

6. Ecology & Nature Conservation

Introduction

- 6.1 Ecology is concerned with the relationship between living organisms and their environment. Within the context of this assessment, it encompasses the living natural resources of the Site, including nature conservation and biodiversity (i.e. the variety of living organisms).
- 6.2 This chapter sets out an assessment of the ecological resources of the Site, establishes a 'baseline' of ecological quality and sensitivities as well as considering the sensitivities and ecological quality of the wider area. The potential effects of the Proposed Development on these resources are then assessed and evaluated. Finally, measures for the mitigation of negative or undesirable effects are proposed as well as possible improvement measures to enhance the Site in terms of its biodiversity interests (Section 8).

Policy Context

- 6.3 This chapter has been undertaken with reference to the Institute of Ecology and Environmental Management (IEEM) 'Guidelines for Ecological Impact Assessment in the UK' (2006), the Institute of Environmental Assessment's 'Guidelines for Baseline Ecological Assessment' (1995), best practice methods, set out in the JNCC Handbook for Phase 1 Habitat Survey (2004) and Planning Policy Statement 9: Biodiversity and Geological Conservation. The chapter will consider the following European and National legislation:
- EC Habitats Directive (Council Directive 92/43/EEC)
 - The Wildlife and Countryside Act (1981)
 - The Countryside and Rights of Way Act (2000) and
 - The Conservation (Natural Habitats & c.) Regulations (1994).

Assessment Methodology & Significance Criteria

- 6.4 The role of EIA is to predict the likely character and scale of significant environmental effects, to assess their significance against relevant criteria and to propose monitoring and mitigation measures to reduce or control potentially significant impacts. Impact prediction has been undertaken by means of existing best practice tools and techniques whilst significance assessment has been undertaken against widely accepted thresholds and criteria. The tools and thresholds selected are those which are recommended in planning guidance, Institute of Ecology and Environmental Management (IEEM) practice guides and other relevant guidelines.
- 6.5 In order to identify the impacts on ecology, an approach is taken where the Site in its current form is assessed, then the potential impacts on the ecological resources of the existing site are assessed against this baseline. Therefore, the assessment considers baseline and impacts on the baseline in a systematic way, considering the various aspects of ecology, nature conservation and biodiversity as follows:
- the baseline is defined, i.e. an assessment of the Site in its current status and condition is made, including assessment of the ecology and an evaluation of the water quality of natural waters using the techniques outlined herein;

- the potential impact and sources of impact on ecological resources are defined and quantified, where possible, in terms of magnitude and duration. Impacts resulting from the development are assessed for construction and operation of the Proposed Development; and
- the significance of impacts is assessed and where impacts are significant, mitigation measures are described.

- 6.6 These objectives are achieved through completion of a preliminary ecological assessment in the form of an extended Phase I Habitat Survey (Section 4) and baseline data search. The need to carry out further ecological surveys prior to any development at the Site is determined by the Phase I Habitat Survey.

Baseline Conditions

Phase I Habitat Survey

- 6.7 The Phase I Habitat Survey (Joint Nature Conservation Committee, 2003) forms the first stage of the ecological assessment of a site and is used to identify whether further, more detailed, species surveys are required. The Phase I Habitat Survey is a simple technique, essential for surveying, classifying and mapping wildlife areas in a standard way. The aim of this survey is to provide a description of the existing habitat types, to determine the existence and location of any ecologically valuable areas and to identify the presence of any protected species or habitat that may support protected species. This information serves to determine any further ecological surveys that may be required, assess the ecological impact of any development at the Site, identify any ecological constraints and/or mitigation measures required and also identify any enhancement measures that may be possible.

Overview

- 6.8 The study comprised two key phases: a desk-top study and a walkover field survey. The study was undertaken with reference to the Institute of Ecology and Environmental Management (IEEM) 'Guidelines for Ecological Impact Assessment in the UK' (2006) and best practice methods, set out in the JNCC Handbook for Phase 1 Habitat Survey (2004).

Desk Study

- 6.9 The purpose of the desk-top study was to collect baseline data about the Site and the surrounding area, held on the Multi-Agency Geographic Information for the Countryside (MAGIC) website and by statutory and non-statutory consultees (Table 6.1). Information was requested from Sussex Biodiversity Records Centre (SBRC) for the Site and a 2 km study area around it.

Field Survey

- 6.10 It was necessary to supplement the information obtained from the desk study with a walkover field survey, in order to:
- ascertain whether the Site could be of ecological interest and/or contain protected species, even though the Site might not be covered by existing statutory ecological designations; and
 - establish the ecological value of the Site in order for the overall disturbance to ecosystems within the area to be evaluated.

- 6.11 A site visit was carried out on the 27th September 2007. This time of year is considered suitable for assessing the suitability of the Site for protected species.
- 6.12 The dominant plant species were recorded and the habitats classified according to their vegetation types and presented in the standard Phase I Habitat Survey format (Joint Nature Conservation Committee, 1993). Also, records were made of the suitability of habitats for protected faunal species. The locations of any evidence of the presence of these species (footprints, burrows, setts etc) were recorded with a handheld GPS unit.
- 6.13 The results of the survey are presented as a series of habitat and species descriptions. The Phase I Habitat Plan is shown in Figure 6.1 and these descriptions should be read in conjunction with this plan. Target notes (TN) were made on any species or subject of particular note and are listed in Appendix 11.2.

Habitat Evaluation

- 6.14 By applying recognised criteria produced by *Ratcliffe* (1977), the following seven-point scale was used to rank the importance of the habitat types and species they support:
- low value;
 - low to intermediate value;
 - intermediate value;
 - intermediate to high value;
 - high value (Local/District importance);
 - very high value (County importance e.g. Sites of Nature Conservation Interest (SNCI), County Wildlife Site); and
 - exceptional value (National importance e.g. Site of Special Scientific Interest (SSSI)).
- 6.15 A summary of the Ratcliffe criteria is attached at Appendix 11.1

Protected Species

- 6.16 Particular attention was paid to record the presence of protected species such as reptiles, bats, otters and badgers that might be using the Site, with the following survey techniques adopted, where appropriate.

Badgers

- 6.17 Badgers and their setts are protected by *The Protection of Badgers Act* 1992, under which it is an offence to harm badgers or their setts. Evidence of badger activity is usually detected by any one or more of the following signs:
- presence of holes with evidence of badger such as footprints, discarded hair, etc.;
 - presence of dung pits and latrines;
 - presence of well used runs with subsidiary evidence of badger activity; and
 - presence of other indications of badger activity, such as signs of foraging and footprints.
- 6.18 A sett is defined as "any structure or place which displays signs indicating current use by a badger". Natural England (formerly English Nature)

interpret current use as having been used at any point in the last 12 months.

Bats

6.19 Currently there are 16 species of bat known to breed in the UK. All 16 species and their roost sites are protected under the *Wildlife and Countryside Act 1981* and *The Conservation (Natural Habitats &c.) Regulations 1994*. As a signatory to the Bonn Convention (Agreement on the Conservation of Bats in Europe), the UK is also required to protect their habitats. This legislation makes it illegal to kill, injure, capture or disturb bats or to obstruct access to, damage or destroy bat roosts and protection from damage or disturbance of important feeding areas. Under the law, a roost is any structure or place used for shelter or protection.

6.20 The exterior of any building was examined using binoculars, where necessary, to identify any roost access points. Individual trees were also surveyed for suitability and checked for any signs of bats. Evidence of bats is usually detected by any one or more of the following signs:

- presence of bat droppings, which tend to accumulate under established roost sites or at roost entrances;
- accumulation of large numbers of moth wings, which have been discarded by feeding bats;
- areas of staining by urine or from fur rubbing; and
- presence of bats or their corpses.

Reptiles and Amphibians

6.21 All species of reptile are protected under the *Wildlife and Countryside Act 1981* (as amended by the *Countryside and Rights of Way Act 2000*) against intentional and reckless killing and injury and against sale. Reptile activity is dependent upon the time of year and weather conditions. During the colder winter months, they hibernate in dry, frost-free locations and they may also use these locations on cooler summer days. Reptile populations reach their highest densities in well-drained heathlands and grasslands with south facing slopes. Reptiles can populate field margins and roadside verges where these are close to other habitat features, though reptiles are sensitive to pesticides and other forms of chemical contamination. Favourable amphibian habitat comprises water bodies with a low flow rate and good vegetation cover surrounded by mature woodland with lots of dead wood or areas of rough grassland.

6.22 During the survey, the area was carefully searched and, where possible, artificial and natural refugia were lifted and checked for any sheltering reptiles or amphibians. Reptile and amphibian activity is dependent upon the time of year and weather conditions. Although presence of such species may be detected during a single survey, proving absence is difficult; it was therefore necessary to assess the suitability of habitat for reptiles and amphibians, by considering both the overall habitat and any specific features that are important for species of reptiles and amphibian.

Water Voles

6.23 Water voles are protected under the *Wildlife and Countryside Act 1981* (as amended by the *Countryside and Rights of Way Act 2000*) whereby the animals themselves are not protected, but their habitat and places used for shelter are. Evidence of water voles is usually detected by one of the following signs:

- presence of burrows;
- presence of droppings and latrines;
- presence of feeding stations;
- presence of well used runways in vegetation (most often found within two metres of the water's edge) and grazed lawn areas; and / or
- presence of other indications of water vole activity such as nests and footprints.

Other Wildlife

- 6.24 The survey of the Site also recorded any obvious signs of other protected species and other wildlife that may be using the Site.

Desk-top Study

Consultation

- 6.25 A summary of the scoping responses received from the statutory and non-statutory consultees is provided in Table 6.1.

TABLE 6.1: SUMMARY OF CONSULTEES RESPONSES

Consultee	Information and Consultation Response
Natural England	Recommended contacting Sussex Biodiversity Records Centre and consulting the MAGIC website.
Environment Agency	Recommended contacting Sussex Biodiversity Records Centre. Recommended that buffer strips of 5 metres should be retained between any development and the top bank of any watercourse. Would like to see environmental enhancements integrated into any development.
Sussex Biodiversity Records Centre (SBRC)	Sent data showing statutory & non-statutory sites and legally protected and notable species records up to 2 km from the Site
Sussex Wildlife Trust	Response still awaited.
Sussex Bat Group	Response still awaited.

Designated Sites

- 6.26 According to the MAGIC website, no designated sites of international, national or local conservation importance pertain to the Site or are present within 2 km of the Site boundary.
- 6.27 However, there are two SSSI (Sites of Special Scientific Interest) within 5 km; Felpham SSSI (2.3 km to the south) and Bognor Reef SSSI (3 km to the south west) SSSIs are conservation designations of national importance.

Protected and Notable Species

- 6.28 Records of protected and notable species within a 2 km radius of the Site were obtained from Sussex Biodiversity Records Centre (SBRC). Information on protected species was also obtained from the National Biodiversity Network (NBN) Gateway website for up to a 10 km radius around the Site. Information from the NBN gives an indication of the presence of protected species within the wider area but the location provided is often only accurate to a resolution of between 100 m and 1 km. Information from both providers is given below.

- 6.29 There are currently no records of protected species on site. However, there are several records (from SBRC & NBN) of protected species living within 10 km of the Site and these are summarised below.
- 6.30 According to NBN there are records of several species of bat within a 10 km of the Site including pipistrelle bat (*Pipistrellus pipistrellus*), noctule bat (*Nyctalus noctula*) and long-eared bat species (*Plecotus sp.*). All 16 species and their roost sites are protected under the Wildlife and Countryside Act 1981 and The Conservation (Natural Habitats &c.) Regulations 1994.
- 6.31 There are records of great crested newts (*Triturus cristatus*) 1.9 km to the south of the Site. Great crested newt are protected under the *Wildlife and Countryside Act, 1981* (as amended by the *Countryside and Rights of Way Act, 2000*) and the *Conservation (Natural Habitats, &c.) Regulations, 1994*.
- 6.32 There is one record of common lizard (*Lacerta vivipara*), 1.9 km south of site. There are five records of slow worm (*Anguis fragilis*), the closest records is 1.9 km south of the Site. There are four records of grass snake (*Natrix natrix*), the closest record is 1.8 km south west of the Site. There is one record of adder (*Vipera berus*), 3 km north east of the Site. All species of reptile are protected under the *Wildlife and Countryside Act 1981* (as amended by the *Countryside and Rights of Way Act 2000*) against intentional and reckless killing and injury and against sale.
- 6.33 There are four records of water voles (*Arvicola terrestris*) within 2 km of the Site; the closest record is approximately 400 m east of the Site. Water voles have been recorded within a 10 km radius of the Site.
- 6.34 Water voles are protected under the *Wildlife and Countryside Act 1981* (as amended by the *Countryside and Rights of Way Act 2000*) whereby the animals themselves are not protected, but their habitat and places used for shelter are.
- 6.35 Badgers (*Meles meles*) have been recorded within a 10 km radius of the Site. Badgers and their setts are protected by *The Protection of Badgers Act 1992*, under which it is an offence to harm either badgers or their setts.

Habitat Types and Evaluation

- 6.36 The results of the Phase I Habitat Survey are presented below as a series of habitat and species descriptions. The Phase I Habitat Plan is shown in Figure 6.1 and the following descriptions should be read in conjunction with this plan.

Arable Land

- 6.37 The dominant habitat within the application area is arable farm land. These areas are generally intensively managed right up to the field margins and have low species diversity. No crops were present in the fields during the survey and these areas were predominantly stubble although occasionally a few herbs and grasses such as perennial rye grass (*Lolium perenne*), ribwort plantain (*Plantago lanceolata*) and creeping thistle (*Cirsium arvense*) could be seen growing on the small field margins but the general absence of an un-sown strip around the edge of the field limits ecological value.
- 6.38 The intensive management and low species diversity of these areas restricts their ecological value although they do provide shelter and grazing for wildlife such as rabbits. When lying fallow, arable fields provide good habitat for flocks of birds that can use arable fields as resting ground or to forage for soil dwelling invertebrates.

6.39 Habitat value: Low to Intermediate.

Tall Ruderal

6.40 Tall ruderal vegetation was present amongst areas of disturbed ground along the margins of the application area, on the edge of hedgerows and beside the track.

6.41 Species present included common nettle (*Urtica dioica*), burdock (*Arctium Lappa*), mugwort (*Artemisia vulgaris*), creeping thistle, (*Cirsium arvense*), spear thistle (*Cirsium vulgare*), hogweed (*Heracleum sphondylium*), white dead nettle (*Lamium album*), dandelion and ribwort plantain (*Plantago lanceolata*). The occasional grass species was also present including false oat grass (*Lolium perenne*).

6.42 This habitat can provide a food source for bird species and insect groups as well as cover for small mammals.

6.43 Habitat value: Intermediate.

Scrub

6.44 Scrub was present along the field margins amongst the patchy hedgerow and also along the drainage ditch. It was also present within the derelict barn (TN 2; Figure 6.1). This habitat was dominated by bramble (*Rubus fruticosus* agg), other species included butterfly bush (*Buddleia* sp.), elder (*Sambucus nigra*), hawthorn (*Crataegus monogyna*), common nettle, teasel (*Dipsacus fullonum*), mugwort, black bryony (*Tamus communis*) and hedge bindweed (*Calystegia sepium*).

6.45 Scrub offers good habitat and a food source and shelter for breeding and wintering birds as well as small and large mammals. Although these areas are generally species poor, they offer a good refuge for wildlife and a wildlife corridor across the Site, amongst the intensively managed arable fields.

6.46 Habitat value: Intermediate.

Hedgerows

6.47 Hedgerow is only present in small patches around the application area; they are species poor, broken and scrubby. Species composition was low and was predominately hawthorn, elm (*Ulmus* sp.), sycamore and bramble.

6.48 Hedgerows surrounding the Site are generally broken, of limited species diversity and ecological value although they all provide good shelter, a food source and nesting habitat for birds.

6.49 Habitat value: Intermediate.

Water and Ditches

6.50 There is a network of wet and dry ditches surrounding the application of the Site area; these connect with further ditches and the Lidsey Rife 300 m to the east. The application area abuts a dry ditch in the east; this is overgrown with scrub.

6.51 The ditch is of low species diversity; however, offers a refuge and a food source for wildlife. It could also form part of a wildlife corridor across what is generally intensively managed arable fields. This could be used by small mammals and potentially bats, if they are present, in the event that they inhabit the nearby cottages (TN 4 Figure 6.1).

6.52 Habitat value: Intermediate.

Buildings and Hardstanding

6.53 There are no buildings in the application area although there are two cottages and a derelict barn just to the south of the Site. The old cottages at Oldlands Farm (TN 4 Figure 6.1) appear to be of late 19th century design, were wooden-framed and housed small gaps in the eaves. The barn is simply a shell, it contains two walls and exposed metal roof beams but no roof. Vegetation associated with the derelict barn comprised dense scrub in the centre and tall ruderal vegetation around the margins.

6.54 Hardstanding was limited on the Site and was predominantly confined to the track in the south of the Site and the driveways and service areas associated with Oldlands Farm Cottages and the derelict barn (TN 2 Figure 6.1).

6.55 The design of the old cottages has the potential to support protected species such as bats although no evidence was found during the survey. The derelict barn is not suitable for protected species although the scrub amongst the barn provides good cover for birds. Areas of hardstanding are of lower ecological value.

6.56 Habitat value: Low to Intermediate.

Fauna

Birds

6.57 The following bird species were either seen or heard on the Site:

- Carrion Crow (*Corvus corone*)
- Magpie (*Pica pica*)
- Wood Pigeon (*Columba palumbus*)
- Goldfinch (*Carduelis carduelis*)
- Greenfinch (*Carduelis chloris*)
- Blackbird (*Turdus merula*)
- Blue Tit (*Parus caeruleus*)
- Black-Headed Gull (*Larus ridibundus*)

6.58 None of the birds identified on the Site are listed on Annex 1 of the European Birds Directive, on Schedule 1 of the *Wildlife and Countryside Act 1981* (as amended) or on the RSPB Red-list. However, Black-Headed Gull are listed on the RSPB Amber lists¹ and RSPB Red-list Reed Bunting (*Emberiza schoeniclus*) was identified outside of the application area, on the central ditch (TN 5 Figure 6.1).

6.59 Bird species are identified through actual sightings or through identification of song. Birds are most vocal and active during the breeding season that runs between March and July; many bird species are less active in

¹ Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green.

September and therefore this list may not be fully representative of the area.

- 6.60 It should be noted that all species of wild bird and their nests are protected under the *Wildlife and Countryside Act 1981* (as amended). The hedgerows and mature trees provide shelter for bird species throughout the year.

Badgers

- 6.61 A badger sett was found approximately 150 m to the north of the application area amongst a hedgerow. This sett contained approximately two partially used holes and five disused holes. It did not appear to be in regular use at the time of the survey and no evidence of recent badger activity was found on the Site. However, parts of the sett appeared to be in good condition and appeared to have been used, at least partially, in the past twelve months. Although it is probably not a main sett, it appears to be a seasonally-used sett and could therefore be re-colonised at any time.

Bats

- 6.62 No obvious evidence of bats was observed during the Site visit amongst either the nearby buildings or trees and the majority of land is too open and exposed to be of significant use to bats. There are also no historical records of bats within 2 km of the Site although they have been recorded within 10 km. The old cottages at Oldlands Farm (TN 4 Figure 6.1) appeared to be of late 19th century design, were wooden-framed and housed small gaps in the eaves; a design that has the potential to support bats. Being predominantly arable land, there is limited foraging habitat for bats within the application area; however the surrounding habitat including the interconnecting ditches and hedgerows do provide cover and foraging habitat for bats.
- 6.63 There are records of bats in the wider surrounding area and there is a possibility that bats could inhabit the cottages to the south of the Site. It is considered highly unlikely that bats are using the Site itself although there is a low risk that bats will forage along the drain to the east of the application area, between the cottages and the main central ditch, located to the north of the application area (TN 5 Figure 6.1). The barn is simply a shell, it contains two walls and exposed metal roof beams but no roof and is not suitable for bats.

Reptiles and Amphibians

- 6.64 The Site was carefully checked for reptiles and amphibians, but none were recorded. Much of the Site is unsuitable for reptiles and amphibians as it is predominantly arable land. Areas of scrub and tall ruderal vegetation may be of some use to resting reptiles but these areas are restricted to the margins of the Site and provide only limited cover throughout the year.

Water Voles

- 6.65 No evidence of water vole was recorded during the survey and the application area, being predominantly arable land is unsuitable for the species. The ditch that forms part of the eastern boundary of the application area is also unsuitable for water vole; it is overgrown with scrub and was dry at the time of surveying. However, the central ditch, off site to the north (TN 5 Figure 2.1), contains suitable vegetation to be of use for the species, although flow appeared to be too low for the ditches to be of prime habitat for water voles. There are records of water vole within 400 m of the Site in Ryebank Rife and Lidsey Rife, which are connected to the central ditch on the Site.

Other Species

- 6.66 No evidence of any other protected species was observed on the Site during the Site inspection. Evidence of rabbit was found in parts of the Site and a fox was seen in the scrub to the east, although these are not protected species.

Identification & Evaluation of Key Impacts

Habitat Loss

- 6.67 The Proposed Development will occupy an area considered to be of low to intermediate ecological importance as it predominantly comprises intensively managed arable land and the margins of the application area contain patches of scrub, species poor hedgerow and tall ruderal vegetation. These areas provide a food source and shelter for invertebrates, small mammals and birds and the arable fields can provide habitat for flocks of birds that sometimes use arable fields as resting ground or to forage for soil-dwelling invertebrates. The scrub in the east of the application area may form part of a corridor used by foraging bats that could inhabit Oldlands Farm Cottages (TN 4 Figure 6.1); however, this is expected to be retained and landscaping of other parts of the Site are proposed.

Surface Run-off

- 6.68 The drainage ditches to the north of the Site are generally of fairly low species diversity although they offer a good refuge and a food source for wildlife, in particular birds such as reed bunting and reed warbler. They are also a good corridor for a range of wildlife which could potentially include bats, amphibians and water voles. Without mitigation, this habitat could be indirectly affected by surface run-off from the Site during construction and operation.

Lighting

- 6.69 There are records of bats in the wider surrounding area and there is a possibility that bats could inhabit the cottages to the south of the Site. It is considered highly unlikely that bats are using the Site itself although there is a low risk that bats will forage along the drain to the east of the application area between the cottages and the main central ditch (approximately 30 m to the north of the application area) (TN 5 Figure 6.1). Therefore, if present, bats could be sensitive to the effects of both construction and operational lighting from the development. Nesting birds could also be sensitive to the effects of lighting.

Noise

- 6.70 Construction noise of moderate intensity could disturb nesting birds and other wildlife using the area surrounding the Site to the north and east of the Site.

Dust

- 6.71 Construction dust will be coarse and therefore likely to fallout less than 100 m from source. There is a risk of disturbance to wildlife and vegetation from soiling within this radius which encompasses the central ditch (TN 5 Figure 6.1); a ditch that is used by Reed Bunting and could potentially be used by protected species.

Badgers

- 6.72 No evidence of badger was found in the application area. However, a badger sett was found 100 m to the north of the application area amongst one of the hedgerows. This sett contained approximately two partially used holes and five disused holes; it appeared to have been used at least partially in the past 12 months. There is a low to moderate possibility that badgers will forage within the application area and could therefore become trapped in open building foundations during the construction phase of the development. During operation, badgers could traverse the new road infrastructure but it is likely that they will avoid the Site during the day when it will be at its most busy.

Prediction of Impact Magnitude

Habitat Loss

- 6.73 Arable land is of low to intermediate ecological value and is subject to intensive levels of management. The surrounding scrub and tall ruderal habitats provide some habitat for invertebrates and birds. These habitats are fully represented to the north of the Site and are of low sensitivity. The loss of the arable land within the application area will be of a moderate magnitude.

Surface Run-off

- 6.74 Wet ditches, reed-beds and the species they support are of moderate sensitivity to contaminated surface run-off from the development. However, reed-beds are fairly pollution tolerant. Therefore, uncontrolled surface run-off will be of a minor magnitude.

Lighting

- 6.75 Bats could potentially forage along the drain to the east of the application area between the cottages and the main central ditch (TN 5 Figure 6.1). This area is already likely to be affected to some degree by lighting from the town to the south; however, lighting could increase in this area and negatively impact commuting bats that are highly sensitive to light and prefer to travel along dark corridors. Bats could also be present amongst the darker hedgerows and ditches to the north of the application area. Because the application area already experiences some degree of lighting from the nearby town, the impact of new lighting is considered to be of a minor magnitude.

Noise

- 6.76 Noise could disturb nesting birds and other wildlife using the scrub and hedgerows surrounding the application areas and the ditches and hedgerows to the north and east of the Site. However, the Site already experiences some degree of noise from the nearby road, railway and industrial estate and there is preferable bird-nesting habitat outside of the application area. Birds and other wildlife in this area are likely to have a low sensitivity to noise and therefore the impact will be of a minor magnitude.

Dust

- 6.77 Construction dust is likely to fallout less than 100 m from source. There is a risk of disturbance to wildlife and vegetation from soiling within this radius which encompasses the central ditch which is of moderate sensitivity. However, even without mitigation, effects are likely to be short-lived and

only occur during construction. Dust impacts are likely to be of minor magnitude.

Badgers

- 6.78 Despite the partially used sett to the north of the Site, no evidence of badgers was found on the Site. It is unlikely that badgers are using the application area. Badgers to the north of the Site are likely to have a low sensitivity to the development and the impact of the development will be of negligible magnitude on badgers in the area.

Assessment of Impact Significance

Habitat Loss

- 6.79 Prior to mitigation, habitat loss will have a minor adverse impact on ecology and nature conservation.

Surface Run-off

- 6.80 Prior to mitigation, surface run-off will have a minor adverse impact on ecology and nature conservation.

Lighting

- 6.81 Prior to mitigation, lighting will have a moderate adverse impact on ecology and nature conservation.

Noise

- 6.82 Prior to mitigation, noise will have a negligible impact on ecology and nature conservation.

Dust

- 6.83 Prior to mitigation, dust will have a minor adverse impact on ecology and nature conservation.

Badgers

- 6.84 Prior to mitigation, the development will have a negligible impact on badgers.

Mitigation Measures

Habitat Loss

- 6.85 All species of wild bird and their nests are protected under the *Wildlife and Countryside Act* (1981). For this reason, the clearance of any potential bird-nesting habitat, such as the hedgerows and scrub should be timed to avoid the breeding/nesting season which, in general, runs from March to July.

Lighting

- 6.86 Bats could be present in the area surrounding the Site and birds could breed within scrub patches. The Site is located close to a heavily built up area and therefore some disturbance from lighting already exists. The use of lighting during the construction phase will be minimal. However, lighting will preferably be screened so it is not allowed to fall beyond the proximity of the development.

- 6.87 During operation, lighting is unlikely to be switched on all of the time and is unlikely to be used in the lighter summer evenings when bats are most active and no bats roosts will be directly illuminated. However, in order to minimise potential disturbance to bats, lighting will be designed to minimise light pollution, in particular, towards the north west of the Site, where the Site is darkest and the habitat is most suitable for bats. Lighting should be of the low pressure sodium type, a type that has a low attraction to insects, unlike mercury lighting which should be fitted with UV filters if they are to be used. Any upward lighting will be minimal to avoid light pollution and light will be restricted to selected areas by fitting hoods which direct the light below the horizontal plane at angles less than 70 degrees². This will minimise the disturbance to breeding birds and bats.

Surface Run-off

- 6.88 The risk from pollution to aquatic waterways from surface runoff can be prevented by ensuring that interceptors are in place to collect all surface drainage, this will ensure that nutrient enrichment and contamination does not occur within waterways on and off site. Measures in accordance with good site practice should be employed to minimise the risk of pollution to the more sensitive areas within the Site and to the surrounding designated sites.

Noise

- 6.89 The impacts from noise and dust deposition on nesting birds and other wildlife can be avoided by timing works to take place outside of the breeding bird season, which generally runs between March and the end of June.

Dust

- 6.90 The impacts of dust deposition within 100 m of the Site can be mitigated during the construction phase through the use of low level screens to enclose relevant areas of the Site throughout the construction period, the construction and hard surfacing of the main access roads prior to the construction of buildings commencing and the provision of easily cleaned hard standings for vehicles. Mitigation of dust impacts is discussed in more detail in the Air Quality chapter.

Badgers

- 6.91 Although no evidence of badgers was found on site, a partially used sett is located approximately 100 m north of the Site. Therefore development should be designed with badgers in mind and should include the following measures:

- ongoing monitoring of the Site to check for any increased activity prior to the construction works;
- a means of escape should be provided in any deep excavations that are to remain open overnight, in case any animals fall in;
- the creation of large stock piles of earth should be avoided as these may prove attractive for badgers to excavate new setts; and
- traffic calming measures may be required within the scheme to minimise the risk of road kills.

² Jones. J. (2000) *Impact of Lighting on Bats*. The Bat Conservation Trust

Opportunities for Ecological Enhancement

- 6.92 At present the Site is of low to intermediate ecological value. In accordance with PPS 9 – Biodiversity and Geological Conservation, any new development should aim to promote opportunities for the incorporation of beneficial biodiversity features within the design (e.g. landscaping to provide ecological enhancement). This could include planting landscaped areas with locally native tree, shrub and herbaceous species, in particular berry-producing species. Sowing non-aggressive grasses will allow areas to become colonised by wild flower species, increasing the Site's appeal to insect fauna and other species. These areas should be designed and managed in an ecologically sensitive manner, so that once they have become established, they would enhance the nature conservation value of the area and replace existing habitat considered to be suitable for birds and other wildlife. Also, the installation of bird and bat boxes will encourage these species and attract summer visitors such as house martins, swallows and swifts.

Cumulative Effects

- 6.93 Development within the application area is considered unlikely to have any in-combination effects with other permitted development. However, land to the east and west of the Site is planned for development at a later date; this could impact on the ditches to the east and north of the application area that currently provide a good wildlife corridor. It will also lead to a large area of arable land (which can provide habitat for flocks of birds that sometimes use arable fields as resting ground or to forage for soil dwelling invertebrates) being lost, although there is similar habitat to the north of the Site that will not be developed. These effects can be mitigated by ensuring there is no loss of connectivity between the ditch and hedgerow habitats in the wider area and by providing alternative wet ditch and scrub habitats throughout the Site as a whole. These will be of use to wildlife such as breeding and wintering birds, reptiles, amphibians and bats. Overall, cumulative effects on ecology will be limited.

Residual Effects

- 6.94 Following the proposed mitigation, no residual impacts are anticipated to occur following the Proposed Development of the Site.

Summary

- 6.95 The area to be affected by the proposals is of limited ecological value. The species recorded can be described as common or abundant in similar places across much of the region.
- 6.96 No protected species have been recorded within the Site during the Phase 1 Habitat Survey and protected species walkover. The consultation response from Sussex Biological Records Centre shows that there are no protected species on the Site, although a number exist within a 2 km radius of the Site, including water vole and potentially bats, appropriate mitigation has been provided to minimize disturbance.
- 6.97 The majority of the Application Area will be affected by the proposals; this is predominantly arable land of low to intermediate ecological value of which there is similar habitat to the north and east of the Site. Landscaping of parts of the application area and the wider Oldlands Farm site area been recommended and if these areas are designed and managed effectively,

their nature conservation value could be enhanced to benefit a range of common species.

- 6.98 Ecological enhancement measures and management methods will be designed to ensure that the ecology of the Site and surrounding area is protected during construction and enhanced once the Site is operational. The potential ecological impacts of the Proposed Development will be assessed and mitigation measures included in relation to the proposed use of the Site.
- 6.99 Following mitigation and habitat enhancement strategies, the Proposed Development will have a **negligible** effect on ecology and nature conservation.



