

**Land North of Water Lane,
Angmering**

Ecological Impact Assessment

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 Introduction

Background

- 1.1 This Ecological Impact Assessment (EcIA) evaluates the effects of the development proposals on the ecology and biodiversity of land located on land North of Water Lane, Angmering.
- 1.2 This report presents the results of The Ecology Partnership's surveys in and around the site, which aims specifically to assess the significance of the impacts created by the proposed development on protected species and habitats, and cumulative impacts alongside other developments. The following impacts from the proposed development are considered on the following:
- On site habitats;
 - Protected species known to be present on site;
 - Local cumulative impacts (associated with the development to the east);
 - Wider cumulative impacts on locally designated sites and nationally and internationally designated sites.
- 1.3 The proposals for the site include the construction of up to 525 new homes, with associated gardens, access and recreational green space.
- 1.4 Section 2 of this report sets out the methodologies of the Ecology Partnership's assessment. In section 3 the results of the surveys are presented, creating baseline conditions for the assessment. Assessment of the potential impacts during the construction and operation phases of the development are found in section 4 and 5, including mitigation and compensation in response to these impacts. Cumulative impacts and residual effects alongside other local developments are discussed in further sections. Conclusions drawn from the reports are presented in section 8.

Site Context and Status

- 1.5 The site is located to the north of Water Lane on the eastern edge of the town of Angmering in West Sussex. The site lies adjacent to the South Downs National Park and is adjacent to ancient woodland, major A-roads and agricultural fields. There are no designated sites within 5km of the site.
- 1.6 The approximate red line boundary of the entire site is shown in Figure 1 below.



Figure 1: Approximate location of the red line boundary

Legislation, Policy and Guidance

- 1.7 National and local planning policies may have an effect on the proposed development. The following paragraphs identify relevant planning policies and discuss these in the context of the site.
- 1.8 The applicable legislative framework for ecology and nature conservation is summarised as follows:
- The Conservation of Habitats and Species Regulations, 2017 (as amended);
 - Wildlife and Countryside Act, 1981 (as amended);
 - The Natural Environment and Rural Communities Act, 2006;
 - The Countryside and Rights of Way Act, 2000;
 - Town and Country Planning (Environmental Impact Assessment) Regulations, 2011;
 - The Hedgerows Regulations, 1997;
 - The Protection of Badgers Act, 1992;
 - The Wild Mammals (Protection) Act, 1996.
- 1.8 Under the NERC Act (2006) “Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity”. In order to comply with this ‘Biodiversity Duty’, planning decisions must ensure that they adequately consider the potential ecological impacts of a proposed development.
- 1.9 In compliance with Section 41 of the NERC Act, the Secretary of State has published a list of species and habitats considered to be of principle importance for conserving biodiversity. These were known as BAP habitats and species. The UK BAP lists of priority species and habitats remain an important and valuable reference certainly at county levels. However, the UK Post 2010 Biodiversity Framework (published 2012) has succeeded BAP. It was produced by JNCC and Defra, on behalf of the Four Countries' Biodiversity Group (4CBG), through which the environment departments of all four governments in the UK work together to achieve the ‘Aichi Biodiversity Targets’ and the aims of the EU biodiversity strategy.

1.10 National policy guidance is provided by National Planning Policy Framework (NPPF), which sets out the Government's planning policies for England and how they should be applied. Section 11 of the document is entitled 'Conserving and Enhancing the Natural Environment'. This section highlights the following:

1.12 The planning system should contribute to and enhance the natural and local environment by:

- Protecting and enhancing valued landscapes, geological conservation interests and soils;
- Recognising the wider benefits of ecosystem services;
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

1.13 In addition to this the following paragraphs are also considered to be relevant:

'In preparing plans to meet development needs, the aim should be to minimise pollution and other adverse effects on the local and natural environment. Plans should allocate land with the least environmental or amenity value, where consistent with other policies in this Framework.'

1.14 The site falls under the jurisdiction of the Arun District Council. The saved policies of the adopted Local Plan (2003) contains the following saved policies relating to nature conservation:

- ***Policy GEN28 - Trees and Woodlands***

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- *Policy GEN29 - Nature conservation across the district*
 - *Policy AREA13 - Sites of International Importance for Nature Conservation*
 - *Policy AREA14 - Sites of National Importance for Nature Conservation*
 - *Policy AREA15 - Sites of Local Importance for Nature Conservation*

1.15 The Emerging Local Plan (Arun Local Plan 2011 – 2031) is currently under consultation on the main modifications. With regards to the emerging local plan, several policies are considered to be relevant in terms of biodiversity and natural environment. These are summarised below:

- *Policy ENV SP1 Natural Environment where Arun District Council will encourage and promote the conservation and enhancement of biodiversity and natural environment. Where possible it shall also promote the creation of new areas for habitats and species.*
- *Policy ENV DM1 designated sites of biodiversity or geological importance: where development is likely to have an adverse effect on land within or adjoining a site of biodiversity or geological importance (listed within the document) either alone or in combination with other developments will not normally be permitted.*
- *Policy ENV DM2 Pagham Harbour: provides zoning around Pagham Harbour in the interests of protecting and enhancing the integrity of Natura 2000 sites.*
- *Policy ENV DM3 Non designated sites: where development shall seek to retain and sympathetically incorporate locally valued and important habitats, wildlife corridors and stepping stones and development is so designed in order to minimise disturbance to habitats.*
- *Policy ENV DM4 Protection of trees: where development must consider the proper protection of trees and woodland.*
- *Policy ENV DM5 Development and biodiversity: where development shall seek to achieve a net gain in biodiversity and protect existing habitats.*

1.16 The site was surveyed to assess its ecological value and to ensure compliance with national and local plan policies. The PEA report was produced with reference to current guidelines for preliminary ecological appraisal (CIEEM 2013) and in accordance with BS 42020:2013

Biodiversity – Code of Practice for Planning and Development. This impact assessment has been produced in accordance with CIEEM's EcIA Guidelines 2016 (2nd Edition).

Assessment limitations and difficulties encountered

- 1.17 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.
- 1.18 The initial protected species assessment provided a preliminary view of the likelihood of protected species occurring on site, based on the suitability of the habitat and any direct evidence on site. The EcIA is a comprehensive document covering all relevant protected species to the site and has been informed by a number of species-specific surveys resulting from the initial assessment.

2.0 Methodology

Baseline Surveys

2.1 The pre-development ecological baseline was established through review of existing survey data obtained from the following documents:

- Preliminary Ecological Appraisal, Ecology Partnership, (2017a)
- Bat activity survey, Ecology Partnership (2017b)
- Reptile survey, Ecology Partnership (2015c)
- Dormouse survey, Ecology Partnership (2017c)
- GCN eDNA Letter of Report, Ecology Partnership (2016)

Desk Study

2.2 A desktop study search was completed using an internet-based mapping service, *MAGIC*, for statutory designated sites, and two internet-based aerial mapping services (*Bing Maps* and *Google Maps*) were used to understand the habitats present in and around the survey area and habitat linkages and features (ponds, woodlands etc.) within the wider landscape.

Phase 1 Habitat Survey

2.3 The site was initially surveyed by The Ecology Partnership on the 7th August 2015. An additional portion adjacent to Dapper's Lane in the southwest corner of the site was surveyed on 9th August 2017. The surveyor identified the habitats present, following the standard 'Phase 1 habitat survey' auditing method developed by the Joint Nature Conservancy Council (JNCC). The Ecology Partnership surveyed the site on foot and the existing habitats and land uses were recorded on an appropriately scaled map (JNCC 2010). In addition, the dominant plant species in each habitat were recorded, as was any evidence of protected species. The potential for the site to support protected species was also assessed.

2.4 The site was inspected for indications of the presence of protected species as follows:

- Evidence of badger, including setts, runs, snuffle holes and hairs;

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- The presence of features such as roof voids, bridges and/or trees with fissures, holes, loose bark and ivy or building basements, cladding etc. indicating potential for roosting bats;
 - Scrub/grassland mosaic and potential hibernation sites for common reptiles;
 - Relevant habitat for dormice such as dense deciduous woodland, coppice and thick shrubbery;
 - The presence of suitable breeding places (water bodies) and hibernation features for great crested newts (GCNs);
 - The presence of suitable freshwater habitat for white-clawed crayfish;
 - The presence of ditches for water voles;
 - The presence of fresh water stream/rivers for otters;
 - Suitable nesting places for birds; and
 - Other potential protected species.

The likelihood of occurrence is ranked as follows and relies on the current survey:

- Unlikely – while presence cannot be absolutely discounted, the site includes very limited or poor quality habitat for a particular species or species group. The site may also be outside or peripheral to known national range for a species;
- Low – on-site habitat of poor to moderate quality for a given species/species group. Presence cannot be discounted on the basis of national distribution, nature of surrounding habitats, habitat fragmentation, recent on-site disturbance etc;
- Medium – on-site habitat of moderate quality, providing all of the known key-requirements of given species/species group. Factors limiting the likelihood of occurrence may include small habitat area, habitat severance and fragmentation, disturbance;
- High – on site habitat of high quality for a given species/species group. Good quality surrounding habitat and good connectivity; and

- Present – presence confirmed from the current survey or by recent, confirmed records.

2.5 The purpose of this assessment is to identify whether more comprehensive species surveys for protected species or habitats (Phase 2) are to be recommended.

Protected Species Surveys

2.6 Species specific surveys were undertaken with respect to bats, badgers, reptiles, GCNs, dormice and bird surveys. A summary of the work is set out in the table below. Detailed survey methodologies are provided in the baseline ecological reports found in the appendix.

Table 1 Protected Species Surveys

Faunal Group	Survey Methodology	Date of Surveys	Guidance
Bats – tree inspection	As part of the habitat surveys, any trees supporting particular features likely to be of value to bats, such as splits, cracks, rot holes, coverings of ivy, peeling bark or similar, were recorded. The potential for the trees to support roosting bats has been assessed in accordance with the criteria set out in the Bat Conservation Trust guidelines (BCT, 2012; BCT, 2016)	7 th August 2015, 9 th August 2017	Bat Surveys – Good Practice Guidelines 2 nd Edition (Hundt, 2012) Bat Surveys – Good Practice Guidelines 3 rd edition (Collins, 2016).
Bats – activity surveys	Several dusk surveys and the use of remote recording (anabat surveys) across the site using transect methods and stops for recording activity as per Bat Conservation Trust guidelines (BCT, 2012; BCT 2016).	2015 26 th August 2015 8 th September 2015 Anabat Express was deployed on site and recorded data from the 26 th August – 28 th August and from 5 th September – 7 th September 2015 2017 7 th June 2017 8 th August 2017 28 th September 2017 Anabat Express was deployed on site and	Bat Surveys – Good Practice Guidelines 2 nd Edition (Hundt, 2012) Bat Surveys – Good Practice Guidelines 3 rd edition (Collins, 2016).

		recorded data from 28 th June – 3 rd July; 8 th August – 14 th August & 12 th to 19 th September 2017.	
Reptiles	The refugia were placed around the edges of the site adjacent to areas of scrub, hedgerow and within the more developed grassland field margins. Mats were set up prior to the commencement of the reptile survey. A total of seven survey visits were made to the site to check the refugia for the presence of reptiles during each survey. Visits were only carried out if the weather conditions were suitable for locating reptiles. On each visit to the site, a minimum of one circuit to check all refugia was carried out. Natural refugia were also surveyed during these visits. Any natural refugia, such as log piles and brash piles, were lifted and hand searched for evidence of reptiles.	10 th September 2015 – 30 th September 2015	The timing and number of surveys completed were based on guidelines produced by Froglife (1999) and Gent and Gibson (1998).
Badgers	During the survey, all habitats potentially suitable for badgers were systematically examined for evidence of badger activity. Particular attention was paid to areas where the vegetation and/or the topography offered suitable sett sites such as embankments and wooded areas.	7 th August 2015; 9 th August 2017 30 th January 2018	The evaluation of badger activity was based on methodology developed for the National Survey of Badgers (Creswell <i>et al.</i> , 1990).
Great Crested Newt Surveys	eDNA surveys conducted on a pond to the south of the site. All water samples were taken by Emma Bagguley BSc (hons) MSc who holds a WML-CL08 GCN Survey Level 1 license – REF: 2016-23003-CLS-CLS. All water samples were analysed by NatureMetrics in accordance with the protocol set out in Appendix 5 of Biggs <i>et al.</i> (2014).	June 2016	Biggs <i>et al.</i> (2014)
Dormice	A total of 87 dormouse tubes were established along the woodland edge and hedgerows in early August 2015. Checks were undertaken once a month in August, September, October and November 2015. The survey must	August – November 2015	Dormouse Conservation Handbook – English Nature

	continue until the search effort score of 20 has been reached Suitable habitats for dormice were present within the woodland edge, hedgerow and tree line habitats on-site. An additional 53 tubes were established in April 2017, bringing the total to 140. Checks were undertaken once a month in May, June, July, August, September and October 2017, a survey effort of 61.8 was achieved.	May – October 2017	
Water vole	A survey of the ditches off-site to the south for water voles was carried out in June 2016, within the optimal season for water vole activity (April – October); when water voles establish breeding territories, marked with latrines (discrete piles of droppings).	April 2016	Water Vole Conservation Handbook 2 nd Edition (Strachan & Morehouse, 2006)

Ecological Assessment Methodology

- 2.7 This assessment has been carried out with reference the CIEEM *Guidelines for Ecological Impact Assessment* (EcIA) (CIEEM, 2016). This document provides best practice guidance in identifying whether an EcIA is required and where it is required, guidance on determining the value of ecological features and resources including those that have been designated for nature conservation, and the impact magnitude, including description of baseline conditions and cumulative impact assessment.
- 2.8 The baseline condition of the site is taken to be the situation as found by The Ecology Partnership during site surveys carried out throughout 2015, 2016 and 2017. Surveys conducted in the wider landscape have been reviewed to help assess the cumulative impact scenarios.
- 2.9 Future baseline is considered to be the year of completion of the project (anticipated 2035). The assessment takes into account the ‘worst case’ development permitted within the parameters being applied for.
- 2.10 The methodology below defines how the criteria for how the assessment is to be made. This includes identifying the importance of ecological features (the ‘receptor’) within the

site and around the site, the significance of the impact in which the assessment addresses the importance of the receptor and the extent, magnitude, duration of the impact on that receptor.

The level of importance of a receptor

- 2.11 The evaluation of ecological features and resources should be based on sound professional judgement whilst also drawing on the latest available industry guidance and research. The approach taken in this report is based on that described in 'Guidelines for Ecological Impact Assessment in the UK and Ireland' published by the Chartered Institute of Ecology and Environmental Management (CIEEM 2016) whereby important ecological features are identified, and these are considered within a defined geographical context, as further described below.
- 2.12 A receptor is defined as a feature affected by an impact. This receptor may be of negligible nature conservation value, or it may have a value at local, county, national or international level.
- International; Features of **international** importance are those protected by international treaties, legislation, agreements and designations. Examples include Ramsar sites, Special Protection Areas (SPA) and Special Areas of Conservation (SAC). Certain species are also protected under international law, such as those listed in the Habitats Directive (1992).
 - National / Regional; Features of importance at the **national** level include those with statutory protection, such as National Nature Reserves (NNRs), Sites of Special Scientific Interest (SSSIs) and species with legal protection, such as BAPs/ Red Data Book species.
 - County / District; Features that are important at **County or District** level may be protected by local development framework policies. Sites can also have local statutory designations as Local Nature Reserves (LNRs) or local non-statutory designations such as the Sites of Nature Conservation Importance (SNCI)
 - Local; Features that are important at a **local** level may be of particular value in the context of the site itself.
 - Site (not of elevated importance at a local level).

- 2.13 Features considered to be of importance at the site level only have been scoped out of this assessment (with the exception of protected species which are considered in terms of mitigation and any legislative requirements).

Assessment of Impacts and Significance

- 2.14 The CIEEM publication also sets out a methodology for the assessment of potential effects arising from development.
- 2.15 The impacts which are set out below are those which arise after taking account of the design mitigation. The impacts on ecology are assessed by (a) determining the level of importance/sensitivity of the receptor, for example national, county, or local; (b) determining the type, magnitude and timescale of the impact; and then (c) using this information on the receptor and impact to determine the significance of the impact: described as major, moderate, or minor significant, or not significant. For example, a moderate or small impact on an internationally important feature is likely to be significant, while a similar impact on a feature of local value is less likely to be significant.
- 2.16 Based on this context, the nature of the effect is characterised and considered under the following parameters:
- Positive or negative – will the activity lead to an adverse, beneficial or neutral effect;
 - Extent – the size or amount of an impact, the area of habitat or number of individuals affected;
 - Duration – the time for which the impact is expected to last prior to recovery or replacement, i.e. short-term or long-term;
 - Reversibility – an effect may be irreversible in that recovery is not possible within a reasonable timescale or there is no reasonable chance of action being taken to reverse it, i.e. permanent or temporary;
 - Timing and frequency – some changes may only cause an impact if they coincide with critical life-stages or seasons, whilst frequent events may cause a greater effect than a single event.

- 2.17 Based on these parameters, the scale of effect (or magnitude) can be summarised as follows. This is in relation to adverse effects, although a similar scale can be applied to beneficial effects.

Table 2 Criteria for determining impact magnitude

Magnitude	Criteria
Large	Loss of over 50% of a site feature, habitat or population. Adverse change to all of a site feature, habitat or population. For benefits, an impact equivalent in nature conservation terms to gain of over 50% of a site feature, habitat or population.
Medium	Loss affecting 20-50% of a site feature, habitat or population. Adverse change to over 50% of a site feature, habitat or population. For benefits, an impact equivalent in nature conservation terms to a gain of 20-50% of a site feature, habitat or population.
Small	Loss affecting 5-19% of a site feature, habitat or population. Adverse change to 20-50% of a site feature, habitat or population. For benefits, an impact equivalent in nature conservation terms to a gain of 5-19% of a site feature, habitat or population.
Negligible	Loss affecting up to 5% of a site feature, habitat or population. Adverse change to less than 20% of a site feature, habitat or population. For benefits, an impact equivalent in nature conservation terms to a gain of up to 5% of a site feature, habitat or population.

- 2.18 Based on the nature of the effect, an assessment is then made whether the effect on a habitat or species is likely to be ecologically 'significant'. CIEEM guidance defines a 'significant effect' as *"an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general"*, going onto state that *"significant effects encompass impacts on structure and function of defined sites, habitats or ecosystems and the conservation status of habitats and species (including extent, abundance and distribution)."*

Table 3 Matrix for determining impact significance

		Levels of importance of the receptor				
		International	National	County/District	Local	Negligible
Effect magnitude	Large	Major	Major	Moderate	Minor	Indiscernible
	Medium	Major	Moderate	Minor	Minor	Indiscernible
	Small	Moderate	Minor	Minor	Indiscernible	Indiscernible
	Negligible	Minor	Minor	Indiscernible	Indiscernible	Indiscernible

Limitations of the Assessment

2.19 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment. The site was visited over the period of several site visits, as such seasonal variations cannot be fully observed and potentially only a selection of all species that potentially occur within the site have been recorded. Therefore, the survey provides a general assessment of potential nature conservation value of the site and does not include a definitive plant species list. However, the survey area was visited on a number of occasions over the optimal period, ensuring that detailed habitat information could be gathered. It is therefore considered that the survey work has allowed a robust assessment of habitats and botanical interest across the site.

2.20 The specific protected species surveys were undertaken at the appropriate time of year and during suitable weather conditions to an appropriate level of survey effort. Any specific limitations are noted in the relevant sections above or discussed in the results section.

3.0 Results

Current Baseline

Desktop Study

- 3.1. An ecological data search was obtained from Sussex Biodiversity Records Centre (SxBRC) in 2015. Records of protected species were identified within a 2km radius of the site (See table 4). It should be noted that as the data search was undertaken in 2015, additional records may now be present within the locality of the site.

Table 4. Notable species records within 2km in the ten years.

	Species	Status	Closest record distance	Most recent record
Amphibians	Great Crested Newt (<i>Triturus cristatus</i>)	Bern Convention Appendix 2; European Protected Species; Habitats Directive Annex 2 - non-priority species; Habitats Directive Annex 4; Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England; Sussex BAP species; Sussex Protected Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5	Approximately within 2km	2012
Mammals	Water Vole (<i>Arvicola amphibious</i>)	Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England; Sussex BAP species; Sussex Protected Species Register; Sussex Rare Species Inventory; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5	780m west	2014
	Hazel Dormouse (<i>Muscardinus avellanarius</i>)	European Protected Species; Habitats Directive Annex 4; NERC Act 2006 - Species of Principal Importance in England; Sussex Biodiversity Action Plan; Sussex Protected	Approximately 2km northeast	2011

		Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5		
Reptiles	Slow Worm (<i>Anguis fragilis</i>)	Natural Environment and Rural Communities Act 2006 - Species of Principal Importance in England; Sussex BAP species; Sussex Protected Species Register; UK BAP priority species; Wildlife and Countryside Act 1981 Schedule 5 Section 9	Approximately 2km northeast	2013
Bats	Pipistrelle sp. (<i>Pipistrellus pipistrelles</i> / <i>Pipistrellus pygmaeus</i>)	UK BAP species, Annex IV of the Annex IV of the Habitats Directive, Priority Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006, Wildlife and Countryside Act 1981 Schedule 5 Section 9; Schedule 2 of Conservation of Habitats and Species Regulations 2010 (European Protected Species animal)	380m west	2014
	Brown long-eared bat (<i>Plecotus auritus</i>)	See above	50m west feeding roost	2014
Birds	Red kite (<i>Milvus milvus</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2015
	Hobby (<i>Falco subbuteo</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended)	Approximately within 2km	2011
	Peregrine falcon (<i>Falco peregrinus</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended)	Approximately within 2km	2011
	Northern lapwing (<i>Vanellus vanellus</i>)	IUCN Red List UK BAP species	Approximately within 2km	2014
	Barn owl (<i>Tyto alba</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2013
	Kingfisher (<i>Alcedo atthis</i>)	Schedule 1 Part 1 of the Wildlife and Countryside Act 1981 (as amended) IUCN Amber List	Approximately within 2km	2012
	Firecrest (<i>Regulus ignicapilla</i>)	See above	Approximately within 2km	2010

- 3.2. The site does not lie within or adjacent to any national or international statutory designated sites and no such designations are present within a 5km radius of the site. Neither does the site lie within or adjacent to any non-statutory designated sites, however, the following non-statutory sites are located within 2km of the site:

Table 5: Designated Sites within 2km of the site

Name of Site	Description	Approximate Distance from Site	Scale of Importance
Highdown Hill & the Miller's Tomb Site of Nature Conservation Importance (SNCI)	The Miller's Tomb SNCI, identified in 1992, comprises a small area of species-rich chalk grassland. The SNCI was extended in 1997 to include Highdown Hill. The whole site comprises relatively unimproved chalk grassland and scrub on the south facing scarp of a small outlier of the South Downs near Worthing. Although heavily used for informal recreation, the site supports several uncommon plants and animals.	1.1km east	County
Titnore & Goring Woods Complex SNCI	This woodland complex is the largest in Worthing Borough. Much of it is ancient in origin, although its structure and species composition varies considerably, due to management. The site is of outstanding importance as a large area of semi-natural habitat close to a heavily built-up area.	1.4km east	County

- 3.2 The southern part of the site is designated as good quality semi-improved grassland, a habitat contained within the Priority Habitat Inventory but not listed on the NERC Section 41 habitats of principal importance. It must be noted that during the survey period this habitat was not identified as being present on site. This section of the site was under rotational use between grazed fields and under crop.

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- 3.3 The site also contains a number of hedgerows, a section 41 habitat of principal importance. No other s41 habitats are identified within the site boundary.
- 3.4 The site borders Groom's Copse to the east, a 3.6ha compartment of priority deciduous woodland that is also designated as ancient semi-natural woodland. The northwest corner of the site borders an additional compartment of priority deciduous woodland to the west, this extends north on the opposite side of the A27 road that runs along the northern site boundary. A small compartment of priority orchard habitat is situated 60m north of the site on the opposite side of the A27. A number of ponds, also a priority habitat, are situated 20m south of the site on the opposite side of Water Lane. No other priority habitats are present within a 500m radius of the site.
- 3.5 Deciduous woodland and hedgerows are designated as priority habitats under the NERC Act 2006 and as such due regard for this habitat is required.



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Figure 2: Habitats on and surrounding the site shown in red. Woodland is shown in green, with ancient woodland shown by orange hatching; pink indicates good quality semi-improved grassland (non-priority).

Review of Adjacent Applications:

- 3.6 A number of planning applications have been submitted on land adjacent to the site in the past 5 years, the location and extent of these are detailed below in figure 3. An additional parcel of land to the south of water lane has also been subject to ecological surveys and has been submitted to planning and is awaiting a decision.



Figure 3. Location and extent of adjacent planning applications in relation to site. Site boundary of A/99/17/OUT indicated by yellow polyline. Site boundary of land application ref A/31/15/PL indicated by orange polyline, site boundary of A/27/16/PL indicated by blue polyline, site boundary of A/142/16/OUT indicated by green polyline and site boundary of A/142/14/PL indicated by purple polyline.

3.7 Approval was given the for the construction of 53 care apartments on land to the southwest of the site in 2016 (A/27/16/PL). A PEA undertaken by Wold Ecology (Wold

Ecology, 2014) in support of the application did not consider the site to be constrained by protected species and no further surveys were recommended.

- 3.8 Conditional approval was given to demolish an existing greenhouse and construct eight light industrial units in 2015 (A/31/15/PL). A PEA undertaken by Darwin Ecology (Darwin Ecology, 2015) in support of the application identified the site as having moderate potential to support reptiles. No further surveys for protected species were recommended.
- 3.9 Outline planning for the construction of 18 dwellings was accepted on land adjacent to the west of the site in 2016 (A/142/16/OUT). A PEA undertaken by the Ecology Partnership (Ecology Partnership, 2016a) in support of the application identified the site as having potential to support reptiles, the existing building on site was also considered to have 'low' potential to support roosting bats, the following protected species surveys were recommended:
- Reptiles: A reptile survey undertaken in 2016 (Ecology Partnership, 2016b) found no reptiles present within the site boundary, they were therefore considered likely to be absent from the site.
 - Bats: An emergence survey was undertaken on the existing residential building (Ecology Partnership, 2016c). No bats were seen to emerge and the building was not considered to be in use as a bat roost found no reptiles on-site.
- 3.10 Conditional approval was given to the redevelopment of land to the west of the site for industrial units in 2014 (A/142/14/PL). No ecology surveys were undertaken in support of this application.
- 3.11 Outline planning for the development of up to 175 residential dwellings on land south of Water Lane is currently under consideration by Arun District Council. The surveys, undertaken by The Ecology Partnership, found the following:
- Reptiles: Surveys undertaken in 2015 and 2016 found no reptiles to be present despite the presence of extensive areas of suitable habitat within the site boundary.
 - Bats: No trees or buildings considered as having potential to support roosting bats were identified during the preliminary ecological appraisal undertaken in February 2016. The buildings were also considered unsuitable for roosting bats. The hedgerows

and tree-lines were considered to offer good foraging and commuting opportunities for bats in the local area. In 2016 the western half of the site was surveyed, common and soprano pipistrelle were the most abundant species on-site, low numbers of Nathusius pipistrelle, serotine, noctule, leislers, brown long-eared bat and *Myotis sp.* were also identified.

- GCN: Waterbodies were surveyed in conjunction for land north and south of Water Lane. eDNA testing of waterbody 1 indicated the likely absence of GCN, waterbodies 2 and 3 were both considered unsuitable for GCN, no additional surveys for GCN were undertaken on these waterbodies.

Land north of Water Lane- Preliminary Ecological Appraisal

3.12 The site consists primarily of arable fields as shown in Figure 3, surrounded by significant hedgerows and trees line. The fields across the site were in annual rotation and varied from sown pasture to arable over the survey period. Most recently, as of 2017, the majority of the fields were comprised of arable crops. The south west compartment comprised a horse grazed field with an extent of scrub to the west. The field and site boundaries were marked by hedgerows and fence lines, and the eastern extent bordered a compartment of broadleaved woodland. The northeast of the site featured a racing track. The site is privately owned but areas are accessible to the public. The initial PEA was conducted in August 2015, in November 2017 an update PEA was undertaken following the addition of a small parcel of land to the southwest of the site. Table 6 below summarises the habitats found on-site.

Table 6. Summary of Habitats identified on-site or adjacent

<i>Habitat and Flora</i>	<i>Description</i>	<i>Scale of importance</i>
Poor semi-improved grassland	Forms horse grazed paddock in the southwest corner of the site. Species poor and over grazing evident with large patches of bare earth.	Negligible
Arable	Formed majority of the site, in rotation over the survey period with sown pasture also present in intervening	Site

	years. As of 2017, corn was dominant crop.	
Bare ground, buildings and hardstanding	Little vegetation present, in use as a car race track and subject to regular disturbance.	Negligible
Scrub	Patches of bramble scrub established around race track following lack of management. Southwest extent of site featured overgrown scrub on abandoned allotments, species poor and dominated by bramble with hogweed and nettle.	Site
Hedgerows	Number of hedgerows considered as 'important' and species rich, provide connectivity across the site for a range of species, as well as providing habitat for dormice. The hedgerows qualify as s41 habitats of principal importance. Hedgerows 1 – 5 and 7 were considered as 'important' under the hedgerow regulations.	Local
Broadleaved woodland edge	Along east and northwest site boundary, oak woodland with hazel coppice understory. A s41 habitat of principle importance and of some ecological value.	Local
Flora	Plants identified on-site all common and widespread. No rare or protected plant species identified in any of the habitats.	N/A

Protected Species Surveys

Bat Surveys

- 3.13 None of the buildings on site were considered suitable for roosting bats. All buildings, outbuildings, caravans etc, were considered to have negligible potential for bats. No further surveys on any buildings were therefore undertaken.
- 3.14 Bat activity surveys were undertaken on the site in 2015 and 2017. A predetermined transect route was agreed and followed for the duration of the survey, during which bat flyovers and activity were recorded. The route was designed to follow linear features such as hedgerows and tree lines which bats are known to use as commuting corridors. These habitats also provide the most suitable habitat on site for foraging. Figures 5 and 6 below displays the layouts of the transect route for the 2015 and 2017 surveys respectively.



Figure 4: Location of the transect routes for the survey undertaken in 2015. The circle icons represent the locations of the remote bat detectors.



Figure 5: Location of the transect routes undertaken in 2017. Transect route 1 (T1) includes the additional section added to the original red line boundary. T2 and T3 are also shown, which incorporates a large area of largely sub optimal habitat. Anabat locations (A1, A2, and A3) are shown in blue.

- 3.16 The dusk surveys started 30 minutes before sunset and observations were maintained until 2 hours after sunset. Bats usually emerge about twenty minutes after sunset depending on the species, light level, weather conditions and time of year. Peak activity will normally last for about two hours after sunset, during times of peak insect activity.
- 3.17 In 2015 the surveys were undertaken on 26th August 2015. Sunset was at 20.01 and the temperature was 17 degrees with some slight breeze and 30% cloud cover. The second 2015 survey as undertaking on the 8th September 2015. The temperature was 15 degrees and it was dry and clear evening. Sunset was at 19.35.

- 3.18 In 2017 the first 2017 transect survey was undertaken on the morning of 7th June 2017. Dawn was at 04:48 and the survey commenced at 02:48. The survey was completed just after 05:00. The temperature was mild at 15°C and the weather was overcast. The second activity survey was completed on the evening of 8th August 2017. Sunset was at 20:35 and the temperature was 14°C. The third activity survey was completed on 28th September 2017 at dusk. Sunset was at 18:46 and the weather was overcast with a slight breeze and a temperature of 16°C.
- 3.19 Bat surveys were completed with Alexia Tamblyn MA (Oxon) MSc CEnv MCIEEM FRGS, Joe Bullard BSc (Hons) MSc GradCIEEM, Emma Bagguley BSc (Hons) MSc AIEEM and Natalie Kay BSc (Hons) MSc AIEEM.
- 3.20 Activity levels and species composition were largely the same across the 2015 and 2017 surveys, with both surveys recording a low to moderate level of bat activity. Across both surveys, the most abundant species was the common pipistrelles, it was considered the site forms a core part of the foraging habitat for this species. Low levels of soprano pipistrelle were recorded, along with a single instance of a Nathusius' pipistrelle in 2017. Noctules were also identified commuting across the site, it was not considered the site forms a key foraging area for this species. Low levels of serotine were also recorded in 2015, but not in 2017.
- 3.21 Activity was greatest along the eastern woodland edge and along the mature trees along the access track through the centre of the site. Activity levels were low within the open arable fields and bare earth, with only commuting noctules identified flying overhead.
- 3.22 In addition to walked activity transects, Anabats were deployed across the site on features considered suitable for foraging and commuting bats, in the case of this site, woodland edge and hedgerows. Figures 5 and 6 above show the locations of the Anabats across the 2015 and 2017 survey periods.

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- 3.23 In 2015, Anabats were deployed on site for three survey nights from the 26/08/2015 until 29/08/15 and for an additional three survey nights from 05/09/15 until 08/09/15. The most frequently recorded species was the common pipistrelle, low levels of brown long-eared bat, serotine, soprano pipistrelle, noctule and natterers were also recorded. The greatest level of activity was recorded along the central access road.
- 3.24 In 2017, Anabats were deployed on site from 28/06/2017 – 3/07/2017, 08/08/2017 – 14/08/2017 and 12/09/2017 – 19/09/2017. The most frequently recorded species was the common pipistrelle, with significant levels of soprano pipistrelle activity also recorded. Myotis passes were relatively low in comparison, although this varied according to the time of the year. Big bats (noctule, serotine and Leisler's) and brown long-eared bats were recorded only occasionally. In addition to the common species, the rare barbastelle bat was also recorded on site although the number of passes made were very low; between 1 and 8 calls per night recorded. Nathusius' pipistrelle was also recorded but only on two separate occasions over the entire survey period. The greatest level of bat activity was recorded on the anabat along the central access road.

Badgers

- 3.25 A main badger sett was identified in the land south of the racetrack, the location is indicated below in figure 7.
- 3.26 In January 2018 an update survey was undertaken of the badger sett. A total of 14 holes were identified in total, of which 10 showed evidence recent use, such as excavated bedding. Recent badger footprints were also identified on the mud bank leading up to the holes. The sett is therefore considered to still be in active use by badgers.



Figure 6. Location of main badger sett on-site

Reptiles

- 3.27 The majority of the site comprised arable farm land, however, arable field margins and areas of semi improved grassland were considered to provide some opportunities for reptiles.
- 3.28 A survey of the field for reptiles (presence or likely absence) was carried out at the site between the dates the 10th and 30th September 2015. Prior to the commencement of the survey, the site was set up with artificial refugia (roofing-felt mats) for reptiles on 7th August 2015. Surveys were only undertaken in suitable weather conditions

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- 3.29 No reptiles were identified on-site during the course the survey, reptiles are therefore considered likely to absent from the site. It must be noted that reptile surveys to the south of the site and in Merry England Nurseries, did not identify the presence of reptiles within these sites.

Dormice

- 3.30 A total of 87 dormouse tubes were established along the woodland edge and hedgerows in early August 2015, an additional 53 tubes were established in in April 2017. Each dormouse tube was established as per Natural England guidelines, attached to the underside of a suitable branch.
- 3.31 Checks were undertaken once a month from August to November 2015 and May to October 2017. Dormice were found in three locations areas of the site, these are indicated below in figure 8.
- 3.32 Nest tubes were used as parts of hedgerow across the site contained relatively little hazel, a hazel nut search was therefore considered unsuitable for these areas. Following conformation of dormouse presence on site through use of nest tubes, no additional methodologies survey methodologies were considered necessary.



Figure 7. Locations of the dormice (red) and dormice nests (yellow) found across the site in 2015 and 2017

Great Crested Newts

- 3.33 Three ponds were identified within the desktop study to the south of the red line boundary (Figure 9). Waterbody 1 was surveyed for GCN presence using eDNA in June 2016. The eDNA survey returned a negative result, indicating the likely absence of GCN from the pond.
- 3.34 A fishing lake was identified to the south west of the site. This pond was considered unsuitable for GCN owing to the high level of fish within the pond, a predator of GCN

The map shows the Angmering area in Sussex. Key features include the town of Angmering, the Angmering River, and several lakes and ponds. The map is labeled with 'Angmering' and 'Sussex'.

Other Species

- The Ecology Partnership

changing to arable in 2017, thus the site was not considered to provide a consistent suitable habitat for farmland specialists such as skylark or yellowhammer. The habitats of value to birds were considered to be the hedgerows and off-site woodland. During surveys for other species, tawny owls were identified along with nesting buzzards.

Table 8: Summary table of faunal groups and levels of importance

Faunal Group/Species	Description	Level of importance
Bats – roosting	No bat roosts identified on site. Trees with potential to support bats identified. No buildings on site with potential to support roosting bats.	n/a
Bats – foraging	Moderate levels of foraging and commuting activity was recorded along the woodland edge and access track. These features provide green links across the site for bats in the local area. The arable, bare earth and grassland habitat were considered of negligible interest to bats. The bats recorded were largely dominated by common species, with common and soprano pipistrelle well represented. Other species included Leisler's, <i>Myotis</i> and Nathusius' pipistrelles as well as occasional passes from the rare Annex II listed barbastelle.	Local
Badgers – sett	An active main sett was identified within wooded area south of the race track. Expanse of arable land provides foraging opportunities, hedgerows provide connectivity to adjacent sites.	Local
Badgers – foraging and commuting	The suitable foraging and commuting for local use by both on-site and off-site badger groups.	Site

Reptiles	No reptiles were identified within the surveyed field boundaries. Given their likely absence from the site, the impact on reptiles will not be considered further within this report.	n/a
Dormice	Dormice were found within adjacent Groom's Copse to the east, the boundary with the off-site woodland in the northeast corner and hedgerow to the east of the old raceway access road.	Local
GCN	No water bodies on-site. Off-site water body south of the site tested negative for GCN eDNA. Given their likely absence from the site and adjacent waterbodies, GCNs will not be considered further within this report.	n/a
Birds	Field margins provide foraging opportunities bird species. The hedgerows and woodland edge also provide nesting opportunities. Specialist species such as tawny owls likely to make use of the adjacent woodland habitat.	Site

Off-Site Habitats

3.37 The development will not have any direct impacts on national or local wildlife sites or nature reserves as there is no land take, no isolation or fragmentation of protected habitats. Furthermore, the development will not result in impacting linkages to such habitats. The site is set on the eastern edge of the village of Angmering and bordered to the north by the A27 and the A280 to the south, both of which are likely to present significant barriers to dispersal. Elsewhere, much of the intervening habitat is comprised of arable fields and developed land, with no green corridors linking the site to sites designated for nature conservation.

3.38 There are several compartments of priority deciduous woodland and ancient woodland identified outside the site boundary, including directly adjacent to the east and west of the

site. Priority deciduous woodland is a habitat of principal importance for the conservation of biodiversity under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. This means that development needs to take into account impacts on this habitat to prevent their degradation.

- 3.39 The NPPF is the key government policy document relating to planning decisions affecting ancient woodland. The importance of ancient woodlands as an irreplaceable habitat is set out in paragraph 118 of the NPPF, which states:

'planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development on that location clearly outweigh the loss.'

- 3.40 Ancient woodland is defined as being:

"Where the stands are composed predominantly of trees and shrubs native to the site that do not obviously originate from planting. However, woodlands with small planting of trees native to the site would still be included in this category. The stands may have been managed by coppicing or pollarding in the past or the tree and shrub layer may have grown up by natural regeneration."

- 3.41 Whilst ancient woodland is not protected under statute, there is a presumption that ancient woodland should be maintained where possible. Benefits of development affecting ancient woodland must be significant in terms of social or economic drivers and mitigation measures and / or compensation must be provided to reduce where possible significant impacts.

- 3.42 Woodlands are considered to be ancient or semi-natural even if they have been disturbed. The soil and the seed bank is considered to be of primary importance rather than the maturity or otherwise of the trees.

- 3.43 As the woodland is documented as ancient it must be considered as part of the design layout. Benefits of development affecting ancient woodland must be significant in terms

of the design scheme. Natural England identify the following significant effects from adjacent land that may have an effect on ancient woodland. These must be considered within the scheme.

3.44 Effects from development of adjacent land:

- Fragmentation and loss of ecological connections with surrounding woodland/veteran trees and the wider natural landscape;
- Effects on the root protection area of individual trees;
- Reduction in the area of other semi-natural habitats adjoining ancient woodland;
- Increased exposure to pollutants from the surrounding area;
- Increased deposition of dust, particularly from quarries, resulting in physical and/or chemical effects;
- Impacts on local hydrology through drainage or water table levels changing;
- Increased public use near veteran trees such that safety works leading to possible damage to the tree may be needed;
- Change to the landscape context for ancient woods and veteran trees;
- Change to light pollution at night (if development includes street lighting);
- Fly tipping, garden encroachment and increased predation from cats.

3.45 Natural England standing advice for ancient woodland (updated 04/01/2018) is for the creation of a buffer zone of at least 15m from the edge of the woodland. This buffer zone has been identified as being of this size due to the above considered effects with regards to development and ancient woodland. This standing advice is considered to be most relevant in terms of larger residential developments adjacent to woodlands, where indirect impacts can have a significant detrimental effect on the conservation value of such a habitat.

3.46 Given the large scale of the proposals, a minimum of a 15m buffer is incorporated into the masterplan. Groom's Copse will be buffered along the extent of the eastern edge of the site by at least 15m. The buffer will be planted with shrub and tree species to create a semi-natural habitat. New planting to the north of the site will form a green linkage across the site to the compartment of woodland to the north west of the site.

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- 3.47 The site does not lie within or adjacent to any statutory designated sites, the nearest such designation is Arundel Park SSSI approximately 5.8km northwest. At this distance, a residential development is outside the SSSI Impact Risk Zone for this statutory designation and others of a greater distance.
- 3.48 Two non-statutory designated sites lie within a 2km radius of the site, the nearest of which is Highdown Hill & the Miller's Tomb SNCI. This is an open access site that already subject to significant recreational pressure, with a car park providing easy access onto the site for local members of the public.

Future Baseline

- 3.49 Future baseline conditions are conditions which would be likely to arise if present conditions continue and none of the proposed alternatives are implemented. Future baseline conditions of the site will be described as the maintenance of the site as arable farmland, recreational use and horse grazed paddocks. It is considered this would include management of scrub and hedgerows and use of the hardstanding race track as per current conditions.
- 3.50 The future baselines are considered as to be as follow:
- Arable – No significant change likely. Continued annual rotation of varying crop type. It is considered that with continued management of the habitat as arable crop the fields would remain unsuitable for protected species.
 - Buildings, bare earth and hardstanding – No significant change likely. Buildings to be in continued use as garages/outbuildings, some deterioration likely over time. Hardstanding and bare earth in continued use as access road and race track.
 - Hedgerows – No significant change likely. Infrequent cutting regime as is currently the case.
 - Scrub – No significant change likely. Scrub around racetrack likely to be subject to only very occasional management to prevent encroachment onto hardstanding/bare earth. Scrub in southwest corner of site to continue to be left unmanaged.

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- Grassland – No significant change likely. Continued overgrazing of species poor grassland in horse paddock to the southwest of the site. Rough grassland around racetrack subject to continue to be subject to sporadic cutting.
 - Broadleaved woodland – No significant change likely. Infrequent understory clearance for game management. Over the long term a lack of coppice management may result in a decline of value to dormice.

3.51 In summary, future baseline conditions of the site will largely be the same as what is currently present, comprising arable land and bare earth subject to regular and significant disturbance and unmanaged species poor grassland and scrub. The site is part of an active farm and race car track and would remain as such for the foreseeable future, with boundary features and marginal vegetation subject to ongoing occasional management and arable crops in continued rotation across the fields. There is no reason to consider that any other regime would be implemented.

4.0 Effects During Construction

Activities and proposals with the potential for significant effects

4.1 Construction within the red line boundary of the site is considered to involve the following aspects:

- Removal of arable, semi-improved grassland, scrub, hardstanding and field margins;
- Removal of some trees and hedgerow on site;
- Construction of new buildings, hardstanding and infrastructure;
- Tree and shrub planting and landscaping within the scheme; and
- Disturbance - construction lighting and plant / vehicle noise, vibration, movement and general activity.

4.2 Habitats and species which are considered in terms of potential impacts:

- Habitats present on site, including mature trees, arable, semi improved grassland and hedgerow;
- Protected species present on site;
- Off-site habitats adjacent to the site, including the lowland deciduous woodland to the northwest and Groom's Copse ancient woodland to east;
- Protected species off site in adjacent habitats;
- Off-site habitats which are designated and protected either locally or nationally designated.

Construction Effects on Site Habitats and Ecological Features

4.3 The construction process will involve the clearance of habitats, such as arable fields and field margins, semi improved grassland, and some scrub and individual trees and the development of new access road, buildings, residential gardens, communal greenspace and associated infrastructure.

4.4 The impact upon individual habitats within the site are reviewed below:

- Arable fields. The dominant habitat across the site, the development would result in the loss of a significant amount of this habitat. However, the habitat is considered to be common and widespread. Loss of this habitat is of **negligible significance**. The creation of gardens and open space, associated swales and extended green links, will support various grassland habitats and newly created habitats which can be enhanced post development would result in a **minor positive impact**.
- Poor semi improved grassland. This habitat was located in a horse grazed paddock to the south west of the site and the margins of the race track. The development would result in the loss of a significant amount of this habitat. However, the habitat is considered to be common and widespread and in poor condition as a result of management or lack thereof. Loss of this habitat is of **negligible significance**. The creation of gardens and open space associated swales and extended green links will support various grassland habitats and newly created habitats which can be enhanced post development would result in a **minor positive impact**.
- Hedgerows: The site contains a network of hedgerows, considered to be of local significance. Hedgerows H1 and H2 are to be fragmented to enable access onto the site. Other hedgerows to be retained. Hedgerow H1 was not found to support dormice, however it was in close proximity to known dormouse habitat and so the possibility should not be ruled out, it was also assessed as 'important' under the hedgerow regulations. Hedgerow H2 supports dormice and is also considered as 'important'. The fragmentation of hedgerow H1 and H2 is considered to be of **site significance**. The creation of new linkages, green corridors, planting over gaps and the use of native hedgerow planting within the design of the development will compensate for the loss of this feature. Post development would result in a **minor positive impact**.
- Scrub: The areas of scrub are considered to be common and widespread habitat dominated by bramble and as such of site level interest only. Almost all of the areas of scrub area to be lost as part of the proposals aside from the area around the badger sett. The loss of this habitat is considered to be indiscernible in terms of significance. The planting of woodland buffers and hedgerow creation will result

in the provision of structurally similar but more species rich habitat post development. Construction process may result in a direct, temporary and small impact resulting in **negligible significance**.

- Off-site ancient woodland and lowland deciduous woodland. Ancient woodland to the east of the site and lowland deciduous woodland located largely to the northwest of the site are not to be directly impacted upon. These habitats will be suitably buffered (15m) and protected by fence lines during the construction process. Indirect impacts, such as increase levels of dust and light will be mitigated by screening, damping down and other best practise methods which will be detailed in the CEMP. Post development, recreational pressure will be limited by restricting access with fencing and sensitive lighting schemes will limit light pollution. It is considered that the construction process will be of short term and temporary disturbance of **negligible significance**.

4.5 The impacts predicted on the site fauna are reviewed below:

- Bats roosting: No bat roosts have been identified on site. Several trees were identified as supporting ivy covering, which were considered to be of 'low' potential for bats. It is considered that these are to be retained within the scheme. However, individual trees which are to be lost should be re surveyed prior to felling and either soft felled or felled under ecological supervision. If bat roosts are identified on site prior to trees being felled, then further works, including a license would be required. Currently no bat roosts on site and as such loss of individual trees would be of **negligible significance**.
- Bats foraging: The proposals will result in the loss and fragmentation of the hedgerows bordering the access road, moderate levels of bat activity were recorded along this road, this is likely to impact upon bats commuting across the site. Much of the habitat to be lost on-site is arable land, bare earth and grassland, all of which are sub-optimal for bats, it is considered the loss of these habitats would be of negligible significance to foraging and commuting bats. Buffer zones along the ancient woodland and deciduous woodland edges, the creation and maintenance of green corridors and the creation of the open spaces to the north provide continuous landscape linkages and provide commuting corridors. As such it is not

considered likely to affect the favourable conservation status of bats in the local area. Commuting routes will be retained through the maintenance of hedgerows around the edges of the site which are considered to be the most diverse area for bats and where activity was recorded. Increase in lighting levels may have indirect impacts. Locally foraging bats are unlikely to be disrupted by noise during development from construction operations, particularly as site activity will be limited at dawn/dusk in the spring and summer when bats' foraging is at its peak. Construction impacts are considered to be of **minor negative significance**.

- **Badgers:** A single badger sett was identified on-site. This sett is to be retained and protected with a development buffer. During construction, safety measures must be employed to ensure the sett and access to foraging habitats are retained. This will be detailed within the CEMP. Connectivity to off site habitat to the east will be retained through green corridors and links (as shown on the master plan extending eastwards and northwards from the sett area). The loss of foraging grounds, including the loss of arable and grazed pasture, and the replacement of some of these habitats with fenced gardens and buildings will reduce overall foraging habitat within the red line boundary. However, enhancement planting to the north of the site, enhanced hedgerows and edges, will provide new food sources for badgers. Overall there is likely to result in an impact of **minor negative significance**.
- **Reptiles:** No reptiles were found on-site or on adjacent sites, it is therefore considered no reptiles are present on-site or in adjacent properties and no impacts are therefore predicated.
- **Dormice:** Dormice have been identified within the on-site hedgerows and adjacent ancient woodland habitat. The population of dormice on-site is considered to be of local significance. The woodland and majority of the hedgerows are to be retained and buffered from development, however the hedgerows either side of the access road are to be fragmented as a result of the development. The habitats will be removed under license from Natural England. Clearance will take place in a two-stage cut to enable dormice to disperse into nearby suitable habitat to be retained. The creation of new dormice habitat and increased green linkages between existing dormice habitat is likely to result in a net increase in suitable habitat for dormice,

although replacements habitats will require time from planting to establish to a level suitable to support dormice. It is considered the impact upon dormice as a result of the loss/fragmentation of the hedgerows would result in a short-term impact of **minor negative significance**.

- GCNs. GCN are not considered to be on-site or in nearby off-site habitats, no impacts are therefore predicted.
- Birds. Common bird species were largely confined to edge habitats such as the hedgerows and woodland. These edge habitats will be largely retained and suitable buffered from construction work. As such the more common species of bird, which use edge habitats are considered to be of short term and temporary disturbance and considered to be of **negligible significance**

4.6 In terms of the wider landscape and designated sites, no direct impacts are predicted on any of the designed sites in the landscape, with no land loss, no land take, fragmentation or isolation of habitats resulting from the development.

4.7 Indirect impacts are considered negligible in the wider landscape on locally, nationally and internationally designated sites due to the nature of the development and the distances and lack of ecological pathways linking the habitats within the red line boundary and the off-site designated habitats.

Table 7: Summary of Predicted Impacts and recommended mitigation measures

Receptor (Receptor Importance)	Nature of Impact	Impact Significance	Mitigation measures
Highdown Hill & the Miller's Tomb SNCI (County)	This SNCI is suitably removed from the Site by distance and intervening land uses such that no direct effects are anticipated.	N/A	None required
Titnore & Goring Woods Complex SNCI (County)	This SNCI is suitably removed from the Site by distance and intervening land uses such that no significant	N/A	None required

	effects are anticipated.		
Ancient woodland and lowland deciduous woodland (adjacent to the site to the north and south of the site) (Local)	There will be no direct impacts, however there has potential for indirect impacts during the construction phase due to pollution events such as increased dust levels. Temporary, indirect, negative	Minor negative	Buffered from construction and tree protection fencing installed across required aspects. Use of best practise construction measures CEMP
Arable land (Site)	Significant loss of habitat Permanent, direct, negative	Negligible	New diverse habitat developed through new planting
Grassland (Site)	Significant loss of habitat Permanent, direct, negative	Negligible	New more diverse habitat developed through new planting
Scrub (Site)	Loss of large areas. Permanent, direct, negative	Minor negative	New more diverse habitat developed through new planting
Hedgerows (Local)	Removal and fragmentation of important hedgerows Permanent, direct, negative	Minor negative	Additional hedgerow planting across site, protection of retained hedgerows during construction phase.
Bats foraging (Local)	Loss of major commuting and foraging area of site Partial loss of foraging habitat, changes to light levels, noise and dust Permanent, direct, negative	Minor negative	Retention of trees and buffer zones around woodland habitats. New planting, green corridors and links creation of new habitats within the red line boundary
Bats roosting (Local)	Felling of trees with bat roost potential and destruction of a bat roost	No roosts currently on site no impacts. Minor negative impact if roosts identified	Further survey work, a Natural England licence obtained if roost is discovered

Badger sett (Local)	Increased disturbance, loss of significant areas of immediately adjacent foraging habitat Permanent, direct and indirect, negative	Minor negative	Sett to be buffered with planting. Badger friendly fencing, Improved connectivity to the adjacent woodland. New planting to include new food sources for badgers
Reptiles (N/A)	N/A	N/A	None required
Dormice (Local)	Loss and fragmentation of sections of hedgerow along access road in centre of site. Permanent, direct, negative	Minor negative	Works to be carried out under Natural England license. New planting along woodland buffers and enhancement of existing hedgerows. Dormouse boxes to be established in off site woodland / on site habitats
GCNs (N/A)	N/A	N/A	None required
Birds (Site)	Partial loss of some suitable foraging and nesting habitat and disturbance. Permanent, direct, negative	Minor negative	Removal of vegetation outside of bird breeding season. Bird boxes and new planting to provide new opportunities.

Construction Mitigation Measures

4.8 In order to minimise effects of construction, standard mitigation measures will be put in place during the construction phase. These measures could be included within a Construction Environmental Management Plan (CEMP) at the detailed stage, and will include:

- Erection of tree protection fencing around retained trees in accordance with BS5837:2012;
- Erection of fence lines to projected ancient woodland off site and lowland deciduous woodland off site;
- Scrub, arable and tree clearance to be undertaken outside nesting bird season, or checked by a suitably qualified person prior to removal;

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- Damping down of dust sources and covering of loose materials to reduce dust deposition within adjacent habitats;
 - Use of lighting in the vicinity of retained habitats and along the edges of the site to be kept to a minimum, with use of directional lighting or screening as required to reduce light spill;
 - New wildlife planting including; new woodland planting, new buffer planting and green corridor planting and enhancements;
 - Storage of chemicals and hazardous materials in line with best practice guidelines;
 - General housekeeping rules, including litter removal, maintenance of fence lines etc.

Bats

- 4.9 Several mature trees on site have been identified as having potential to support roosting bats. It is understood that none of these trees are to be removed. However, if this is to change, for example for health and safety purposes then they are to be resurveyed for the potential to support roosting bats. If a bat potential tree is identified it will be subject to an aerial inspection and climbed by an ecologist. If evidence of bats is found or there is a reasonable likelihood that bats would use the feature, then further surveys will be undertaken. This could include up to three surveys (2 evening and 1 dawn survey). If a roost is confirmed then a license from Natural England will be applied for to fell the tree. If no evidence of the tree being used by bats was recorded then the tree will be removed using reasonable avoidance measures, as described above.
- 4.10 Mitigation for bats is included within the design of the site. This includes retaining features for bats to use as for commuting and foraging. The tree lines around the edges of the site will be enhanced, by filling in the gaps with native species planting to ensure a linear vegetative link across the site to allow bats to easily move across the landscape. Additional planting including planting that will benefit bats will be included within the open space to the north. Linear corridors, green links, use of swales will all provide suitable ecological networks for bats within the site. Enhancements within the site will include planting of native species and the use of bat boxes on retained trees.
- 4.11 A sensitive lighting scheme will also be employed for this scheme post development for the operational stage. This will be installed at the construction stage. This will shield

features of importance for bats such as retained bat potential trees and commuting and foraging features such as woodland edges and tree lines as well as any newly created habitats.

4.12 Furthermore, enhancements to the site for bats should include the installation of bat boxes which will enhance the number of roosting opportunities for bats in the local area. Boxes should be hung on mature and semi-mature trees and have clear flight paths. Recommended boxes include:

- Schwegler 2F – This box simulates crevices inside to allow suitable habitats for crevice-dwellers;
- Schwegler 1FD – This box is a larger version of the 2F; and
- Schwegler 1FW – This box is suitable for maternity or hibernation roosts.

Badgers

4.13 A main sett was identified in an area of scrub to the centre of the site. Badgers are mobile species that can establish new setts or expand existing ones in a short period of time, an updated badger survey is to be undertaken prior to works commencing to determine whether additional badger activity has occurred in the intervening period. Should any additional setts be identified during this survey then a monitoring period may be required to determine the status and nature of the sett in support of a Natural England closure license. Once the updated status of badgers on site has been established, a development buffer is to be put in place of at least 20m around the sett and any other setts to be retained. The area around the sett/s will be fenced off, encouraging badgers to avoid the construction site and instead forage and commute across the adjacent Groom's Copse. The following best practice guidance for working in proximity to badger setts should be adopted.

- Any trenches or excavations on site should be either covered over at night or a plank of wood placed in so as to allow any mammals to escape if the badgers were to accidentally fall in.
- Any open pipes or conduits laid should be blocked off each night to prevent badgers from entering them.

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- Construction work should only take place between dawn and dusk with no late evening work. This will reduce possible disturbance to badgers as they emerge to forage and also reduce the risk of traffic casualties from late working site traffic.
 - All site workers will be informed of the known badger sett. Site workers must be informed that, by law, they must not:
 - Interfere with setts;
 - Dump equipment or litter in badger holes;
 - Have fires next to badger holes;
 - Damage or destroy the setts.

4.14 The edge habitat and tree lined green edges within the site will ensure that badgers can move across the site and into the local landscape and therefore will be able to access foraging habitats in the local area. Sections of badger friendly fencing will be incorporated into the fence bounding the adjacent Groom's Copse to ensure connectivity is retained post development. New wildlife planting will include species which are favoured by badgers to provide new food sources within the site boundaries.

Dormice

4.15 The hedgerows and adjacent woodland have been found to support dormice. Works affecting these habitats will need to be performed under a Natural England EPS license. All site operatives working in areas of suitable habitat for dormice will be subject to a TBT and works will be performed under the supervision of a qualified ecologist. Vegetation clearance will follow the method detailed below:

- Vegetation to be removed will be searched for dormice nests prior to work commencing
- Cutting vegetation down to 30-50cm in November to March using hand tools, ideally before the end of February to avoid overlap with bird nesting season. This will avoid disturbing dormice hibernating at ground level.
- Upon emergence from hibernation in spring, dormice will be encouraged to disperse into suitable habitat nearby, clearance of remaining vegetation and stumps can then be undertaken in mid to late May.

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- 4.16 Compensatory planting is proposed across the site, new boundary features and hedgerow planting will incorporate species of value to dormice such as hazel, yew and buckthorn. The planting will also provide improved connectivity across the site, linking the two compartments of adjacent woodland. The planting will commence at the earliest opportunity, prior to removal of existing dormouse habitat, in order to reduce the time between clearance of existing dormice habitat and establishment of suitable dormice habitat.
- 4.17 Dormice nest boxes are to be put in place in suitable and connected habitat across the site and in the adjacent Groom's Copse.

Birds

- 4.18 The UK breeding season for most bird species takes place between March and September. Any works affecting the suitable bird habitat on site are to be carried out outside of this period. If this is not possible, areas of suitable vegetation and ground will be checked for active nests no more than 48 hours prior to clearance. Should active nests be discovered, any works in the vicinity of the nest must cease until the birds have fledged the nest.
- 4.19 Woodland edges, trees and hedgerows which are to be maintained within the scheme will be protected by fence lines to ensure that these features are adequately protected.
- 4.20 Bird boxes are to be hung on suitable retained trees to increase the number of breeding opportunities throughout the site. Recommended boxes include:
- Schwegler 1N Deep Nest Box – give added nest protection from predators; and
 - Schwegler 1B Bird Box – general purpose bird box, suitable for many species.

Table 9: Summary of construction mitigation measures

Mitigation measure	How it will be implemented and when
Completion of an update bat survey of any trees which are required for removal	Prior to construction activities on site. If evidence of bats is identified, an appropriate bat mitigation strategy will be required as part of the planning application and to inform a Natural England Licence, if deemed necessary.
Clearance of vegetation outside of breeding bird season or under ecological watching brief (essential)	The vegetation clearance will be subject to a nesting bird check which is a legal requirement and likely to be required as part of the planning permission. Trees, hedgerows and scrub to be cleared under a Natural England dormouse licence. The timings of the inspections are to be incorporated into the CEMP.
Update badger survey and development buffer around sett (essential)	Update badger survey prior to works commencing on-site. Establish development buffer around sett prior to works commencing. Buffer zone around badger sett, adoption of best practice methods for working near badger setts. TBT and working methods reviewed This will form part of the CEMP.
Two stage dormouse habitat clearance works (essential)	Application for Natural England EPS license for work involving removal of dormice habitat. Commence compensatory habitat planting at earliest opportunity. Undertake two stage clearance of scrub/hedgerows, to knee height in winter followed by removal in summer once dormice given opportunity to disperse to adjacent suitable habitat. Timetable of works will be implemented through the CEMP.

5.0 Effects During Operation

Activities and Proposal with the Potential for Significant Effects

5.1 Operational impacts include the following:

- Management of public open space, including amenity areas;
- Management of newly created and retained habitats such as enhanced grassland, new hedgerow networks, shrub and tree planting;
- Increase in local pet population and the associated pressure on the on-site species in terms of disturbance and predation.
- Increase in the local human population and the increase in wear and tear of off-site habitats.
- Increase in disturbance from lighting and noise.

5.2 Operational activities will include the management of existing and newly created habitats and open spaces within the development. It is considered that the management of gardens use will not be significant in terms of ecology and biodiversity.

5.3 The key operational impact is the introduction of a new resident population to the site. The impacts this can cause, in ecological terms, includes increased recreational pressure on both on site habitats and designated sites in the surrounding area, as well as a potential increase in bird and dormouse predation and disturbance through the increase in local domestic pets. The disturbance of an increase in local residents and pets will also have to be considered as potentially impacting upon other species such as badgers.

Operational Effects on Habitats and Ecological Features on Site

5.4 The operational stage will involve the use of the new roads, buildings, residential gardens and communal greenspace and associated infrastructure. It is understood that a management company will be employed to manage all open space areas. Each of the areas will have a bespoke management plan. The management plan for the habitats on site will be conditioned as part of the permission.

5.5 The operational impacts on retained and new habitats are reviewed below:

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- Buffer zones (15m) adjacent to woodland (lowland deciduous and ancient woodland) will be incorporated in the layout of the site (as can be seen from the master plan). The 15m buffer will be planted with a range of species, such as woodland species creating an ecotone between the woodland edge and the end of the 15m. Dense planting will occur adjacent to the woodland, creating a thicket of linear habitat which, combined with the fence line, will limit any potential incursion in to off-site habitats. The thicket (with thorny species such as hawthorn and blackthorn) will also provide nesting and foraging opportunities for a range of bird species identified on site. The ancient woodland has been taken into consideration with regards to the masterplan, no gardens abut onto the buffer. Footpaths and wooden fence lines are to be sited along the edge of the buffer to prevent encroachment and disposal of garden waste. This habitat will be managed by a management company. This area will be managed with a light touch to ensure that suitable habitat is provided for a range of species, including dormice. It is considered that the buffer zones will provide new opportunities for wildlife and provide new habitats. This habitat will not support recreation activities. This would result in a **positive impact of minor significance**.
 - Swales: Two swales are included within the masterplan, along the western site boundary and to the south of the site adjacent to the proposed employment buildings. These will be designed and built to ensure water run-off is maintained at current green field levels. The swales will be designed and planted with ecological benefit in mind, the turf for these areas will comprise at least 20% wildflower-rich turf interspersed with purpose-grown amenity grade turf. These swales will provide new habitats within the site, providing additional for invertebrates and animals such as birds that feed upon them. The creation and long-term management the swales would provide a **positive impact of minor significance**.
 - Green links / green corridors and hedgerow planting: these features are present around the eastern and northern edge of the site, connecting Groom's Copse and the offsite woodland to the northwest of the site as well as newly proposed open space to the north. The addition of these features will be of particular benefit to species such as dormice and bats. These features are to be enhanced through

hedgerow creation and additional native tree planting and wildflower grass verges. The footpaths /cycle paths within the scheme will follow the routes of these features. The trees and wildflower grassland habitats will be managed by the management company. These features will support some lighting, albeit lighting will be maintained with low level bollard lighting along the footpath / cycle ways. The enhancement and creation of these features would result in a **positive impact of minor significance**.

- Open space. An area of open space is included within the masterplan to the north of the site, adjacent to the A247. This area of the site will be used as recreational open space with a football pitch and games area. Outside of these areas, planting schemes will be incorporated, including hedgerow and tree planting, wildflower areas and tussocky grassland. Development of the open space will result in a **positive impact of minor significance**.
- Garden habitats and habitats under private ownership are to be planted with a range of species. However, the long-term management of these plots are not controlled by the management company. However, it is considered that these areas and habitats would be of **negligible significance** in terms of nature conservation.
- Off site adjacent habitats: ancient woodland and lowland deciduous woodland located outside the redline boundary of the site. These habitats are not publically open or accessible and there are no footpaths into these habitats. Whilst there may be some disturbance from recreational pressure, or fly tipping, the design of the development separates such features from housing areas, with no back gardens associated with edge habitats or networks. As such it is considered that such issues as waste / fly tipping has been designated out. With regards to recreational pressure, it is considered that the northern open space element of the site, and the green links within the site would provide sufficient areas for recreation. Furthermore, play areas are to be included within the design of the site. Finally, the buffer zones adjacent to the ancient woodland to the north will be fenced and planted with a range of species to provide a dense ecotone between the development edge and the ancient woodland itself. This would act as a deterrent from entering this off-site habitat. It is considered that the operational impacts on

the adjacent ancient woodland and lowland deciduous woodland would be considered to be of **negligible significance**.

5.6 The operational impacts on fauna are reviewed below:

- Bats: Bat species are nocturnal and light sensitive. Bat activity was considered to be located around the edges of the site, notably the hedgerows and woodland edges. Light levels around these features could impact upon how bats are using the site. Lighting levels are to reflect this, will minimising light spill around the edges of the site. New planting, enhanced edges and the creation of gardens may provide new opportunities for foraging bats. It is considered that operational impacts are of **negligible significance**.
- Roosting bats. No bat roosts were identified on the site. Bat boxes are to be established on the site to provide new opportunities within the red line boundary. These should be maintained on features which are currently used for foraging and commuting bats. The addition of new roosting opportunities will provide impacts are of **negligible significance**.
- Badgers: increase in human recreational pressure and disturbance from dogs may impact upon the badger sett. Additional planting may help to conceal the sett from humans, however badgers are likely to create new push through which may be accessible to dogs. It is considered that green edges will allow badgers to move across the site and into the wider landscape. Open habitat and grassland habitat will be retained and additional planting would include species which badgers can use to forage. The large areas of green space within the development are considered to be sufficient to ensure that badgers can still use the site during the operational period. It is considered that operational impacts are of **minor negative significance**.
- Reptiles: No impacts are predicted. No reptiles identified on site.
- Dormice. The dormouse is a nocturnal species, light levels around suitable dormouse habitat such as hedgerows and woodland should be kept low to avoid potential disturbance to dormice. The increase in human population is likely to result in an increase in cats which are known to predate on dormice. The planting of thorny species along the edge of woodland may help to deter cats from

encroaching into dormouse habitat. It is considered the operation impacts are of **minor negative significance**

- GCNs. No Impacts are predicted. No GCN identified on-site or in adjacent waterbodies.
- Birds: An increase in local human population is likely to result in an increase in local population of domestic cats and dogs. Cats are known to predate on some species such as birds, and this can be difficult to prevent. New nest boxes will be models with inbuilt predator protection such as the Schwegler 2GR in order to limit the impact of cat predation. Birds are largely contained within the hedgerows and off site woodland habitats of the site. These are to be maintained, with further planting created within the design. The creation of new opportunities for common bird species, including creation of new hedgerows and planting within. As such it is considered that impacts upon common species would be lessened as a result. Operational impacts are considered to be of **minor negative significance**.

Operational Impact on Off Site Habitats

- 5.7 With regard to local designated sites including SNCIs within walking distance from the site, an increase in activities such as walking and dog walking would lead to the disturbance of habitats which for which the sites have been notified, furthermore, increased widening and wear of paths, increased levels of dog fouling and littering and the potential to harm the biodiversity of the area through the destruction of habitats and disturbance to wildlife.
- 5.8 However, considering the size and extent of the development and its associated infrastructure, it is considered that the recreational green space, the green links and corridors through the site, and other recreational opportunities set within the development (including play areas) it is considered that day to day recreation would be maintained within the site boundaries.
- 5.9 Highdown Hill & the Miller's Tomb SNCI is a public access site with car parking. It is currently subject to significant levels of recreational pressure (Barton, 1994), and so the

impact of additional recreational pressure from the development is at worst likely to result in a **minor negative impact** as a result of the proposals.

5.10 Titnore and Goring Woods Complex SNCI is under private ownership and as such increased recreational pressure as a result of the development is unlikely to be factor. Given the distance of the site and lack of connectivity, no operational impacts are predicted as a result of the proposals.

Table 10: Summary of Operational Impacts

Receptor Receptor Importance	Nature of Impact	Impact Significance	Mitigation measures
Highdown Hill & the Millers Tomb (local)	Open access SNCI with car park on-site, likely to result in increased recreational pressure from proposals.	Minor negative	Provision of on-site open space will likely reduce level of recreational pressure.
Titnore and Goring Woods Complex SNCI (local)	No impacts likely	N/A	N/A
Ancient woodland and lowland deciduous woodland (adjacent to the site to the north west and east of the site) (local)	Potential for fly tipping including garden waste and occasional recreational pressure. Low levels of light and noise pollution.	Minor negative	15m buffer established habitat with dense screening and fenceline Provision of on-site open space within the development. Implementation of sensitive lighting scheme
Hedgerows and trees (site)	Maintained and managed in the long term. low levels of light pollution.	Negligible Negligible	Long term management of hedgerow and trees through management plan Implementation of sensitive lighting scheme
Open space	General use and wear and tear	Negligible	Management plans in place to ensure public open space is user

			friendly and acceptable to new residents
Green corridors and green links	General use and wear and tear	Negligible	Management plans in place to ensure public open space is user friendly and acceptable to new residents
Swales	General use and wear and tear Establishment of non-native invasive species	Negligible Minor negative	Management plans in place to ensure that attenuation ponds are effective and wildlife friendly. Monitoring to ensure invasive species do not become established.
Bats foraging (Local)	Increased lighting on site. Recreational pressure may impact longevity of trees.	Minor negative Minor negative	Established habitats, including buffer zones, swales, dark corridors, new planting in gardens and open space. Management of trees, tree lines etc. for long term. Replace trees within features as part of the long-term management Lighting plan conditioned
Bats roosting (local)	Currently no roosts identified on site.	Negligible	Long term management of features under management plans and objectives. Established bat boxes on site to provide new roosting opportunities Checking boxes can occur with licensed bat worker
Badgers (Local)	Potential for increased pressure from humans and dogs.	Minor negative	New planting. Fencing to encourage badgers to commute to off-site habitats and limit access

			to badger sett from dogs.
Reptiles	N/A	N/A	N/A
Dormice (local)	Increase cat predation. Light pollution	Minor negative	Planting of thorny species to form a buffer to deter cat incursion. Dormouse nest boxes in areas of suitable habitat concealed from view of the public
GCNs	N/A	N/A	N/A
Birds	Maybe subject to disturbance from recreation and cat predation	Minor negative	Management plans in place to ensure suitable habitat is in place (refugia etc) Management of habitats with a light touch Bird boxes with predator protection and new planting to provide new opportunities.

Operational Mitigation Measures

- 5.11 A long-term management plan for open spaces and on-site habitats will be developed which will prescribe the management requirements for each habitat area for a period of 5 - 10 years. After the initial 5 years a review of the management plan will be implemented and adjustments made where necessary.
- 5.12 The design of the development has incorporated significant mitigation measures to reduce any potential impacts on protected species and habitats.

- 5.13 The creation of enhanced habitats, with native species planting, the establishment of wildlife boxes, the creation maintenance of connectivity around the site, will provide optimal conditions for a range of species present on site and in the local area. Thus the new planting will enhance the local carrying capacity for these species.

Table 11. Summary of operational mitigation measures

Mitigation measure	How it will be implemented and when
Management of areas of recreational green space and improved management and monitoring of existing and created habitats such tree lined features	Landscape plan/strategy implementation
Creation of new habitats within the site such a planted and enhanced buffer zones (15m) and swales	During construction – planting of public greenspaces, tree/shrub planting,

6.0 Residual Impacts

6.1 Residual impacts are finally considered taking the development, construction and operational impacts, alongside mitigation measures. The outcome of the layout of the site and the mitigation measures employed throughout the construction and operational stages of the development aim to removal, where possible, any residual impacts.

Table 12. Residual Effects During Construction and Operation

Receptor Receptor Importance	Significance before mitigation	Mitigation	Residual Impacts
Highdown Hill & the Miller's Tomb SNCI (Local)	Minor negative	On-site green open space and recreational facilities, including play areas and footpaths.	Negligible
Titmore & Goring Woods Complex SNCI (Local)	N/A	N/A	N/A
Ancient woodland and lowland deciduous woodland (adjacent to the site to the north and south of the site) (local)	Minor negative	15m buffer zones implemented around the site. Sensitive working New green links to provide connectivity to proposed habitats and existing woodland. No gardens to back on to woodland habitats, fencing to No lighting adjacent to woodland edges Long term management of semi natural habitats associated within the buffer to enhanced the habitat and species diversity	Minor positive
Hedgerows. mature and semi mature trees (site)	Minor negative	Long term management plan and including tree management. Planting of new species rich hedgerows.	Negligible

		Protective measures during construction phase and root protection areas around trees.	
Habitats lost: including species poor grassland grassland, arable, and pockets of scrub (site)	Minor negative	Planting/establishment of new habitats, including swales, tussocky grassland, wildflower seed mix and hedgerows. Long term management to provide habitats of greater ecological value.	Negligible
Open space	Negligible	Long term management plan.	Minor positive
Green corridors and green links	Minor positive	Long term management, linkages to existing and proposed habitats of ecological value.	Minor positive
Swales	Negligible	Long term management plan, seeding with wildflower and amenity turf.	Minor positive
Bats foraging (Local)	Minor negative	Retention of trees and off-site woodland, improved management, new planting included enhanced buffer zones Recreational green space area provision of new diverse habitat on site Implementation of sensitive lighting scheme providing dark corridors Erection of bat boxes	Negligible
Bats roosting (local)	Negligible	Retention of trees and off-site woodland, improved management, new planting Erection of bat boxes	Minor positive
Badgers (Local)	Major negative	Development buffer around sett, additional planting in proximity of sett. Sensitive working measures during construction phase.	Minor negative

		Green edges and links allow badgers to move across the wider landscape.	
Reptiles	N/A	N/A	N/A
Dormice	Major negative	Sensitive habitat removal under Natural England EPS license. Establishment of new habitat on-site, sensitive lighting scheme and dormouse nest boxes.	Negligible
GCNs	N/A	N/A	N/A
Birds	Minor negative	New diverse habitat creation in buffer zones, woodland, green corridors Predator resistant bird boxes within the scheme.	Negligible

7.0 Cumulative Impacts

7.1 The consented developments are all required, as a result of the planning process, to minimise effects on ecology through mitigation measures. The granting of planning permission for these sites must have been a result of assessing potential impacts on the surrounding habitats, including designated sites, as required by law and policy. This includes assessing the impacts alone and in combination with other projects and plans within the local landscape.

- A/99/17/OUT – Land South of Water Lane – Outline application with some matters reserved (Access only) for development up to 175 No. residential dwellings, public open space, play areas with associated infrastructure including roads, drainage & landscaping – awaiting decision.
- A/27/16/PL – Broadlees Dappers Lane – Erection of 53 care apartments within Class C2, parking, access, footpath, landscaping & other associated works. – Approved conditionally with s106 in 2017.
- A/142/16/OUT – Merry England Nursery Dappers Lane, Angmering – Outline application with some matters reserved for the demolition of existing buildings & erection of 18 No. dwellings and the provision of pedestrian footpath adjacent to Dappers Lane – approved conditionally with s106 in 2017.
- A/132/17/OUT – Outline application with some matters reserved for the demolition of the existing single dwelling & construction of 30 No. dwellings – approved conditionally with s106 in 2018.
- A/144/15/PL - 246 No. residential dwellings including garages & associated parking, affordable housing, associated landscape & infrastructure & addition of pumping station – Approved conditionally with s106 in 2016.
- A/167/14/PL - Erection of 46 residential dwellings with associated access, car parking, landscaping, open space & works, following demolition of existing buildings & structures. – Approved conditionally with s106 in 2015.
- A/154/14/OUT - Outline Application for the erection of 18 No. dwellings – Approved

conditionally in 2015.

- 7.2 Additional planning applications have been lodged with the Arun District Council. Those listed above are developments of over 10 units within the zone of influence of the site from the last 10 years. The A247 that runs along the north of the site is considered to be a significant barrier to dispersal and so only applications south of the A247 and within the locality of Angmering were considered.
- 7.3 The majority of individual housing developments listed above have already been granted planning permission and it is therefore anticipated that impacts on ecology and local designated sites have been considered and deemed not significant.
- 7.4 Assuming that the nearby developments have mitigation in place to negate any potential negative effects such as increased surface water run-off, atmospheric pollution or increased visitor pressure, a cumulative impact from the developments would be insignificant.
- 7.5 Considering the proposed development at land north of Water Lane supports a mitigation strategy within the master plan which recreational green space, and supports green links and corridors within the site, and protects and enhances off site habitats, it is considered that the ecological functionality of the landscape will be retained and the biodiversity value of the site will be retained and potentially enhanced by the proposals.
- 7.6 It is therefore considered that as a standalone development with mitigation in place, the study development will not have a significant negative impact on the designate site.

8.0 Summary and Conclusion

- 8.0 The site is dominated by arable land, along with areas of bare earth, hardstanding and species poor grassland and scrub. There are hedgerows surrounding the fields, and broadleaved woodland along the eastern and northwest boundaries. A small number of waterbodies and a stream are situated off-site to the south of Water Lane.
- 8.1 Habitats within the site were considered to be common and widespread. Off-site habitats included ancient woodland and lowland deciduous woodland, which were considered to be of significant ecological value, providing habitat for protected species such as bats and dormouse.
- 8.2 The site is proposed to support up to 525 new homes, employment buildings, recreational green space and associated infrastructure.
- 8.3 The site has been subjected to numerous surveys including bats, badgers, reptiles, dormice and GCNs.
- 8.4 The site supports a badger sett within the centre of the site. The hedgerows and off-site woodland support populations of dormice. These features also provide foraging and commuting opportunities for bats in the local area. No bat roosts were identified on-site, although trees with potential to support roosting bats were identified. No reptiles or GCN were identified on-site or in off-site habitats where applicable.
- 8.5 The badger sett is likely to be subject to an unavoidable negative residual impact as a result of the development, with a significant area of foraging habitat to be lost in the immediate vicinity of the sett and likely disturbance from human activities post development. While planting around the sett and elsewhere across the site, as well as retained links to the adjacent woodland will go some way to mitigating against the predicted impacts, the measures are not considered adequate to fully diminish the negative effects.
- 8.6 Dormice habitat is to be lost under the proposals, works impacting these habitats will be performed under a Natural England EPS license. Compensatory planting is included

within the masterplan, with new hedgerows, buffer planting and green linkages between the off-site woodland compartments. Other mitigation for this species include nest boxes and a sensitive lighting scheme. It is considered with the adoption of these measures the impacts to dormice would be largely avoided.

- 8.7 The most significant area of bat foraging habitat is to be impacted under the proposals, with sections of hedgerow along the centre of the site to be lost and fragmented. However, the majority of the mature trees within this area of the site are to be retained. Combined a sensitive lighting scheme, planting and creation of new green links, no significant residual impacts to foraging bats are predicted as a result of the proposals.
- 8.8 The design of the development provides new opportunities for a range of species found to be on site, with opportunities to enhance habitats for dormice, bats and birds. The site maintains habitat connectivity and linkages, ensuring bat foraging habitat and commuting corridors are maintained within the scheme. New opportunities for roosting will be provided. No residual impacts on these species are predicted.
- 8.9 Impacts from development on offsite and adjacent habitats, including ancient woodland and lowland deciduous woodland and local SNCIs are not considered to be significant. The development includes an area of open green space to the north of the site which will provide new ecological opportunities within the landscape, connecting to buffer zones and off-site habitats in and around the site and as such preserving ecological networks. The on-site green space will also help mitigate against increased recreational pressure to adjacent habitats and local designated sites. With the design of the development maintaining such linkages and provide new habitats within the site, it is considered no impacts on off-site habitats or designations are predicted.

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Appendix 1: PEA

Appendix 2: Bats

Appendix 3: Dormice

Appendix 4: Reptiles

Appendix 5: GCNs

Appendix 6: Site Layout

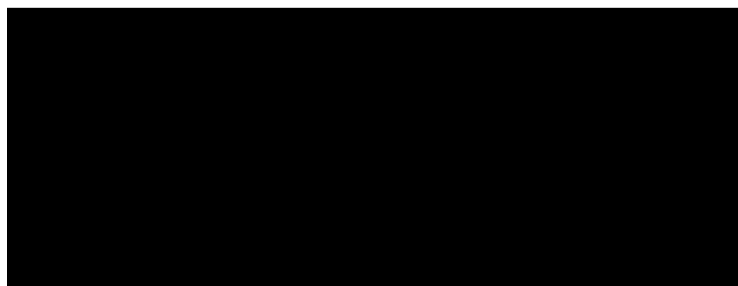
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