodology

2.4.1 The assessment was undertaken in accordance with the Chartered Institute of Ecology and Environmental Management's (CIEEM) Professional Guidance Series 'Guidelines for Ecological Impact Assessment [EcIA] in the UK and Ireland' (Second Edition January 2016).

2.4.2 More details of the assessment methodology are provided at Appendix B, but in summary, the impact assessment process involves:

- Identifying and characterising impacts
- Incorporating measures to avoid and mitigate (reduce) these impacts
- Assessing the significance of any residual effects after mitigation
- Identifying appropriate compensation measures to offset significant residual effects
- Identifying opportunities for ecological enhancement

2.4.3 The hierarchical process of avoiding, mitigating and compensating ecological impacts is explained further below.

2.4.4 In EcIA it is only essential to assess and report significant residual effects (those that remain after mitigation measures have been taken into account). However, it is considered good practice for the EcIA to make clear both the potential significant effects without mitigation and the residual significant effects following mitigation, particularly where the mitigation proposed is experimental, unproven or controversial; or to demonstrate the importance of securing the measures proposed through planning conditions or obligations.

2.4.5 Assessment of the potential impacts of the application takes into account both on-site impacts and those that may occur on adjacent and more distant ecological features. Impacts can be positive or negative. Negative impacts can include:

- Direct loss of wildlife habitats
- Fragmentation and isolation of habitats through loss of connectivity

- Disturbance to species from noise, light or other visual stimuli
- Changes to key habitat features
- Changes to the local hydrology, water quality, nutrient status and/or air quality

2.4.6 Negative and positive impacts on nature conservation features are characterised based on predicted changes as a result of the proposed activities. In order to characterise the impacts on each feature, the following parameters are considered:

- The magnitude of the impact
- The spatial extent over which the impact would occur
- The temporal duration of the impact and whether it relates to the construction or operational phase of the development
- The timing and frequency of the impact
- Whether the impact is reversible and over what timeframe

2.4.7 Both short term (i.e. impacts occurring during the site clearance and construction phases) and long term impacts are considered.

Conservation status

2.4.8 The extent to which the application may have an effect upon ecological features should be determined in the light of its expected influence on the integrity of the protected site or ecosystem. The integrity of protected sites is considered specifically in the light of the site's conservation objectives. Beyond the boundaries of designated sites with specific nature conservation designations and clear conservation objectives, the concept of 'conservation status' is used. Conservation status should be evaluated for a study area at a defined level of ecological value. The extent of the area used in the assessment relates to the geographical level at which the feature is considered important:

- For habitats, conservation status is determined by the sum of the influences acting on the habitats and its typical species that may affect its long-term distribution, structure and functions as well as the long-term survival of its typical species within a given geographical area
- For species, conservation status is determined by the sum of influences acting on the species concerned and inter-relationships that may affect the long-term distribution and abundance of its populations within a given geographical area.

Confidence in predictions

2.4.9 It is important to consider the likelihood that a change or activity will occur as predicted and also the degree of confidence in the assessment of the impact on ecological structure and function:

- **Certain** probability estimated at above 95%
- **Probable** probability estimated above 50% but below 95%
- **Possible** probability estimated above 5% but below 50%
- **Unlikely** probability estimated as less than 5%.

Overall assessment

2.4.10 An overall assessment of value and impact is provided specific to each site, and this is based upon the highest level of value of any of the features or species present or likely to be present on the site, and similarly the overall assessment of impact would be the impact of greatest significance.

2.4.11 Assessments have been formed on a precautionary basis, i.e. on the assumption that most habitats on-site at the time of survey would be removed to facilitate development but on the assumption that some key habitats might be retained (Impact Avoidance) and that certain standard mitigation measures might be delivered.

2.4.12 It is likely that in most instances, a well-designed development which retains all key habitats of important would likely lead to a lower impact than that provided in our reports.

2.4.13 The likely impact of development on designated sites in the local area (both on- or off-site) is also evaluated. This impact may be direct or indirect (see above), with direct

effects such as landtake on on-site designated sites or habitats having a greater level of impact than off-site indirect effects. The impact of recreation upon internationally designated sites is similarly briefly evaluated, but would be covered by the HRA for the site allocations plan and HRA for individual developments and thus lies beyond the scope of this study.

2.5 Mitigation hierarchy

2.5.1 The following principles underpin EcIA and have been followed, where applicable, in this assessment:

- **Avoidance** Seek options that avoid harm to ecological features (for example, by locating the proposed development on an alternative site or safeguarding on-site features within the site layout design).
- **Mitigation** Adverse effects should be avoided or minimised through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.
- **Compensation** Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.
- **Enhancement** Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.

2.6 Identification of protected species potential

2.6.1 The potential for each site to support protected species (and hence requirement for protected species survey in support of any future planning application) was determined by one of the Core Team members using the following information:

- Habitat connectivity between the site and any local designated sites or other notable habitat features
- Results of Phase 1 survey, including habitats present, the botanical richness of these habitats and, the presence of plant species suggestive of relatively undisturbed or higher quality habitat
- Site management, and in particular whether hedges were closely managed or had been allowed to grow to a tall, broad form; presence of scattered scrub, presence of tall or rough grassland
- Whether wet ditches or ponds were present
- The presence of woodland, and particularly ancient woodland or designated areas of BAP habitat
- Identification of specific features likely to support protected species, such as rubble piles
- Identification of protected species during the Phase 1 survey
- The presence of protected species within the search radius.

2.6.2 The table below summarises the types of habitats or features used by specific protected species or species groups. This information was used to inform the likelihood of protected species present on site, in combination with the above-listed factors

Species/Species group	Habitats and features indicating likelihood of presence
Rare and scarce plants	'Higher quality' habitats such as semi-improved grassland, marsh grassland, ancient hedgerows (indicated by species

	richness), ancient woodlands (designated or potential due to species composition); ditches or watercourses.
Rare and scarce invertebrates	'Higher quality' habitats such as semi-improved grassland, marsh grassland, ancient hedgerows (indicated by species richness), ancient woodlands (designated or potential due to species composition); ditches or watercourses.
Amphibians including great crested newts	Presence of ponds on or close to site and presence of habitats with potential to support this group; tall grassy vegetation, particularly where associated with scrub, woodland or hedgerow, dense hedge with broad base; dense scrub, woodland, areas of marshy vegetation, ditches and watercourses, especially where habitats are shaded for at least part of the day; high degree of habitat connectivity.
Reptiles	Presence of habitats with potential to support this group; tall grassy vegetation, particularly where associated with scrub, woodland or hedgerow, dense hedge with broad base; dense scrub, woodland, areas of marshy vegetation, ditches and watercourses, especially where habitats are sunlit for at least part of day; presence of south or east facing banks for basking, presence of habitat piles ; high degree of habitat connectivity.
Breeding/Wintering birds	Presence of vegetation suitable for use by foraging birds (providing berries or invertebrate food); presence of dense scrub, dense, well-grown hedgerow or woodland habitats; presence of mature trees; mixture of taller and shorter swards.
Dormouse	Presence of species rich woodland with dense understorey; dense, tall, species rich hedgerows; dense scrub; high degree of habitat connectivity.
Aquatic mammals including water vole and otter	Presence of watercourses or wet ditches with a high degree of blue infrastructure connectivity; these habitats being suitable for foraging by water vole, otter etc.
Terrestrial mammals including badger	Presence of rough or semi-improved grassland, marsh grassland, hedgerows, backs, woodland and dense scrub.
Bats (roosting potential)	Presence of mature trees or buildings.
Bats (foraging and commuting)	Foraging and commuting bats may use any semi-natural habitat particularly where there is a high degree of habitat connectivity or sheltered foraging available.

2.7 Identification of potential mitigation

2.7.1 The potential mitigation requirement for individual sites is likely to depend significantly upon whether habitats of particular wildlife value (as identified in the report section which deals with impact avoidance) can be safeguarded in any future development and the outcome of the recommended protected species surveys. It is therefore not possible to provide more than generic guidance on potential mitigation measures designed to protect retained habitats, replace lost vegetation and ensure no direct harm comes to nesting birds or terrestrial mammals.

2.8 Identification of potential enhancements

2.8.1 Ecological enhancements aim to improve the quality of the site and the immediate vicinity for native flora and fauna.

2.8.2 The potential enhancement measures which might be delivered for individual sites is likely to depend significantly upon: whether habitats of particular wildlife value (as identified in the report section which deals with impact avoidance) can be safeguarded in any future

development; whether these habitats might then be managed to benefit wildlife; the scale of development; and whether this retains on-site greenspace within which such enhancements might be delivered.

- 2.8.3 It is therefore not possible to provide more than generic guidance on potential enhancement measures, although those that have been identified, for example creation of new ponds and areas of new woodland, would provide a high degree of nature conservation benefit.
- 2.8.4 Possible enhancement opportunities specific to the development proposals for this site are provided in individual site reports. It is not anticipated that all these options would be utilised. The options are listed in order of priority, with habitat enhancements having most benefit to wildlife. Small-scale enhancements targeted at individual species or species groups, whilst valuable, are generally of less overall benefit than habitat enhancement measures.
- 2.8.5 Wherever possible, new site planting should use native species, which support biodiversity significantly better than non-native plants, this is due to the number of flowers, fruits, seeds and berries that are produced on our native species and their different flowering and fruiting times throughout the year. Where sites to be developed lie in close proximity to protected wildlife sites or ancient woodland, sourcing of plant material from local genetic stock is advisable; woodland extensions could be delivered through allowing natural colonisation from an adjacent woodland, where this is of suitable quality.
- 2.8.6 Wherever possible, site planting should try to mimic species composition of local woodlands and hedgerows, and both link to site boundary vegetation; and also connect local green infrastructure; so that a development could potentially incorporate an in-site green woody corridor connecting two woodlands on either side of the site which currently are linked only by a more tortuous route. Similarly, if there is a small woodland on the north boundary of a site then new woodland planting along that boundary could effectively double the size of the wood, connect it to other woodland or hedgerow habitats and hence deliver biodiversity benefit.
- 2.8.7 Sustainable Urban Drainage Systems (SUDS) are likely to be required for most if not all development sites, in line with local and national planning policy. The extent and design of SUDS is likely to need to take account of local soil permeability and flood alleviation requirements and so wildlife benefits can be identified only at a generic level at this stage.
- 2.8.8 Wherever possible, SUDS should be designed so as to benefit wildlife through creating a network of wet or damp habitats, both natural and man-made: for example an area of existing marsh grassland could be extended by linking it with a SUDS attenuation meadow or swale, or an on-site pond could be linked to a balancing lagoon by a corridor of vegetation. All SUDS should be designed so as to incorporate appropriate wetland native species.

2.9 Study output

- 2.9.1 The outcomes of the study included
- Detailed Phase 1 mapping using JNCC colour coding and habitat codes and identification
 - Identification of higher and lower ecological value or potential ecological value on site
 - Mapping and description of local wildlife corridors/components of the local ecological networks; both the blue infrastructure network (floodplains rivers, ditches and ponds) and green infrastructure network (hedgerows, scrub, woodlands) were considered
 - Report to BS 42020:2013, in accordance with CIEEM guidance for PEA, and following a standard report structure.

- An indicative assessment of the likely ecological value of the site, insofar as this can be established through desktop study and phase 1 survey in the absence of protected species survey
- Identification of any further species surveys required, including any requirement for detailed botanical survey or habitat survey.
- Preliminary assessment of the impact of any development insofar as this can be established through desktop study and phase 1 survey in the absence of protected species survey
- Preparation of indicative constraints and opportunities for each site: identification of key features and habitats to be safeguarded in the event of development (Avoidance); and identifying opportunities and making recommendations, in relation to the individual sites as to where habitats or features could be protected, maintained, enhanced, restored or created.
- Lists of recommended protected species surveys (note that bat emergence survey would not be recommended (or the need discounted) until detailed inspection of trees and buildings has been carried out. This uncertainty is denoted in individual site reports by 'NK')
- An assessment of the likelihood that the site might support protected species interest, based upon the habitats present, their management condition and protected species presence in the area.

3 References

British Standards Institution (2013) *BS42020 Biodiversity – A code of practice for planning and development*. <http://shop.bsigroup.com/ProductDetail/?pid=000000000030258704>

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