

JAMES BLAKE ASSOCIATES

Preliminary Ecological Appraisal of

**Land at Rustington Golf Course,
Rustington, West Sussex**

on behalf of

Barratt Homes Southern Counties

**March 2021
Revision A - 2022**

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Disclaimer

James Blake Associates Ltd have made every effort to meet the client's brief. However, no survey ensures complete and absolute assessment of the changeable natural environment. The findings in this report were based on evidence from thorough survey; It is important to remember that evidence can be limited, hard to detect or concealed by site use and disturbance. When it is stated that no evidence was found or was evident at that point in time, it does not mean that species are not present or could not be present at a later date: The survey was required because habitats are suitable for a given protected species, and such species could colonise areas following completion of the survey.

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Non-technical Summary

Site:	Land at Rustington Golf Course, Rustington, West Sussex
Ordnance Survey National Grid Reference:	TQ055034
Report Commissioned by:	Barratt Homes Southern Counties
Date of Walkover Survey:	4 th March 2021

Considerations	Description	Potential impacts and timing
Statutory designated wildlife areas within 7km of the site:	Two 'Sites of Special Scientific Interest' (SSSI), one 'Local Nature Reserve' (LNR) and a National Park	The site is within several IRZ's for SSSI's and will meet the qualifying criteria for consultation between the Local Planning Authority and Natural England.
Non-statutory designated wildlife sites within 2km of the site:	-	-
Results of walkover survey:	The site is considered suitable to support bats, great crested newt, hedgehog, and nesting birds. The site is considered to be of 'low' habitat value for foraging and commuting bats.	-
Phase 2 surveys:	Great crested newt survey	Initial eDNA survey then a minimum of four survey visits undertaken between March and June (if tests positive). *Additional two survey visits if GCN are present*
	Bat activity survey	One survey visit undertaken per season in spring, summer and autumn.
Phase 2 surveys dependent on final layout:	Bat emergence/return to roost survey (if 'Moderate' BRP tree is to be impacted upon)	Two survey visits undertaken from May to August.
Precautionary measures:	Vegetation removal.	Outside of the nesting bird season or following a clear nesting bird check. Nesting season is March to mid-August.

Considerations	Description	Potential impacts and timing
		Scrub should be cut to 20cm using hand-held tools and checked for hedgehogs. Note: no vegetation removal should be undertaken until ecological surveys are complete and mitigation in place, if required.
	Continual management of amenity grassland.	-
	Rabbit holes.	Precautionary measures for removing soil/vegetation near holes.

1 Introduction

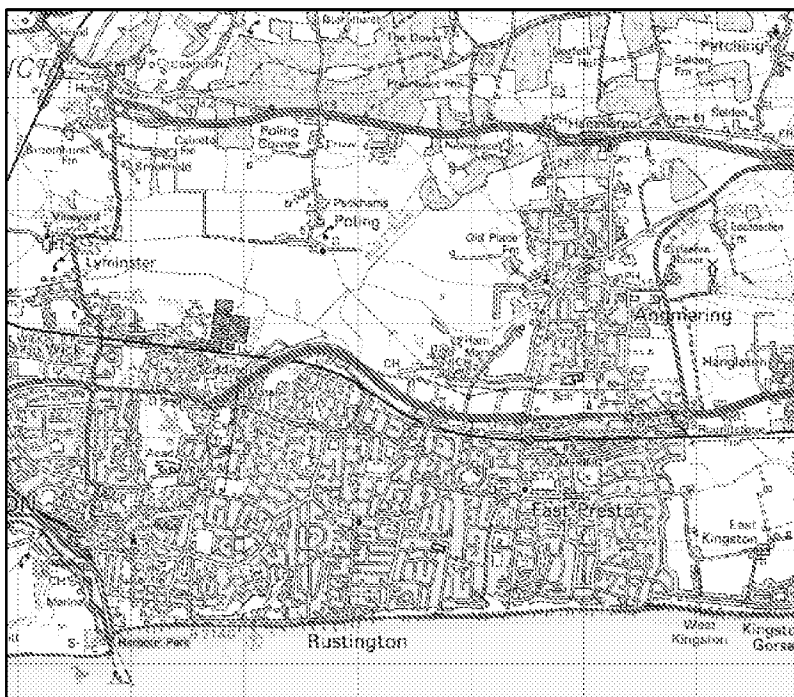
Background

- 1.1 James Blake Associates Ltd. was commissioned by Barratt Homes Southern Counties to undertake a Preliminary Ecological Appraisal (PEA) of land at Rustington Golf Course, Rustington, West Sussex. Ordnance Survey National Grid Reference; TQ055034, taken from the centre of site.
- 1.2 The assessment was required to accompany a planning application for the development of residential dwelling units and associated infrastructure.

Site Description

- 1.3 The site is approximately 7.3 hectares in size and is located at Rustington Golf Course, Rustington, West Sussex. The wider landscape includes the town of Rustington, residential and commercial buildings and arable land. The A259 is approximately 17m south of the site (see Figure 1 below).
- 1.4 The site itself mainly consists of amenity grassland, with species poor hedgerows, boundary/scattered trees, with small areas of semi-improved grassland, tall ruderal, introduced shrubs. A pond is located towards the east of site.

Figure 1: Site location



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Aims and objectives

1.5 The aim of the survey was to:

- Identify the presence, or potential presence, of any protected or notable species or habitats on, or adjacent to, the site; and
- make recommendations for further surveys if required, to advise on avoidance and/or mitigation measures following the survey (if necessary) and provide suggestions to enhance the wildlife value of the site post-development to provide a net gain in biodiversity value.

Wildlife Legislation and Planning Policy

1.6 The relevant wildlife legislations and planning policies are listed below:

- Conservation of Habitats and Species Regulations 2017, ('The Habitats Regulations'). The Habitats Regulations implement The Habitats Directive 1992 (92/43/EEC) into English Law. (Amended by the Conservation of Habitats and Species (Amendment) Regulations 2012 S.I. 2012/1927).
- Wildlife and Countryside Act, 1981 (as amended) (WCA). (Amended by the Countryside and Rights of Way Act (2000).
- The Natural Environment and Rural Communities Act, 2006 (NERC).
- The Protection of Badgers Act, 1992 (The Badgers Act).
- The Wild Mammals (Protection) Act, 1996.
- The Hedgerows Regulations, 2007.
- National Planning Policy Framework, 2019 (NPPF).

2 Methodology

Desk study

- 2.1 A desk study was undertaken for statutory and non-statutory designated wildlife sites within a 7km and 2km radius of the site, respectively using 'MAGIC', the Multi-Agency Geographic Information system for the Countryside. The data provided from Sussex Biodiversity Information Service (SxBIS) was consulted for records of non-statutory sites and protected and rare species within a 2km search radius (SxBIS data provided on the 5th March 2021).
- 2.2 The site is covered by the Local Biodiversity Action Plan (LBAP) for Sussex which was consulted as part of the desk study.
- 2.3 Within the desk study results, the Birds of Conservation Concern (BoCC) are split into three criteria; the Red list is the highest conservation priority (species needing urgent action). The Amber list is the next most critical group, followed by Green. Red listed species are those that are globally threatened according to the International Union for Conservation of Nature (IUCN) criteria, species with populations or ranges that have declined rapidly in recent years, and those that have declined historically and have not shown a substantial recent recovery.

Walkover Survey

- 2.4 The survey was undertaken by Rachel Hall BSc (Hons) (Natural England Bat Class Licence CL17 and Natural England Great Crested Newt Class Licence CL08) on the 4th March 2021.
- 2.5 The survey methodology followed the standard Phase 1 methodology of Joint Nature Conservation Committee Guidelines (JNCC, 2010). An extension of this basic methodology was also undertaken to provide further details in relation to notable or protected habitats present within the survey area, or in relation to habitats present that have the potential to support notable or protected species (CIEEM, 2013).
- 2.6 **Badgers (*Meles meles*):** A visual survey for setts, hair, latrines, prints, snuffle marks or other signs of badgers was undertaken within the site boundary, following guidelines set out by the Mammal Society (1989).
- 2.7 **Bats:** Trees within the site boundary were surveyed, from the ground, for their potential to support roosting bats in accordance with Bat Conservation Trust's Guidelines (Collins (ed.), 2016).

- 2.8 **Hazel Dormouse (*Muscardinus avellanarius*):** Hedgerows within the site boundary were surveyed, from the ground, for their potential to support hazel dormouse in accordance with survey guidelines in Bright et al (2006) and Natural England.
- 2.9 **Otter (*Lutra lutra*) and Water Vole (*Arvicola amphibius*):** A visual survey for the presence of field signs was carried out to assess if otter and/or water vole were likely to be present.
- 2.10 **Birds:** A visual survey of bird activity and suitable nesting habitat was carried out, to determine if any areas would be suitable for WCA Schedule 1 birds, BoCC or other common and widespread nesting birds.
- 2.11 **Reptiles:** A visual survey for the presence of suitable habitat was carried out according to the criteria given in the Herpetofauna Workers' Manual (Gent and Gibson 1998).
- 2.12 **Amphibians:** Where accessible, known ponds within 500m of the site (unless ecologically separated from the site by significant barriers, such as major roads or rivers) were assessed for potential to support breeding amphibians, such as great crested newts (GCN) (*Triturus cristatus*). Ponds were assessed for their potential suitability to support GCN by undertaking a Habitat Suitability Index (HSI) assessment (Oldham *et al.*, 2000). The HSI for GCN is assessed using ten habitat variables (suitability indices – SI) which are known to affect the survival and ability to breed, of GCN. The variables include:
- Geographical location.
 - Pond area.
 - Pond permanence (number of years a pond is likely to dry out per decade).
 - Water quality.
 - Percentage of shade of margin.
 - Number of waterfowl.
 - Occurrence of fish.
 - Pond density.
 - Terrestrial habitat.
 - Macrophyte (plant) cover.

Each variable (or suitability index) is assessed in the field and expressed on a scale from 1 (optimal suitability for GCN) to 0 (totally unsuitable). The ten variables, or indices, are combined using geometric mean to derive the final HSI score for the waterbody. The scoring system is presented in Table 1 below:

Table 1: HSI score and suitability of a waterbody habitat to support breeding GCN

HSI Score	Suitability of water body habitat to support breeding GCN
0.01-0.49	'Poor'
0.50-0.59	'Below average'
0.60-0.69	'Average'
0.70-0.79	'Good'
0.80-1.00	'Excellent'

- 2.13 **Invertebrates:** The site was scoped for significant rotting deadwood, and high quality aquatic or other habitats, which could be used by significant assemblages of invertebrates, or by any of the invertebrates highlighted in the data search.
- 2.14 **Flora and habitats:** All habitats and plant species that were identifiable at the time of the survey were recorded.
- 2.15 **Adjacent Habitat:** Habitats close to the site were identified, using aerial maps and field observation, so that the ecological impact of the proposed works on the wider landscape could be assessed.

Limitations and Assumptions

- 2.16 The baseline conditions reported in this document represent those identified at the time of the survey on 4th March 2021. Although a reasonable assessment of habitats present can be made during a single walkover survey, seasonal variations are not observed. The survey was conducted in March, which is outside the optimal season for the identification of flora, however this is not considered a significant constraint.
- 2.17 The desk study used available records and historical data from the local area. However, this does not provide a reliable indication of species present since records depend entirely on survey effort in the area, which is highly variable. The data is useful as a general guide to supplement the site visit, but absence of records does not reflect absence of species.

3 Results

Desk Study

Statutory Designated Wildlife Sites

- 3.1 Two 'Sites of Special Scientific Interest' (SSSI), one 'Local Nature Reserve' (LNR) and a National Park were identified within 7km of the site. Statutory designated sites are detailed in Appendix A.
- 3.2 The proposed development site is within the SSSI Impact Risk Zones (IRZ) for at least one SSSI; it currently fulfils the criteria for consultation between Natural England (NE) and the Local Planning Authority (LPA).

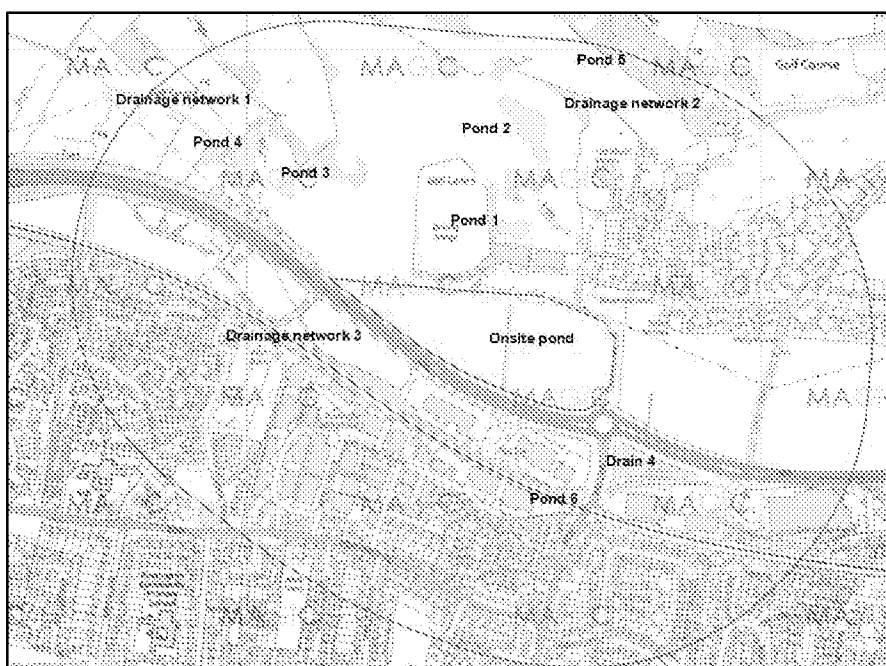
Non-Statutory Designated Wildlife Sites

- 3.3 There were no non-statutory designated wildlife sites identified within 2km of the site.

Ponds within 500m

- 3.4 Six ponds and four drainage networks were identified within 500m of the site boundary (Figure 2). The onsite pond is located towards the eastern boundary of the site. Pond 1 located 130m north of site, Pond 2 is located 275m north of the site, Pond 3 is located 213m north west of the site, Pond 4 is located 265m north west of the site, Pond 5 is located 492m north of the site and Pond 6 located 160m south of the site.

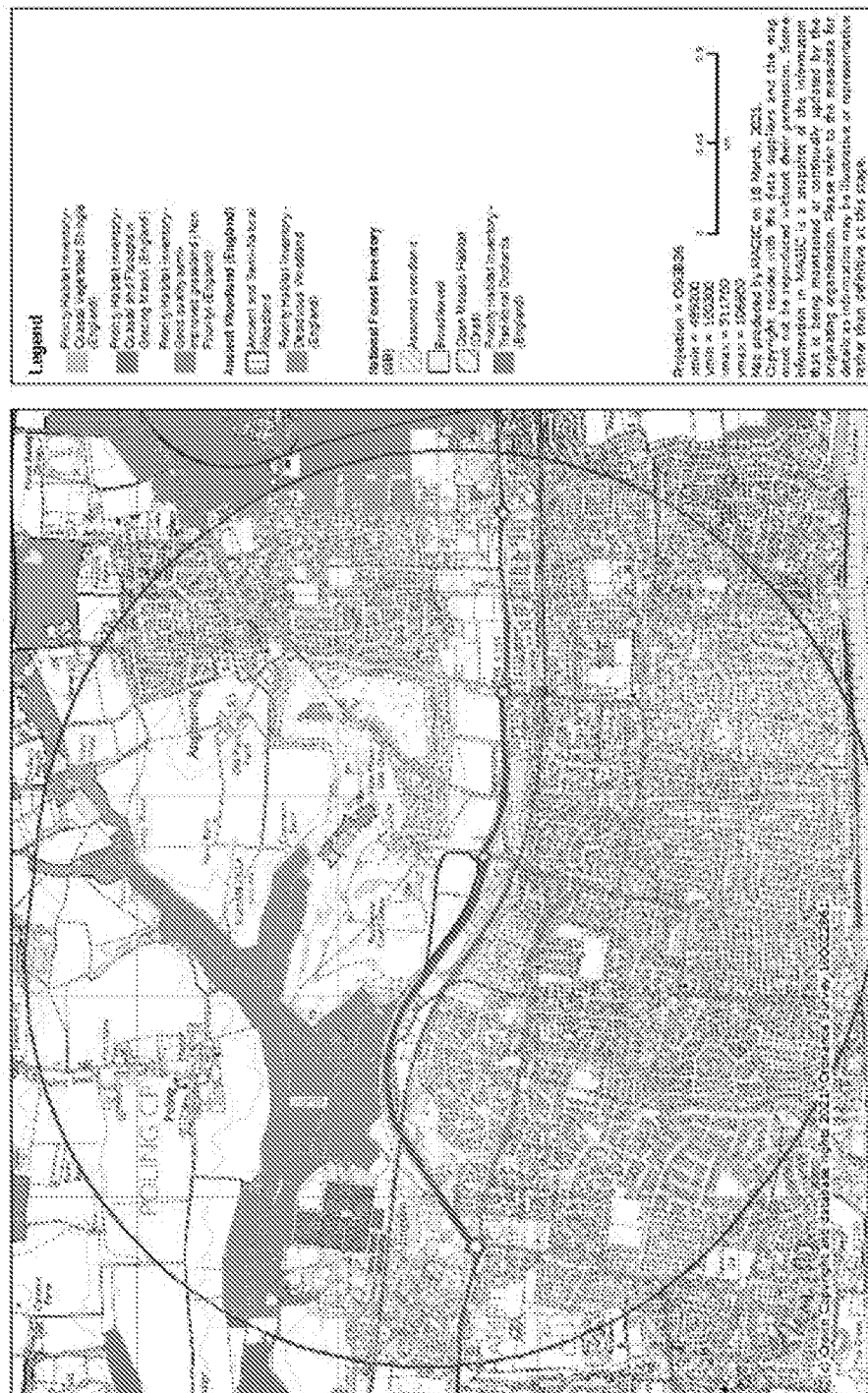
Figure 2: Ponds within 500m of the site boundary



Habitat Types within 2km

- 3.5 Habitat types within the area include costal vegetated shingle, costal and floodplain grazing marsh, good quality semi-improved grassland, ancient and semi natural woodland, deciduous and broadleaved woodland, traditional orchards and open mosaic. Habitat types are shown on Figure 3. The nearest broadleaved woodland is located 425m north with costal and floodplain grazing marsh 300m north west.

Figure 3: Habitat types within 2km of the site



Protected, priority and rare species within 2km of site

- 3.6 There were no records of protected or rare species for the site itself; although there were numerous records of species within 2km of the site (full raw data can be provided upon request). The most relevant records are described below. Records over ten years old have not been referred to as the walkover survey is considered to provide a more up to date and accurate account of the species and habitats for the site.
- 3.7 Within the desk study common pipistrelle (*Pipistrellus pipistrellus*) roost was recorded 1.6km east of site in 2017. Soprano pipistrelle (*Pipistrellus pygmaeus*) were recorded 1.0km west of the site in 2013. Brown long-eared bat (*Plecotus auritus*) roosts were also highlighted in the desk study within 1.3 km north of the site in 2011. A *myotis* bat was recorded 1km west of site in 2013. A western barbastelle (*Barbastella barbastellus*) was recorded within 2km of the site in 2015.
- 3.8 Hedgehog (*Erinaceus europaeus*) has been recorded on multiple occasions. The most recent record was from 2019, 1.4km south of the site.
- 3.9 Water vole was identified on multiple occasions; the most recent recorded was in 2018 1.2km north east of the site, the closest to site record was in 2011, 615m north east. However, in 2016 water vole was recorded 1.2km west of the site within the drainage network that is connected to drains (Drainage network 1) closest to the site boundary.
- 3.10 42 Red listed bird species were identified within 2km of the site; including cuckoo (*Cuculus canorus*), fieldfare (*Turdus pilaris*), house sparrow (*Passer domesticus*), linnet (*Carduelis cannabina*) and nightingale (*Luscinia megarhynchos*), lesser redpoll (*Acanthis cabaret*), Eurasian Skylark (*Alauda arvensis*), and spotted fly catcher (*Muscicapa striata*)
- 3.11 60 Amber listed bird species were also identified within the desk study; including bullfinch (*Pyrrhula pyrrhula*), dunnock (*Prunella modularis*) and meadow pipit (*Anthus pratensis*), Kestrel (*Falco tinnunculus*), and common house martin (*Delichon urbicum*).
- 3.12 Schedule 1 species bird include: kingfisher (*Alcedo atthis*) which was recorded breeding within 500m site boundary in 2018, Cetti's warbler (*Cettia cetti*) which was recorded breeding on several occasions, the most recent 2018 within 500m of site boundary, and Barn owl (*Tyto alba*) recorded present 100m north west of site in 2020.

- 3.13 Grass snake (*Natrix helvetica*) and Slow worm (*Anguis fragilis*) were recorded in 2015, 80m south of the site. The most recent record of slow worm was recorded in 2017, 1.4km east.
- 3.14 GCN was identified within 2km of the site boundary, with records showing a high population within the area. The most recent record is from 2012, 1.7km north.
- 3.15 Stag beetles (*Lucanus cervus*) have been recorded on multiple occasions with the nearest record 1.7km south. The most recent record was in 2020.
- 3.16 A single record of the hornet hoverfly, (*Volucella zonaria*) was identified within the 2km site boundary, 1.8km south in 2019. This species of true fly is part of the Sussex Rare Species Inventory.
- 3.17 Swallowtail (*Papilio machaon*) have been recorded on two occasions within 2km of the site boundary; with the most recent record from 2014, 1.4km south. Chalk Hill Blue (*Polyommatus coridon*) have been recorded within 90m of the site boundary in 2014. Grizzled Skipper (*Pyrgus malvae*) was recorded 1.1km north west in 2014. Small heath (*Coenonympha pamphilus*) have been recorded within 2km south west of the site boundary in 2011.
- 3.18 A total of 37 moth species were identified; 22 of which are UK BAP, including latticed mottled rustic (*Caradrina morpheus*), luna yellow underwing (*Noctua orbona*), dot moth (*Melanchra persicariae*).

Walkover Survey

- 3.19 The habitats on site were considered with respect to their potential to support protected species.
- 3.20 Within the redline boundary the site comprises a number of dominant 'habitat types', taken from those listed in the Handbook for Phase 1 Habitat Survey (JNCC, 2010). These habitat types are described below and are shown schematically on Figure 4. Target Notes (TN) are presented in Table 2. A list of plant species identified on site is included in Appendix B. The baseline conditions reported and assessed in this document represent those identified at the time of the survey on 4th March 2021. Although a reasonable assessment of habitats present can be made during a single walkover survey, seasonal variations are not observed.

3.21 The majority of the site comprises highly managed amenity grassland. Other habitats present on site are scrub, species poor hedgerow (defunct), boundary/scattered trees, semi-improved grassland, introduced shrubs and tall ruderal. A pond was also present to the east of the site.

3.22 The following photographs in Table 2 show the Target Notes referred to in Figure 4.

Figure 4: Phase 1 Habitat Map

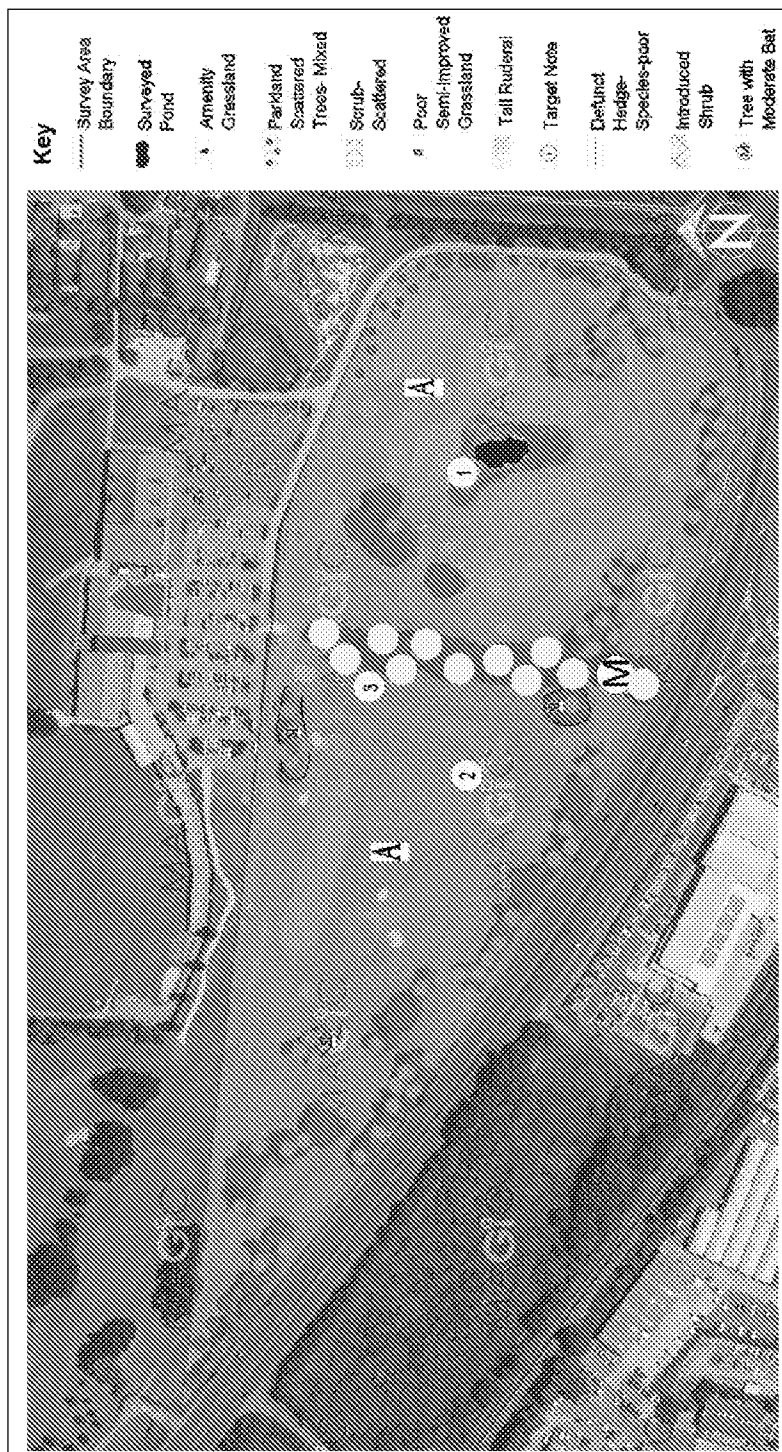


Table 2: Target Notes

Target Note	Description	Photo
1	Onsite pond with surrounding vegetation of common bullrush (<i>Typha latifolia</i>) sedges and rushes.	
2	Blind ended rabbit holes (<i>Oryctolagus cuniculus</i>).	
3	Rabbit activity.	

4 Protected Species – Results and Evaluation

Badger

- 4.1 The habitats on the site varied with respect to suitability for badger. Areas of boundary/scattered trees and scrub could provide shelter and sett creation; however this habitat is limited. The majority of the site comprises amenity grassland which provides limited shelter and foraging opportunities.
- 4.2 No setts or evidence of badger activity with regard to hair, latrines or snuffle holes were recorded on the site itself during the survey. However, badgers can move into an area relatively rapidly, especially if there is pressure on the habitat they are currently using or if foraging opportunities increase.

Bats

- 4.3 No buildings are present on-site; however, the scattered boundary trees (Figure 4) were assessed from the ground for bat roost potential (BRP).
- 4.4 Majority of the trees are considered to have 'negligible' to 'low' BRP due to no or minimal suitable features present, such as dense ivy cover, peeling bark or knot holes. One tree to the south of the site is considered to have 'moderate' BRP due to a potential cavity. See Table 3 for bat roosting feature photographs (numbering corresponds to those seen in Figure 4).
- 4.5 Habitat on-site was assessed as 'low' suitability for foraging and commuting bats. The habitats could be used by small numbers of commuting bats with moderate connectivity to the wider landscape. The onsite pond also provides foraging habitat. Amenity grassland within the site provided low foraging habitat as the area is currently highly managed (mown).

Table 3: Photographs showing potential bat roost features

Potential bat roost features	Photo
M1: Monterrey pine with potential cavity	

Hazel Dormouse

- 4.6 No records of dormice were identified within the desk study. The site was considered unsuitable for hazel dormouse due to the majority of the site comprises highly managed amenity grassland. Hedgerows on site are species poor providing minimal shelter. There is also limited connectivity to the wider landscape.

Otter and Water Vole

- 4.7 The onsite pond to the east of the site is considered unsuitable for water vole and otter due to its isolated location which is not linked to further waterways in the surrounding area. No evidence was recorded at the time of the survey, the banks of the pond offer moderate habitat for burrow creation and some food plants were available however the vegetation is regularly managed.
- 4.8 The drainage network 1 (which lies west of the site) is considered suitable for water vole and otter. Two small mammal holes approximately 4cm in diameter were observed within the banks of the ditch. No other evidence of water vole was recorded at the time of the survey. The banks of the ditch offer good habitat for burrow creation and is linked to further waterways in the surrounding area. The desk study identified water vole within 1.2km west of the site in 2016 within the drainage network that is connected to drains close to the site boundary. However, this is unlikely to be impacted by the

proposed development as the drainage ditch is over 50m away from the proposed development.

Mammals - Other

4.9 The site provides limited habitat for hedgehog; small areas of scrub, boundary/scattered trees, hedgerow and semi-improved grassland could provide shelter and foraging opportunities, although these are very limited. No evidence of hedgehog was recorded during the walkover survey.

4.10 Rabbit diggings were observed within the sand 'bunkers' of the golf course.

Birds

4.11 Trees, hedgerows and scrub on site provide nesting and foraging opportunities for birds. The amenity grassland is considered unsuitable for ground nesting birds due to the current high management (mown). The areas of semi-improved grassland are deemed too limited in size to support ground nesting birds and high levels of disturbance due to the current use of the site.

4.12 Bird species observed during the walkover survey included; wood pigeon (*Columba palumbus*), blackbird (*Turdus merula*), grey heron (*Ardea cinerea*), blue tit (*Cyanistes caeruleus*), green woodpecker (*Picus viridis*), magpie (*Pica pica*), robin (*Erithacus rubecula*), and wren (*Troglodytes troglodytes*).

4.13 Canada goose (*Branta canadensis*) were observed within Pond 2 which are a Schedule 9 species.

4.14 An inactive magpie and wood pigeon nest were observed within the south western scattered trees.

Reptiles

4.15 The majority of the site is managed amenity grassland which currently does not provide good habitat for reptiles. The boundary/scattered trees, scrub, and semi-improved grassland provide some foraging and sheltering opportunities for reptiles however these areas are limited and isolated due to large areas of amenity grassland that separates them.

Amphibians

- 4.16 Six ponds and four drainage networks were identified during the desk study search within 500m of the site boundary, which are considered to be ecologically connected. Ponds 1-6 and drainage networks 1-4 were subject to a HSI assessment which have varying suitability to support breeding GCN (see Appendix C).
- 4.17 The boundary habitats are considered sub-optimal for GCN; the boundary/scattered trees, hedgerows, scrub and areas of semi-improved grassland provide suitable hibernation and sheltering opportunities; however, these are limited. The surrounding habitat was deemed more suitable for GCN than the habitat available within the proposed development site.

Invertebrates

- 4.18 The habitats on the site are unlikely to support a diverse assemblage of invertebrates.
- 4.19 No rare or protected invertebrate species were observed during the walkover.

Flora

- 4.20 No rare, principally important, local BAP or protected plant flora was identified during the walkover survey.
- 4.21 Schedule 9 invasive plant species such as Japanese knotweed (*Fallopia japonica*) were not identified at the site during the walkover survey.

5 Evaluation, Legislation and Recommendations

5.1 Table 5 below includes a summary of all identified and potential ecological constraints to the development, including those where there is insufficient information at the time of survey to be definitive. Relevant legislation has also been given here.

Table 5: Survey evaluation, relevant legislation and recommendations

Ecological Receptor	Summary of desk and walkover survey findings and relevant legislation	Likely impact and recommendations for further survey
Designated wildlife areas - statutory	The desk study identified two SSSI's and one LNR and one national park within 7km of the site: • South Downs National Park (2.1km north east); • West Beach LNR (3.2km south west); • Climping Beach SSSI (3.7km south west) and; • Arundel Park SSSI (5.2km north west).	The site is within several IRZ's for SSSI's and meets the qualifying criteria for consultation between the LPA and NE.
Designated wildlife areas – non-statutory	The desk study identified no non-statutory designated wildlife areas.	No further survey required.
Habitats	Habitats on the site comprise: • Amenity grassland; • Scattered scrub; • Species-poor hedgerows; • Pond; • Semi-improved grassland; • Introduced shrubs; • Boundary/scattered trees; and • Tall ruderal.	Ponds are listed as a habitat of Principal Importance under Section 41 of NERC.
Badger	There was no evidence of badger activity on site during the walkover survey. The site was considered sub-optimal for sett creation. Badgers and their setts are protected under the Protection of Badgers Act 1992 and also protected by the Wild Mammals (Protection) Act 1996. Protection also extends to include disturbance. Under the Protection of Badgers Act 1992, it is an offence to intentionally or recklessly: • Kill, injure or take badgers; • Damage a badger sett or any part of it; • Destroy a badger sett; • Obstruct access to, or any entrance of a badger sett; and • Disturb a badger whilst it is occupying a badger sett.	No further survey required.
Bats	Majority of trees within the site boundary are considered to have 'negligible' to 'low' BRP. However, one tree was considered to have 'moderate' BRP due to a potential cavity. The site was considered to have 'low' suitability for foraging and commuting bats; habitats can be used by small number of bats.	Currently layout proposals will retain all trees with bat roosting potential. However, if the BRP tree is to be impacted in any way by the development, two surveys are required. The optimum months for emergence and re-entry surveys are from May to August, although it is sometimes

Ecological Receptor	Summary of desk and walkover survey findings and relevant legislation	Likely impact and recommendations for further survey
	All species of bat are afforded full legal protection under Schedule 5 of the WCA. They are also listed under Schedule 2 of the Habitats Regulations. Some species of bat are also listed in Section 41 of NERC Act as an SPI. Combined legislation makes it an offence: to deliberately kill, injure, capture/take a wild bat; intentionally or recklessly disturb bats, including whilst occupying a place of shelter or protection; to damage or destroy a place used by a bat for breeding or resting (does not need to be deliberate, reckless or intentional); and to intentionally or recklessly obstruct access to any place used by a bat for shelter or protection. Bats are classed as 'European Protected Species' (EPS) and mitigation will typically be undertaken under the auspices of an EPS licence from Natural England.	possible to survey in September if previous surveys have already been undertaken, weather permitting. Emergence surveys commence 15 minutes prior to sunset to up to two hours after sunset; re-entry surveys commence two hours prior to sunrise, to sunrise. Surveys would be undertaken using electronic bat detectors and observation aids. The number of surveyors is dependant on the proportion of potential exit/entry points of the tree for bats. If bats are discovered using the building(s) as a roost, works can only proceed under the auspices of a European Protected Species (EPS) licence granted by Natural England. Mitigation would be required to offset the loss of roost(s). Lighting may need to be a consideration with respect to foraging bats. Due to the proposed removal of vegetation and/or connecting vegetation; bat activity surveys are required. 'Low' habitat for bats requires one survey visit per season (spring – April/May, summer – June/July/August, autumn – September/October) in suitable weather conditions. At least one of the surveys should comprise dusk and pre-dawn (or dusk to dawn) within one 24-hour period. Automated/static detectors should also be used in appropriate locations on site and left in situ for at least five consecutive nights. Further bat surveys may be required if these survey visits reveal higher levels of bat activity than predicted by habitat.
Hazel dormouse	There are no biological records of dormouse within 2km of the site. The site is considered unsuitable for dormouse due to lack of suitable sheltering and feeding opportunities. The hazel dormouse is afforded full legal protection under Schedule 5 of the WCA. It is also listed under Schedule 2 of the Habitat Regulations and in section 41 of NERC as a species of Principal Importance. The hazel dormouse is classed as a 'European Protected Species' and mitigation will typically be	No further surveys recommended.

Ecological Receptor	Summary of desk and walkover survey findings and relevant legislation	Likely impact and recommendations for further survey
	undertaken under the auspices of a licence from Natural England.	
Water vole and otter	No evidence of water vole was recorded within site boundaries during the walkover. Habitats on site are considered unsuitable for these species, the onsite pond is isolated from other water networks and the surrounding vegetation is highly managed. Water vole was identified within the desk study. Two small mammal holes approximately 4cm in diameter were observed within the banks of the ditch of drainage network 1 (west of site boundary). The drainage network is over 50m away from site boundaries and unlikely to be impacted upon by the proposed development. The most recent water vole recorded was in 2018 1.2km north east of the site, the closest record to the site was in 2011, 615m north east of site. <u>Legislation / Policy</u> Water vole: • Schedule 5 WCA (full protection) • Section 41 NERC • Wild Mammals (Protection) Act 1996 • IUCN Red Data Book: Least Concern	No further surveys recommended.
Mammals - other	No evidence of hedgehogs was found during the walkover survey. The site provided sub-optimal habitat due to the large extent of highly managed amenity grassland. Some hibernation and foraging habitat for hedgehogs was observed within scrub, hedgerows, boundary/scattered trees and semi-improved grassland. Hedgehogs are listed on Schedule 6 of the WCA which makes it illegal to kill or capture wild hedgehogs, with certain methods listed. The hedgehog is also a SPI under Section 41 of the NERC. All wild mammals are protected under the Wild Mammals (Protection) Act 1996. Offences relate to any act which results in the intent to inflict unnecessary suffering. Mercy killings and killing in a swift and humane way in the course of a lawful activity are not offences under the Act.	No further surveys recommended. It is recommended that if scrub is to be removed then scrub areas should be cut to 20cm using hand-held tools (brushcutter/trimmer) and checked for hedgehog before removal. See Section 6 for enhancements.
Birds	The following habitats have the potential to support breeding birds: • Scattered/boundary trees; • Hedgerows and • Scrub. An inactive magpie and wood pigeon nest were observed within the south western scattered trees. All wild birds while actively nesting are afforded legal protection under the WCA. Special protection is also afforded to birds listed on Schedule 1 of the WCA which makes it an offence to disturb these species at nest or the dependent young.	It is recommended that any vegetation clearance and disturbance is undertaken outside of the nesting season. The nesting season is deemed to be from mid-March to mid-August, although these times can be temperature dependent. If this timing is not possible then a nesting bird check must be carried out by a suitably experienced person, no more than 48 hours between the check and the removal. If the 'all clear' is given, then removal/works can commence. The survey lasts for no longer than 48

Ecological Receptor	Summary of desk and walkover survey findings and relevant legislation	Likely impact and recommendations for further survey
	Combined legislation means that all birds, their nests and eggs are protected by law and it is an offence, with certain exceptions, to: a) intentionally kill, injure or take any wild bird; b) intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; c) intentionally take or destroy the egg of any wild bird; d) have in one's possession or control any wild bird (dead or alive), part of a wild bird or egg of a wild bird; e) intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building or is in, on or near a nest with eggs or young; or disturb the dependent young of such a bird; and f) have in one's possession or control any birds of a species listed on Schedule 4 of the Act unless registered in accordance with the Secretary of State's regulations.	hours. If works are not completed in this time frame, then a re-survey will need to be carried out. If birds are found to be nesting, then no works should be undertaken within at least 10m of the nest until chicks have fledged.
Reptiles	Habitats on site are considered unsuitable for reptiles, at present, due to the majority of the site comprising managed amenity grassland which is highly managed. The scrub, boundary/scattered trees, and small areas of semi-improved grassland areas offer some shelter and hibernation opportunities however these habitats are isolated due to large areas of amenity grassland. Reptiles are afforded protection under Schedule 5 of the WCA from deliberate injury, killing and trade. They are also listed under Section 41 of NERC as an SPI.	No further survey recommended.
Amphibians, particularly GCN	Six ponds and four drainage networks were identified within 500m of the site boundary. HSI results: • Pond 1 - 'Good' • Pond 2 - 'Good' • Pond 2 - 'Good' • Pond 4 - 'Good' • Pond 5 - 'Good' • Pond 6 - 'Average' • Drainage network 1 - 'Excellent' • Drainage network 2 - 'Below Average' • Drainage network 3 - 'Good' • Drain 4 - 'Good'. The sections of the site such as the scrub, semi-improved grassland, introduced shrub, and scattered trees are considered suitable terrestrial habitat for GCN. GCN were identified in the desk study 1.7km from the site. The surrounding/wider habitat was deemed more suitable than the habitat within on site. Both aquatic and terrestrial habitat is protected under wildlife legislation. GCN is afforded full legal protection under Schedule 5 of the WCA. It is also listed under Schedule 2 of the Habitats Regulations. This species is also listed under Section 41 of NERC as a species of Principal Importance. GCN are classes as a 'European Protected Species' and any necessary mitigation is typically undertaken under the auspices of a licence from Natural England.	According to current plan proposals, the onsite pond and some boundary/scattered trees will be removed. Further GCN surveys will be necessary for the onsite pond, in the first instance by testing for GCN presence/absence using the environmental DNA (eDNA) method. This requires a combined water sample to be taken from around the pond/waterbody and sent to a specialist laboratory for analysis. Samples can be taken from 15th April to 30th June. A positive result will be given if GCN have occupied the pond. If a negative result is received, a destructive search under reasonable avoidance measures can be undertaken. Small sections of scattered trees/scrub/introduced shrubs removed for infrastructure should be undertaken under licenced ecologist supervision. It is also recommended that the amenity grassland is kept mown on

Ecological Receptor	Summary of desk and walkover survey findings and relevant legislation	Likely impact and recommendations for further survey
		a regular basis and is not allowed to grow up. Timings and consideration will also be needed in relation to nesting birds. If the onsite pond is found to be positive for GCN eDNA, then further survey work will be required. This will require 6 visits for a population estimate. Surveys will be undertaken using traps/torches between mid-March and mid-June. At least 3 of these visits must be between mid-April and mid-May. It is therefore important that the eDNA samples are taken early in the season. A European Protected Species licence from Natural England will be necessary if adverse impacts to GCN are likely in the absence of mitigation or Reasonable Avoidance Measures.
Invertebrates	The habitats on site are unlikely to support a diverse assemblage of invertebrates. However, areas of scrub, semi-improved grassland, introduced shrubs and boundary/scattered trees can be used by a small number of invertebrates, such as butterflies.	No further surveys recommended. See Section 6 for enhancements.
Flora	The habitats on site are unlikely to support any rare or protected flora. No Schedule 9 invasive plant species were identified on site. Invasive plant species such as Japanese knotweed are listed on Schedule 9 of the WCA. Schedule 9 includes certain plants that have become established in the wild in Great Britain but which the law seeks to prevent spreading further. The WCA creates various offences, including allowing a Schedule 9 plant to grow in the wild. Negligent or reckless behaviour such as inappropriate disposal, resulting in the plant becoming established in the wild also constitutes an offence. Depositing unauthorised 'controlled waste' (such as Japanese knotweed) is also likely to be a breach of Section 33 of the Environmental Protection Act, 1990. In the recent Court of Appeal decision in the case of <i>Network Rail Infrastructure Limited v Williams and Another</i> [2018], a landowner/occupier can be liable for failing to act reasonably to remove any Japanese knotweed after becoming aware of it and where it is foreseeable that it would damage neighbouring land.	No further surveys recommended. If rare and/or protected species are identified on site, a mitigation plan may be required to avoid potential impacts on the flora. Japanese knotweed can be dealt with by (a) spraying with chemicals, (b) burial at least 5m; (c) burning; and (d) off-site disposal using a specialist. Approval must be sought by the Environmental Agency for burial and burning activities. For off-site disposal, the specialist must operate within the conditions in 'Treatment and disposal of invasive non-native plants: RPS 178' and have the relevant environmental permits. Waste carriers of Japanese knotweed must be registered as such and use an authorised landfill or suitable disposal facility.

6 Ecological Considerations and Enhancements

- 6.1 The proposed development is considered unlikely to be adversely detrimental to designated areas, protected species or habitats, provided the recommendations are followed in Table 5. However, a number of considerations and enhancements are recommended with respect to the overall biodiversity of the site in line with current Planning Policy.
- 6.2 A Biodiversity Net Gain (BNG) assessment may be requested by the LPA to provide a net gain of at least 10%. BNG calculations can be undertaken using Defra Metric 2.0 (2019, as amended) which involves comparing 'baseline' habitat measurements with proposed habitats, post-development.
- 6.3 Where possible, (mature) boundary/scattered trees at the boundaries of the site should be retained, in particular along the southern boundary and central tree line across the site) a ~2m buffer zone enhanced to create corridors and shelter/foraging areas for wildlife including bats, birds, hedgehogs and small mammals.
- 6.4 The addition of standard bird boxes on retained trees and proposed new buildings will attract a greater diversity of birds to nest. A number of 1SP Schwegler sparrow terraces should be installed onto new builds. These should be located out of direct sunlight and close to but not restricted by vegetation. A number of Schwegler Swift Bricks should also be installed on the periphery of the new builds.
- 6.5 The addition of bat boxes could also be installed on retained trees such as the Monterey pines though the centre of the site and proposed new buildings to provide roosting opportunities for common species.
- 6.6 Landscaping should incorporate native or wildlife attracting trees, shrubs, and wildflower areas as these would likely be of benefit to a variety of wildlife including, birds, bats and invertebrates, including pollinators such as the chalk hill butterfly.
- 6.7 'Hedgehog links' (i.e. 15cm x 15cm diameter gaps at the base of fences) are recommended to enable small mammals to move through the development.

7 Conclusion

- 7.1 A Preliminary Ecological Appraisal was undertaken at Land at Rustington Golf Course, Rustington, West Sussex by James Blake Associates in support of a planning application for residential dwelling units and associated infrastructure.
- 7.2 The majority of the site comprises amenity grassland with boundary/scattered trees and a pond.
- 7.3 Further protected species surveys are recommended prior to development for GCN and bats.
- 7.4 Current development proposals show an impact to the pond and terrestrial habitat for GCN. A licenced GCN ecologist needs to be present during any hedgerow/scrub/introduced shrub or boundary/scattered tree removal works. Ideally this should be done between late-March/April and October.
- 7.5 If current development proposals impact the 'moderate' BRP' tree, then further surveys for bats will be required.
- 7.6 If any mitigation or compensation measures recommended following these further surveys is carried out, and if the precautionary measures for birds and hedgehogs detailed in this report are followed, it is considered that the development is able to proceed with minimal impact on the local conservation status of any protected, principally important or rare species within the area.
- 7.7 It is also considered that with a sensitive landscape scheme, and by including some, or all, of the additional enhancements, the site could be improved for local wildlife post development.

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10 Appendices

Appendix A: Statutory designated wildlife sites within 7km

Site Name	Designation	Distance from Site	Description
South Downs	National Park	2.1km north east	Covering an area of 1,62700 hectares in southern England, stretches for 140 kilometres from Winchester in the west to Eastbourne in the east through the counties of Hampshire, West Sussex and East Sussex. The national park covers the chalk hills of the South Downs and a substantial part of a separate physiographic region, the western Weald, with its heavily wooded sandstone and clay hills and vales.
West Beach	LNR	3.2km south west	A 15.66 hectare beach which has national protection due to its habitats, flora and fauna. Habitats include: -sand flats, the tide line, shingle and sand dunes.
Climping Beach	SSSI	3.7km south west	An important 32.0 hectare stretch of coast with a vegetated shingle beach, behind which is a sand dune system. The intertidal zone supports important populations of wintering birds and the numbers of wintering sanderling, in particular, are of European significance.
Arundel Park	SSSI	5.2km north west	A 140.06 hectare site which one of the most important sites in the country for invertebrates including a number of rare and notable species. The area has a particularly diverse breeding bird community and is important for overwintering species. The site also includes examples of species-rich chalk grassland containing several plants uncommon in Sussex. An area in the north of the site supports at least 25 breeding butterflies including the Duke of Burgundy fritillary (<i>Hamearis Lucina</i>), brown argus (<i>Aricia agestis</i>) and chalk hill blue (<i>Lysandra coridon</i>). A rare mollusc (<i>Pseudamnicola confuse</i>) is found in the reedbed along the river bank.

Appendix B: Flora list identified during the walkover survey

Common Name	Scientific Name
Bramble	<i>Rubus fruticosus agg.</i>
Bristly Oxtongue	<i>Helminthotheca echioides</i>
Black polar	<i>Populus nigra</i>
Cherry laurel	<i>Galium aparine</i>
Ornamental cherry	-
Moss	<i>Brachythecium rutabulum</i>
Creeping thistle	<i>Cirsium arvense</i>
English oak	<i>Quercus robur</i>
Hawthorn	<i>Crataegus monogyna</i>
Monterey pine	<i>Pinus radiata</i>
Hazel	<i>Corylus avellana</i>
Holly	<i>Ilex aquifolium</i>
Ivy	<i>Hedera helix</i>
Lichen sp.	-
Nettle	<i>Urtica dioica</i>
Red dead nettle	<i>Lamium purpureum</i>
Privet	<i>Sp introduced shrub</i>
Rush sp	-
Pendulous sedge	<i>Carex pendula</i>
Sedge sp.	<i>Carex sp.</i>
Silver birch	<i>Betula pendula</i>
Stagshorn Plantain	<i>Plantago coronopus</i>
Vine sp.	<i>Vitis sp.</i>
White poplar	<i>Populus alba</i>

Appendix C: HSI of Waterbodies

HSI Variable	Onsite pond		Pond 1		Pond 2		Pond 3		Pond 4	
	Field Score	SI Value	Field Score	SI Value	Field Score	SI Value	Field Score	SI Value	Field Score	SI Value
Location	Zone A	1	Zone A	1	Zone A	1	Zone A	1	Zone A	1
Pond area (m ²)	500-700	1	1600	0.865	5200	0.8	1600	0.856	3200	0.8
Pond permanence	Never	0.9	Never	0.9	Rarely dries	0.9	Rarely dries	0.9	Never dries	0.9
Water quality	Poor	0.67	Moderate	0.67	Moderate	0.67	Good	1	Good	1
Shade %	0-60	1	0-60	1	0-60	1	0-60	1	0-60	1
Waterfowl	Absent	1	Absent	1	Minor	0.67	Minor	0.67	Minor	0.67
Fish	Absent	1	Possible	0.7	Absent	0.7	Possible	0.3	Minor	0.3
Pond density	>12	1	>12	1	>12	1	>12	1	>12	1
Terrestrial Habitat	Poor	0.67	Moderate	0.67	Moderate	0.67	Moderate	0.67	Good	1
Macrophyte cover %	1-5	0.35	1-5	0.3	1-5	0.35	1-5	0.35	1-5	0.35
HSI value	0.714		0.767		0.7423		0.7787		0.7492	
Pond Suitability	Good		Good		Good		Good		Good	

HSI Variable	Pond 5		Pond 6	
	Field Score	SI Value	Field Score	SI Value
Location	Zone A	1	Zone A	1
Pond area (m ²)	1500	0.88	50-100m2	0.1
Pond permanence	Never dries	0.9	Sometimes dries	0.5
Water quality	Moderate	0.67	Moderate	0.67
Shade %	0-60	1	0-60	1
Waterfowl	Minor	0.67	Absent	1
Fish	Absent	0.7	Absent	1
Pond density	>12	1	>12	1
Terrestrial Habitat	Good	1	Moderate	1
Macrophyte cover %	1-5	0.35	10%	0.4
HSI value	0.78		0.624	
Pond Suitability	Good		Average	

HSI Variable	Drainage network 1		Drainage network 2		Drainage network 3		Drain 4	
	Field Score	SI Value	Field Score	SI Value	Field Score	SI Value	Field Score	SI Value
Location	Zone A	1	Zone A	1	Zone A	1	Zone A	1
Area (m ²)	2000+	0.8	2000+	0.8	2000+	0.8	300	1
Pond permanence	Sometimes dries	0.5	Dries annually	0.1	Sometimes dries	0.5	Sometimes dries	0.5
Water quality	Good	1	Poor	0.33	Moderate	0.67	Moderate	0.67
Shade %	0-60	1	80	0.6	70	0.8	70	0.8
Waterfowl	Absent	0.67	Minor	0.7	Absent	1	Absent	1
Fish	Possible	0.7	Possible	0.7	Absent	1	Absent	1
Pond density	>12	1	>12	1	>12	1	>12	1
Terrestrial Habitat	Good	1	Good	1	Good	1	Average	0.67
Macrophyte cover %	30	0.35	1-5	0.35	1-5	0.35	<1	0.3
HSI value	0.824		0.549		0.7415		0.7095	
Pond Suitability	Excellent		Below average		Good		Good	