

APPENDIX 9.3
ECOLOGICAL BASELINE

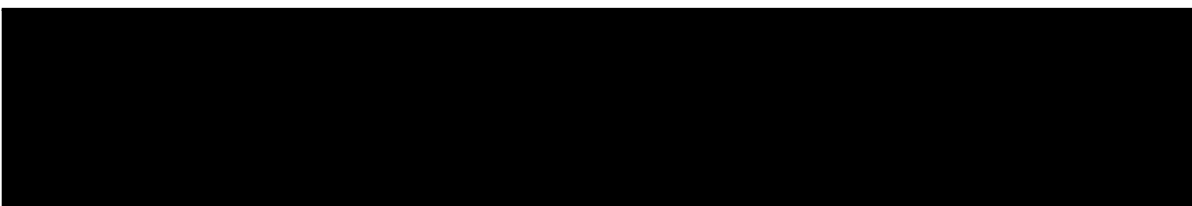
FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 – ECOLOGICAL BASELINE

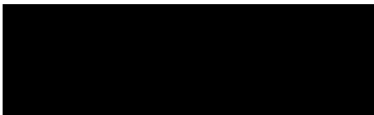
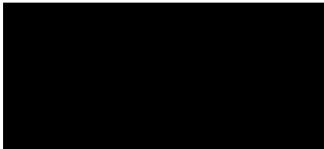
Final Document

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FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 – ECOLOGICAL BASELINE

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1.0 BASELINE ECOLOGICAL CONDITIONS

1.1 Introduction

This section details the results of the ecological survey work undertaken at the site. It assesses the baseline ecological conditions of the site at the time the desktop study was completed and based on the findings of the field survey and subsequent protected species surveys undertaken between 2015 and 2019.

1.2 Statutory and Non-statutory Designated Sites

There are no statutory or non-statutory designated sites of nature conservation interest situated within two kilometres of the site boundary.

Arun Valley SPA lies approximately ten kilometres north of the site and is designated for its wetland habitats, which support a population of Bewick's swan *Cygnus columbianus bewickii* and a significant wintering bird assemblage, regularly supporting 27,241 individual waterfowl (5 year peak mean for 1992/93 to 1996/97) including: shoveler *Anas clypeata*, teal *Anas crecca*, wigeon *Anas penelope*, and Bewick's swan. As birds associated with the SPA may make use of on-site habitat (Arun District Council, 2018) the Zone of Influence was extended to take this into account.

1.3 Habitats

1.3.1 Desktop Study Results

Consultation with SxBRC produced records of 11 plant Species of Principal Importance, divided sedge *Carex divisa*, cornflower *Centaurea cyanus*, fine-leaved sandwort *Minuartia hybrida*, sharp-leaved pondweed *Potamogeton acutifolius*, Borrer's saltmarsh-grass *Puccinellia fasciculata*, corn buttercup *Ranunculus arvensis*, shepherd's-needle *Scandix pecten-veneris*, marsh stitchwort *Stellaria palustris*, spreading hedge-parsley *Torilis arvensis* and pennyroyal *Mentha pulegium*. Bluebell *Hyacinthoides non-scripta* and pennyroyal are present within the desktop study area and are protected under Schedule 8 of the Wildlife and Countryside Act 1981.

A large number of locally notable and protected species were also returned, including 11 records of corn parsley *Petroselinum segetum*.

1.3.2 Field Survey Results

The majority of the survey area comprises arable fields with limited botanical interest. A single specimen of corn parsley was recorded from the corner of Field 4 (**Map 1**). This species features on the Sussex rare species inventory and has been recorded a number of times in the local area. No other notable flora was recorded during the survey. No significant changes in the habitats on site were recorded during the updating

walkover survey or as a result of ad hoc monitoring during other surveys, with the exception of rotation of arable crops.

During the development of the proposals the red line boundary was subject to change. This mainly resulted in exclusion of habitats originally surveyed, with the exception of an additional area of Field 7, including a single mature oak *Quercus robur* tree and Pond 8 on the northern boundary.

Phase 1 habitat types on site are shown in **Map 1**. Full details of the findings of the original Phase 1 habitat are available in the Phase 1 habitat survey report (Artemis, 2016) (Technical Appendix 9.5).

1.4 Bats

1.4.1 Desktop Study Results

Consultation with SxBRC produced records of a number of bat species which are summarised in **Table 1**.

Table 1: Summary of bat records in SxBRC consultation

Species	Summary of Records	Roosts
Alcathoe bat <i>Myotis alcathoe</i>	One record dated 07/07/2014 located at NGR: TQ029051	No evidence of roosts.
Barbastelle <i>Barbastella barbastellus</i>	17 records between 2013 and 2015.	Two records likely to represent roosts.
Brandt's/Whiskered bat <i>Myotis brandtii/mystacinus</i>	Five records between 2014 and 2015.	No evidence of roosts.
Brown long-eared bat <i>Plecotus auritus</i>	12 records between 1986 and 2014.	Approximately 10 records likely to represent roosts.
Common pipistrelle <i>Pipistrellus pipistrellus</i>	43 records between 1984 and 2016.	Approximately 14 records likely to represent roosts.
Daubenton's bat <i>Myotis daubentonii</i>	Six records dated between 1997 and 2014.	No evidence of roosts.
Natterer's bat <i>Myotis nattereri</i>	Five records between 1990 and 2015.	No evidence of roosts.
Nathusius' pipistrelle <i>Pipistrellus nathusii</i>	Four records between 2014 and 2015.	No evidence of roosts.
Noctule <i>Nyctalus noctula</i>	Five records between 1990 and 2014.	No evidence of roosts.
Serotine <i>Eptesicus serotinus</i>	15 records between 1990 and 2015.	Approximately eight records to represent roosts.
Soprano pipistrelle <i>Pipistrellus pygmaeus</i>	13 records between 2013 and 2015.	Three records likely to represent roosts.
Unidentified long-eared bat <i>Plecotus</i> species	Eight records between 1994 and 2014.	Approximately six records likely to represent roosts.
Unidentified <i>Myotis</i> species	Four records between 1986 and 2015.	One record likely to represent roosts.

Unidentified pipistrelle <i>Pipistrellus</i> species	Eight records between 1997 and 2013.	Approximately seven records likely to represent roosts.
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Consultation with the MAGIC database revealed no granted European Protected Species Mitigation (EPSM) licences with respect to bat within the desk study area.

1.4.2 Field Survey Results

Building Assessment

A small number of buildings are present on site including a former hanger, two small brick buildings on the runway and five large industrial sheds. A small underground shelter located at the end of one of the runway aprons outside the red line. The former hanger and underground shelter have low suitability for roosting bats, all other buildings have negligible suitability for roosting bats. Full details of the field survey findings are available in the Phase 1 habitat survey report (Artemis, 2016) (Technical Appendix 9.5).

Tree Assessment

The field survey identified a number of mature trees within the site that could offer roosting opportunities for bats. Trees with ivy or other creepers on the tree or those with cracks, splits and holes can provide roosting sites. Full details of the field survey findings are available in the Phase 1 habitat survey report (Artemis, 2016) (Technical Appendix 9.5).

Foraging and Commuting Habitat

The site supports good quality bat foraging and commuting habitat in the form of an extensive network of hedgerows and treelines and has good connectivity off-site via adjacent hedgerows and treelines present in the wider area. A range of bat species will undoubtedly use the site for this purpose on a regular basis. The site has moderate suitability to support foraging and commuting bats overall.

1.4.3 Bat Ground Level Tree Assessment Results

The results of the ground level tree assessment of the on-site trees are provided in **Table 2**. Details of tree locations and levels of bat suitability are provided in **Map 2**. A single poplar within G52 has moderate suitability for roosting bats. Approximately seven trees have low suitability for roosting bats due to a moderate level of ivy *Hedera helix* covering. The ivy may in some cases obscure other potential roosting features, however, given the structure and maturity of the trees, they are considered unlikely to be suitable to support significant roosts. The remainder of the on-site trees have negligible suitability for roosting bats and have not been included in **Table 2**.

Table 2: Ground level tree assessment results – trees with suitability for roosting bats

Tree Number	Species and Description	Description of Features	Suitability for Bats
T12	Ash	Ivy cladding	Low
G15	Poplar	Ivy cladding	Low
T16	Oak	Ivy cladding	Low
T19	Oak	Ivy cladding	Low
G20	Oak	Ivy cladding	Low
G46	Mix	Ivy cladding	Low
G47	Mix	Ivy cladding	Low
G52	Poplar	Woodpecker hole present on the northern side of the trunk at approximately 6 metres high.	Moderate

1.4.4 Bat Emergence/Re-entry Survey Results

The surveys recorded three species of bat: common pipistrelle, soprano pipistrelle and long-eared bat species¹.

No bats were recorded emerging from either the hanger or the semi-sunken building. Generally low levels of bat activity were recorded on site, with the greatest level of foraging and commuting activity recorded by the surveyor positioned at the semi-sunken building, who noted higher levels of activity associated with the adjacent woodland.

Table 3 provides details of the species, numbers and locations of bats recorded roosting and foraging/commuting during the emergence survey.

Table 3: Bat emergence survey results

Survey Date	Recorded Bat Roosts	General Bat Activity at the Site		
28 th August 2018 <i>Dusk Emergence Survey</i>	<u>Summary:</u> No bats were recorded emerging from the surveyed buildings.	Species	First Pass	Last Pass
		Common pipistrelle	20:36	21:36
		Soprano pipistrelle	20:37	-
		Long-eared bat	20:34	-

¹ There are two species of long-eared bat, the brown long-eared bat *Plecotus auritus* and the grey long-eared bat *Plecotus austriacus*. These species can only be separated by examination of physical characteristics and Phylogenetic Analysis Identification of bat droppings. Unless confirmation of identification has been made by visual identification the two species shall be referred to in this report as long-eared bat. The brown long-eared bat is the commonest of the two species typically being found roosting within large roof voids although small voids and trees are also utilised. The grey long-eared bat is rare and confined to southern England and like the brown long-eared typically roosts in roof voids.

Semi-sunken building and Hanger		<u>Summary:</u> Low levels of foraging and commuting activity were recorded during the survey with the greatest level of activity recorded by the surveyor of the semi-sunken building. These bats were noted to be using the adjacent woodland habitat. A single pass of soprano pipistrelle was recorded by a surveyor in the vicinity of the hanger and a single pass of long-eared bat was recorded in the vicinity of the semi-sunken building.
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1.4.5 Bat Transect Survey Results

A total of six bat transect surveys were undertaken between May and October 2017 during which time a minimum of six species of bat were recorded within the site including common pipistrelle, soprano pipistrelle, Nathusius' pipistrelle, *Myotis* bat species bat, serotine and noctule.

Activity on site was dominated by common pipistrelle on every transect, with activity levels higher to the west of the site on Transect A and around Point Count 3 and 4 on Transect B. Activity levels peaked during the August transect. The key areas of bat activity recorded are provided on **Map 3** with a summary of the findings of each survey provided in **Table 4**.

Table 4: Bat activity recorded during transect surveys

Survey Date	General Bat Activity at the Site
30 th May 2017	<u>Transect A</u> Transect A recorded low levels of activity, dominated by common pipistrelle with single passes of soprano pipistrelle, Nathusius' pipistrelle and <i>Myotis</i> species. The highest level of activity was recorded at Point Count 4 in the west of the site and the adjacent section of hedgerow along the northern boundary of the associated field.
	<u>Transect B</u> Transect B recorded low levels of activity with only common pipistrelle recorded. The greatest level of activity was recorded in the western part of the site.
28 th June 2017	<u>Transect A</u> Transect A recorded low levels of activity dominated by common pipistrelle with only a single registration of soprano pipistrelle. The highest level of activity was recorded along the western part of the site.
	<u>Transect B</u> Transect B recorded moderate levels of activity with registrations of serotine, soprano pipistrelle and noctule. The highest level of activity was recorded at Point Count 5.

Survey Date	General Bat Activity at the Site
3 rd August 2017	<u>Transect A</u> Transect A recorded moderate levels of activity, dominated by common pipistrelle with a single pass of soprano pipistrelle. The highest levels of activity were recorded along the western boundary of the site.
	<u>Transect B</u> Transect B recorded low levels of activity, with a total of four registrations including two common pipistrelle, one <i>Myotis</i> species bat and one soprano pipistrelle. The highest level of activity was recorded at Point Count 5.
4 th /5 th September 2017 (Dusk/Dawn)	<u>Transect A</u> Transect A recorded moderate levels of activity. The majority of the registrations were attributed to common pipistrelle with lower numbers of noctule and long-eared bat with a single pass of a <i>Myotis</i> species bat. The dawn survey recorded low levels of bat activity, dominated by common pipistrelle with lower numbers of soprano pipistrelle. The greatest level of activity was recorded along the western part of the site.
	<u>Transect B</u> The transect B dusk survey recorded low levels of activity. Common pipistrelle was the only species recorded during the transect, with the highest level of activity in the southern part of the site. The dawn survey recorded low levels of common pipistrelle activity. The highest level of activity was recorded at Point Count 5.
26 th September 2017	<u>Transect A</u> Transect A recorded moderate levels of bat activity, dominated by common pipistrelle. Other species recorded during the transect include serotine, a <i>Myotis</i> species bat, soprano pipistrelle and Nathusius' pipistrelle. Activity levels were evenly spread across the site.
	<u>Transect B</u> Transect B recorded moderate levels of bat activity. Activity was dominated by common pipistrelle with lower numbers of noctule and <i>Myotis</i> species bat and a single registration of Nathusius' pipistrelle. The highest level of activity was recorded at Point Count 3.
24 th October 2017	<u>Transect A</u> Transect A recorded two registrations of common pipistrelle along the eastern part of the site.
	<u>Transect B</u> Transect B recorded no bats during the survey.

1.4.6 Bat Automated Detector Survey Results

The automated bat detector survey results recorded a total of 36,978 bat registrations of at least nine species: common pipistrelle, soprano pipistrelle, noctule, serotine, barbastelle, *Myotis* bat species, Nathusius' pipistrelle, long-eared bat *Plecotus* species and greater horseshoe *Rhinolophus ferrumequinum*.

Activity by Species

Table 5 shows the number of registrations and proportion of recorded bat activity at the site by species. Activity at the site was dominated by common pipistrelle (80%), with soprano pipistrelle also prevalent (11%). Lower numbers of *Myotis* bat species, noctule and serotine were recorded (2-3%) as well as small numbers of *Nathusius'* pipistrelle, long-eared bat, and barbastelle (<1%). A single pass of greater horseshoe was recorded. **Figure 1** provides a visual representation of the information provided in **Table 5**.

Table 5: Number of registrations and proportion of bat activity from each species

Species	No. Registrations	% Registrations
Common Pipistrelle	29,530	79.86%
Soprano Pipistrelle	4,233	11.45%
<i>Myotis</i> species	1,051	2.84%
Noctule	909	2.46%
Serotine	766	2.07%
<i>Nathusius'</i> Pipistrelle	201	0.54%
Long-eared Bat	187	0.51%
Unidentified Pipistrelle Species	78	0.21%
Barbastelle	22	0.06%
Greater Horseshoe	1	<0.01%
Grand Total	36,978	100.00%

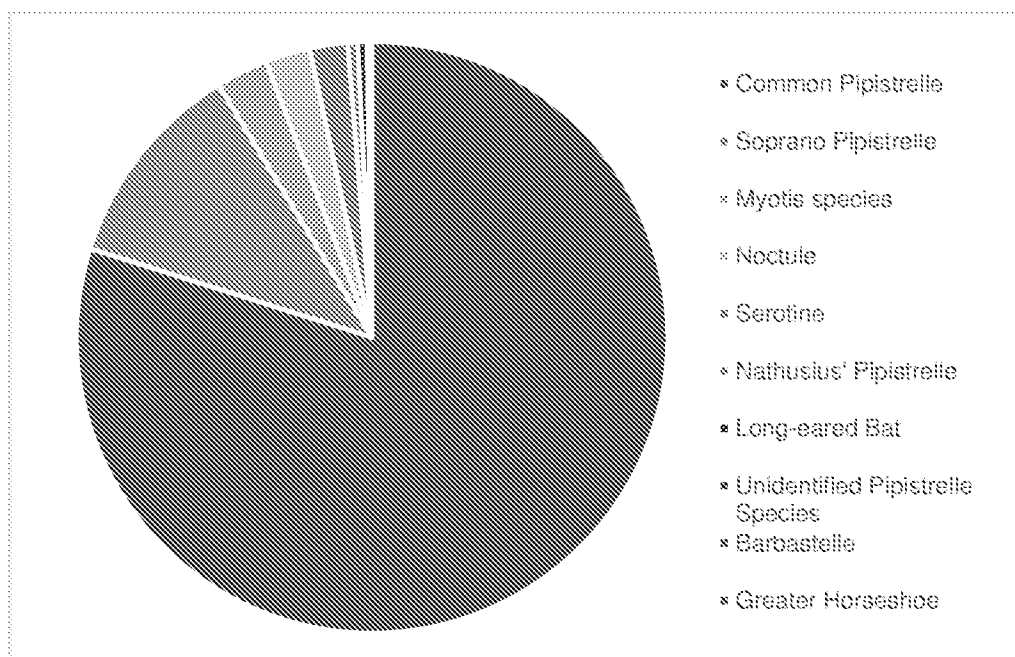


Figure 1: Proportion of bat activity from each species

Species Activity by Month

Table 6 provides the number of registrations of each species recorded within each month. Species diversity was consistent across the season, with the same species recorded each month, with the exception of barbastelle, which was absent at the start and end of the active season (May and October). The month of relatively highest activity was July with an average of 616 registrations per night compared to the average of 234 registrations per night across the entire survey period.

Table 6: Number of registrations of each month split by species

Period	Species	No. Registrations	Activity Index
May-17	Common Pipistrelle	4,243	141.43
	<i>Myotis</i> species	323	10.77
	Noctule	121	4.03
	Soprano Pipistrelle	367	12.23
	Long-eared Bat	1	0.03
	Serotine	160	5.33
	Nathusius' Pipistrelle	47	1.57
	Unidentified Pipistrelle Species	4	0.13
May-17 Total		5,266	175.53
Jun-17	Common Pipistrelle	2,948	98.27
	<i>Myotis</i> species	5	0.17
	Noctule	47	1.57
	Soprano Pipistrelle	512	17.07
	Long-eared Bat	43	1.43
	Serotine	497	16.57
	Nathusius' Pipistrelle	67	2.23
	Greater Horseshoe	1	0.03
	Barbastelle	14	0.47
Jun-17 Total		4,134	137.80
Jul-17	Common Pipistrelle	13,074	522.96
	<i>Myotis</i> species	12	0.48
	Noctule	42	1.68
	Soprano Pipistrelle	2,203	88.12
	Long-eared Bat	7	0.28
	Serotine	17	0.68
	Nathusius' Pipistrelle	12	0.48
	Barbastelle	2	0.08
	Unidentified Pipistrelle Species	22	0.88
Jul-17 Total		15,391	615.64
Aug-17	Common Pipistrelle	7,980	319.20
	<i>Myotis</i> species	616	24.64
	Noctule	592	23.68

Period	Species	No. Registrations	Activity Index
	Soprano Pipistrelle	1055	42.20
	Long-eared Bat	134	5.36
	Serotine	88	3.52
	Nathusius' Pipistrelle	10	0.40
	Barbastelle	5	0.20
	Unidentified Pipistrelle Species	47	1.88
Aug-17 Total		10,527	421.08
Sep-17	Common Pipistrelle	817	27.23
	<i>Myotis</i> species	77	2.57
	Noctule	99	3.30
	Soprano Pipistrelle	60	2.00
	Long-eared Bat	2	0.07
	Serotine	3	0.10
	Nathusius' Pipistrelle	25	0.83
	Barbastelle	1	0.03
	Unidentified Pipistrelle Species	4	0.13
Sep-17 Total		1,088	36.27
Oct-17	Common Pipistrelle	468	15.60
	<i>Myotis</i> species	18	0.60
	Noctule	8	0.27
	Soprano Pipistrelle	36	1.20
	Serotine	1	0.03
	Nathusius' Pipistrelle	40	1.33
	Unidentified Pipistrelle Species	1	0.03
Oct-17 Total		572	19.07
Grand Total		36,978	1405.39

Activity Levels at Locations

Table 7 shows the number of registrations recorded at each individual location throughout the survey period. Given that there is month on month variation between each location it is not possible to directly compare each location. However, based on the information that has been gathered the location with the highest activity is Location 1, in the north-west of the site, and Location 5, in the south-west of the site. The high levels of activity in Location 5 are consistent with the findings of the transect surveys, as this was identified as a key area of activity (Paragraph 1.4.5). The area around Location 1 was not identified as a key area of activity during the transect surveys (Paragraph 1.4.5), however, it is directly linked to the identified key area of activity to the east. It is likely that this habitat forms a foraging and commuting corridor across the site, but high levels of activity are not encountered until later in the evening in the north-west of the site.

Table 7: Activity recorded at each location

Location	Species	Count of Species	Activity Index
Location 1	Common Pipistrelle	9,915	330.50
	<i>Myotis</i> species	12	0.40
	Noctule	12	0.40
	Soprano Pipistrelle	1,441	48.03
	Long-eared Bat	1	0.03
	Serotine	30	1.00
	Nathusius' Pipistrelle	17	0.57
	Unidentified Pipistrelle Species	3	0.10
Location 1 Total		11,431	381.03
Location 2	Common Pipistrelle	823	27.43
	<i>Myotis</i> species	41	1.37
	Noctule	30	1.00
	Soprano Pipistrelle	309	10.30
	Long-eared Bat	13	0.43
	Serotine	19	0.63
	Nathusius' Pipistrelle	12	0.40
	Barbastelle	1	0.03
	Unidentified Pipistrelle Species	1	0.03
Location 2 Total		1249	41.63
Location 3	Common Pipistrelle	2,317	92.68
	<i>Myotis</i> species	43	1.72
	Noctule	602	24.08
	Soprano Pipistrelle	625	25.00
	Long-eared Bat	3	0.12
	Serotine	14	0.56
	Nathusius' Pipistrelle	25	1.00
	Greater Horseshoe	1	0.04
	Unidentified Pipistrelle Species	2	0.08
Location 3 Total		3,632	145.28
Location 4	Common Pipistrelle	5,803	232.12
	<i>Myotis</i> species	493	19.72
	Noctule	135	5.40
	Soprano Pipistrelle	558	22.32
	Long-eared Bat	113	4.52
	Serotine	37	1.48
	Nathusius' Pipistrelle	98	3.92
	Barbastelle	4	0.16
	Unidentified Pipistrelle Species	25	1.00
Location 4 Total		7,266	290.64
Location 5	Common Pipistrelle	10,101	336.70
	<i>Myotis</i> species	55	1.83

Location	Species	Count of Species	Activity Index
	Noctule	51	1.70
	Soprano Pipistrelle	764	25.47
	Serotine	3	0.10
	Nathusius' Pipistrelle	38	1.27
	Barbastelle	1	0.03
	Unidentified Pipistrelle Species	3	0.10
Location 5 Total		11,016	367.2
Location 6	Common Pipistrelle	571	19.03
	<i>Myotis</i> species	407	13.57
	Noctule	79	2.63
	Soprano Pipistrelle	536	17.87
	Long-eared Bat	57	1.90
	Serotine	663	22.10
	Nathusius' Pipistrelle	11	0.37
	Barbastelle	16	0.53
	Unidentified Pipistrelle Species	44	1.47
Location 6 Total		2,384	79.47
Grand Total		36,978	1305.25

1.5 Otter

1.5.1 Desktop Study Results

Otter *Lutra lutra* records are not included in the SxBRC consultation as it has been requested that otter records remain confidential due to their vulnerability within Sussex.

Consultation with the MAGIC database produced no records of granted EPSM licences with respect to otter within the desktop study area.

1.5.2 Field Survey Results

The survey area contains one short length of ditch that borders Field 10. The ditch held no water at the time of the Preliminary Ecological Appraisal undertaken by Artemis in 2015 and the plant communities recorded would indicate that this ditch is dry for much of the year (Artemis, 2016). Plant species recorded along base of channel include creeping buttercup *Ranunculus repens*, scarlet pimpernel *Anagalis arvensis*, prickly sow-thistle *Sonchus asper*, creeping thistle *Cirsium arvense* and common fleabane *Pulicaria dysenterica* with occasional great willowherb *Epilobium hirsutum*, smooth sow-thistle *Sonchus oleraceus*, redshank *Persicaria maculosa*, greater plantain *Plantago major* and daisy *Bellis perennis*, which are typical of drier conditions. Given the isolated nature of the ditch, and the unsuitability of the vegetation, the habitat on site is unsuitable for otter and therefore this species is not considered further in this report.

1.6 Badger

1.6.1 Desktop Study Results

Badger *Meles meles* records are not included in the SxBRC consultation as local badger groups have requested that badger records remain confidential due to their vulnerability to persecution.

1.6.2 Field Survey Results

The habitats present on site provide opportunities for foraging and commuting badger and features such as the hedgerows and treelines could provide suitable areas for sett building.

1.6.3 Badger Survey Results

No badger setts or evidence of badger activity such as foraging signs or latrines were recorded on site. A small number of mammal paths, which could be attributed to badger, were recorded, suggesting that badger are not resident on site, but may make use of on-site habitats for foraging and commuting.

1.7 Hazel Dormouse

1.7.1 Desktop Study Results

Consultation with SxBRC produced no records of hazel dormouse *Muscardinus avellanarius* within the desktop study area, however, this does not confirm the absence of the species in the local area.

Consultation with the MAGIC database produced no records of granted EPSM licences with respect to hazel dormouse within the desktop study area.

1.7.2 Field Survey Results

The site provides a network of hedgerows and treelines with good structure and diversity of plant species. The site is well-connected with the wider landscape via further off-site hedgerows. Overall the site is considered to have suitability to support hazel dormouse.

1.7.3 Hazel Dormouse Survey Results

The hazel dormouse survey confirmed the likely absence of dormouse within the site. The results of the hazel dormouse survey are presented in **Table 8**.

Table 8: Hazel dormouse survey results

Survey Date	Results
21 st June 2017	No evidence of dormouse recorded.

25 th July 2017	No evidence of dormouse recorded. Single wood mouse <i>Apodemus sylvaticus</i> encountered.
22 nd August 2017	No evidence of dormouse recorded. Single wood mouse nest encountered.
28 th September 2017	No evidence of dormouse recorded. Nine wood mouse nests, two individuals and two food caches encountered.

1.8 Water Vole

1.8.1 Desktop Study Results

Consultation with SxBRC produced 20 records of water vole *Arvicola amphibius* within the desktop study area with the most recent record dated 2016 and located approximately 1.75 kilometres to the north-west of the site.

1.8.2 Field Survey Results

The survey area contains one short length of ditch that borders Field 10. The ditch held no water at the time of the Preliminary Ecological Appraisal and the plant communities recorded would indicate that this ditch is dry for much of the year (Artemis, 2016). Given the isolated nature of the ditch, and the unsuitability of the vegetation, the habitat on site is unsuitable for water vole and therefore this species is not considered further in this report.

1.9 Birds

1.9.1 Desktop Study Results

Consultation with SxBRC produced records of 286 species of birds within the desktop study area. Many of these species are likely to occur on site including buzzard *Buteo buteo*, barn owl *Tyto alba*, tawny owl *Strix aluco*, little owl *Athene noctua*, wren *Troglodytes troglodytes*, dunnoek *Prunella modularis*, robin *Erithacus rubecula*, blue tit *Cyanistes caeruleus*, great tit *Parus major*, coal tit *Periparus ater* and skylark *Alauda arvensis*.

The consultation also produced 38 records of Bewick's swan within the desktop study area. Of these 14 records could relate to habitats on or around the site, however all but one are provided with accuracy of one square kilometre. The majority of these records are dated between 1985 and 1998, with only two more recent records, one in 2010 and one in 2011. The more accurate record records 14 birds in a field directly adjacent to the western boundary of the site (NGR: TQ003033) but is dated from 1997.

A wintering bird survey was undertaken at the site by Artemis between November 2015 and February 2016 (Artemis, 2016). A total of 56 species were recorded during the field

surveys. The wintering bird assemblage at the site was found to be typical of the wider wintering bird community recorded on arable sites across the county. The survey findings demonstrated that waders and wildfowl from the Arun Valley SPA are not regularly using the site. Full details can be found in Technical Appendix 9.6.

1.9.2 Field Survey Results

Hedgerows, trees and buildings on site are suitable to support nesting birds, and hedgerows, trees and arable crops provide foraging opportunities. The arable fields on site are suitable for ground nesting birds, particularly skylark. The aircraft hanger has suitability as breeding or roosting site for barn owl. The arable fields and rough grassland offer good hunting habitat for this species, which is also known to breed in hollow trees.

The arable fields on site are suitable for foraging waders and wildfowl, including those associated with the Arun Valley SPA (Paragraph 1.2), although the land does not flood and is subject to regular disturbance as a result human activities associated with the use of the site as a market and carboot and those associated with regular farming. It is therefore considered suboptimal. This is supported by the wintering bird surveys undertaken by Artemis in 2015/2016, which found no waders or wildfowl from the Arun Valley SPA associated with the site (Paragraph 1.9.1).

1.9.3 Breeding Bird Survey Results

Table 9 provides a list of bird species recorded within the site and their conservation status. Records in bold represent species breeding on site. The recorded breeding territories are shown on **Map 5**.

Two red listed species and two amber listed species were recorded breeding on site. Of these breeding skylark is the only ground nesting species.

No evidence of barn owl was recorded associated with the aircraft hanger, no trees were identified as being suitable for barn owl during the ground level tree assessment, and no incidental records of barn owl were recorded during the bat surveys undertaken at the site.

Table 9: Summary of bird survey results

Common name	Scientific name	Breeding On-Site	Estimated Number of Territories	Notes
Red Listed Species				
Herring gull	<i>Larus argentatus</i>	No	-	
House sparrow	<i>Passer domesticus</i>	No	-	
Mistle thrush	<i>Turdus viscivorus</i>	No	-	
Skylark	<i>Alauda arvensis</i>	Yes	9	A total of nine skylark breeding territories were recorded on site (Map 5). Breeding territories were associated with arable habitats
Song thrush	<i>Turdus philomelos</i>	Yes	3	A total of three song thrush breeding territories were recorded on site (Map 5). These territories were recorded in treeline habitats
Starling	<i>Sturnus vulgaris</i>	No	-	
Amber Listed Species				
Black-headed gull	<i>Chroicocephalus ridibundus</i>	No	-	
Bullfinch	<i>Pyrrhula pyrrhula</i>	No	-	
Dunnock	<i>Prunella modularis</i>	Yes	7	A total of seven dunnock breeding territories were recorded on site (Map 5). These territories were associated with hedgerow and scrub habitats
House martin	<i>Delichon urbicum</i>	No	-	
Lesser black-backed gull	<i>Larus fuscus</i>	No	-	
Mediterranean gull	<i>Larus melanocephalus</i>	No	-	
Stock dove	<i>Columba oenas</i>	Yes	1	A single stock dove breeding territory was recorded on site (Map 5). This breeding territory was associated with treeline habitats.
Green Listed Species				
Blackbird	<i>Turdus merula;</i>	No	-	
Blackcap	<i>Sylvia atricapilla;</i>	No	-	

Common name	Scientific name	Breeding On-Site	Estimated Number of Territories	Notes
Blue tit	<i>Parus caeruleus</i>	No	-	
Chiffchaff	<i>Phylloscopus collybita</i>	No	-	
Collared dove	<i>Streptopelia decaocto</i>	No	-	
Cormorant	<i>Phalacrocorax carbo</i>	No	-	
Goldcrest	<i>Regulus regulus</i>	No	-	
Goldfinch	<i>Carduelis carduelis</i>	No	-	
Great tit	<i>Parus major</i>	No	-	
Greenfinch	<i>Carduelis chloris</i>	No	-	
Jackdaw	<i>Coloeus monedula</i>	No	-	
Magpie	<i>Pica pica</i>	No	-	
Pheasant	<i>Phasianus colchicus</i>	No	-	
Pied wagtail	<i>Motacilla alba</i>	No	-	
Robin	<i>Erithacus rubecula</i>	No	-	
Whitethroat	<i>Sylvia communis</i>	No	-	
Wren	<i>Troglodytes troglodytes</i>	No	-	
Woodpigeon	<i>Columba palumbus</i>	No	-	

1.9.4 Wintering Bird Survey Results

A total of 31 species were recorded during the survey. **Table 10** provides a list of bird species recorded within the site, grouped by their conservation category in accordance with the Birds of Conservation Concern (BoCC) (Eaton, et al., 2015). Peak counts are not provided for green listed species. The locations of red and amber listed birds recorded during the wintering bird surveys are shown on **Map 6**.

No Bewick's swan, shoveler, teal or wigeon, or concentrations of other wildfowl which are associated with the nearby Arun Valley SPA (Paragraph 1.2), were recorded using the site.

Table 10: Summary of bird survey results

Common name	Scientific name	Peak Count	Notes
Red Listed Species			
Herring gull	<i>Larus argentatus</i>	30	Peak count recorded on 21 st December 2018
House sparrow	<i>Passer domesticus</i>	8	Peak count recorded on 8 th January 2019
Linnet	<i>Carduelis cannabina</i>	10	Peak count recorded on 8 th January 2019
Redwing	<i>Turdus iliacus</i>	77	Peak count recorded on 8 th January 2019. Redwing was only recorded on two surveys with the second survey (15 th January 2019) recording a peak of only five individuals. The site is therefore not considered to regularly support large numbers of redwing.
Skylark	<i>Alauda arvensis</i>	100	Peak count recorded on 15 th January 2019
Song thrush	<i>Turdus philomelos</i>	4	Peak count recorded on 5 th February 2019
Amber Listed Species			
Black-headed gull	<i>Chroicocephalus ridibundus</i>	200	Peak count recorded on 21 st December 2018
Common gull	<i>Larus canus</i>	50	Peak count recorded on 21 st December 2018
Duncock	<i>Prunella modularis</i>	3	Peak count recorded on 15 th January 2019
Great black-backed gull	<i>Larus marinus</i>	5	Peak count recorded on 21 st December 2018
Kestrel	<i>Falco tinnunculus</i>	2	Peak count recorded on 8 th January 2019
Meadow pipit	<i>Anthus pratensis</i>	2	Peak count recorded on 21 st December 2018
Green Listed Species			
Blackbird	<i>Turdus merula</i> ;	N/A	
Blue tit	<i>Parus caeruleus</i>	N/A	
Buzzard	<i>Buteo buteo</i>	N/A	
Carrion crow	<i>Corvus corone</i>	N/A	
Chaffinch	<i>Fringilla coelebs</i>	N/A	
Feral pigeon	<i>Columba livia domestica</i>	N/A	

Common name	Scientific name	Peak Count	Notes
Goldfinch	<i>Carduelis carduelis</i>	N/A	
Great tit	<i>Parus major</i>	N/A	
Greenfinch	<i>Carduelis chloris</i>	N/A	
Jackdaw	<i>Coloeus monedula</i>	N/A	
Jay	<i>Garrulus glandarius</i>	N/A	
Long-tailed tit	<i>Aegithalos caudatus</i>	N/A	
Magpie	<i>Pica pica</i>	N/A	
Pheasant	<i>Phasianus colchicus</i>	N/A	
Pied wagtail	<i>Motacilla alba</i>	N/A	
Robin	<i>Erithacus rubecula</i>	N/A	
Rook	<i>Corvus frugilegus</i>	N/A	
Wren	<i>Troglodytes troglodytes</i>	N/A	
Woodpigeon	<i>Columba palumbus</i>	N/A	

1.10 Reptiles

1.10.1 Desktop Study Results

Consultation with SxBRC produced records of slow-worm *Anguis fragilis*, grass snake *Natrix natrix*, common lizard *Zootoca vivipara* and adder *Vipera berus* within the desktop study area. The most recent records for grass snake, common lizard and adder are from 2017 and located in Binstead Wood Complex, approximately 1.8 kilometres to the north. The most recent slow-worm record is dated from 2014 and is located approximately 1.1 kilometres to the south-east.

1.10.2 Field Survey Results

There are a number of features within the site that provide suitable habitat for common reptiles (grass snake *Natrix natrix*, common lizard *Lacerta viviparous* and slow worm *Anguis fragilis*). The areas of unmanaged grassland offer the best quality habitat, but all three species will also use uncultivated field margins, woodland edges and earth banks. Full details of the field survey findings are available in the Phase 1 habitat survey report (Artemis, 2016) (Technical Appendix 9.5). During the field survey a single common lizard was recorded in an area of rough grassland in the west of the site (Map 7).

1.10.3 Reptile Survey Results

A summary of the reptile surveys at the site is provided in Table 11 and on Map 7. A single common lizard was recorded in the north of the site.

Table 11: Summary of reptile survey results

Survey Date	Number of Individuals Recorded					
	Slow-worm		Common Lizard		Grass Snake	
	Adult	Juvenile	Adult	Juvenile	Adult	Juvenile
15 th June 2017	0	0	0	0	0	0
29 th June 2017	0	0	0	0	0	0
12 th July 2017	0	0	0	0	0	0
27 th July 2017	0	0	1	0	0	0
10 th August 2017	0	0	0	0	0	0
24 th August 2017	0	0	0	0	0	0
Peak Count	0	0	1	0	0	0

1.11 Great Crested Newt

1.11.1 Desktop Study Results

Consultation with SxBRC produced 94 records of great crested newt *Triturus cristatus* within the desktop study area. The most recent record is from 2017 and is located approximately 810 metres to the west of the site.

Consultation with the MAGIC database produced no records of granted EPSM licences with respect to great crested newt within the desktop study area.

A review of OS mapping and aerial photography revealed a total of ten waterbodies within 500 metres of the site. Locations of these pond are shown on **Map 8**.

Ponds 1, 2 and 3 were previously surveyed in relation to another planning application (Ref. CM/1/17/OUT) in 2016 by Phlorum Limited (Phlorum, 2016). No great crested newt were recorded during the surveys and are therefore considered absent from the ponds.

1.11.2 Field Survey Results

Suitable terrestrial habitat includes woodland, scrub and rough grassland. Hedgerows in arable habitat provide both foraging and dispersal habitat.

1.11.3 Great Crested Newt HSI Assessment Results

Of the ten ponds identified on or within 500 metres of the site, five (Pond 1, Pond 6, Pond 7, Pond 8 and Pond 9) were subject to HSI assessment, either because they lie within the ownership boundary of the site owners, or because they are visible from a publicly accessible location. Of these, two ponds (Ponds 6 and 7) have below average suitability for great crested newt, two ponds (Pond 1 and Pond 8) have good suitability for great crested newt and one pond (Pond 9) has excellent suitability for great crested newt. The remaining ponds could not be accessed for HSI assessment as access was not granted by the owners².

1.11.4 Great Crested Newt eDNA Survey Results

Accessible ponds (Ponds 6, 7, 8 and 9) were sampled for eDNA analysis. All records were returned negative for great crested newt eDNA. Samples had low to medium sediment content but there was no degradation of the DNA and no inhibition of the sample.

Other ponds were not accessible however great crested newt are considered absent from Ponds 1, 2 and 3 (Paragraph 1.11.1).

² See Technical Appendix 9.2 Paragraph 1.8.3 for further information.

Pond 4 is a reservoir located within the HMP Ford prison. It supports fish and is frequently visited by cormorants and grey heron³ and is therefore considered to be unsuitable for great crested newt.

Pond 5 could not be surveyed, however, great crested newt rely on a network of ponds and as great crested newt have been confirmed absent in other ponds within the network (i.e. Ponds 1, 2, 3, 6 and 7) great crested newt is considered likely absent from this pond.

Pond 10 is located approximately 480 metres from the site and the nearest waterbodies are located to the west or the north, therefore it is considered unlikely that if great crested newt are present within Pond 10 they will not occur on site as the site does not lie between Pond 10 and other breeding ponds.

Great crested newt are therefore considered likely absent from site and are not considered further within this assessment.

³ Personal communication with staff member at HMP Ford on 15th November 2018

Table 12: Ponds within 500m of site boundary - details

Pond No.	NGR	Location in Relation to Site Boundary	Waterbody Description	HSI Score	HSI Suitability	eDNA Results	Conclusion
1	SU 9953 0223	19 metres to the south	Medium sized pond adjacent to Horsemere Green Lane	0.76	Good	Not accessible	Likely absent ⁴
2	SU 9996 0227	370 metres to the south-east	Small ornamental pond	N/A	N/A	Not accessible	Likely absent ⁴
3	SU 9998 0228	390 metres to the south-east	Small ornamental pond	N/A	N/A	Not accessible	Likely absent ⁴
4	SU 9984 0300	145 metres to the south of site	Reservoir in the grounds of HMP Ford.	N/A	N/A	Not accessible	Likely absent ⁵
5	TQ 0025 0296	440 metres to the east	Small pond adjacent to an agricultural field and the River Arun	N/A	N/A	Not accessible	Likely absent ⁶
6	TQ 0050 0305	530 metres to the east	Large pond adjacent to an agricultural field and the River Arun	0.51	Below Average	Absent	Absent
7	TQ 0047 0318	450 metres to the east	Small pond adjacent to an agricultural field and the River Arun	0.58	Below Average	Absent	Absent
8	SU 9945 0379	On site on the northern boundary	Small pond in road verge	0.71	Good	Absent	Absent
9	SU 9878 0435	395 metres to the north	Medium sized pond within woodland	0.80	Excellent	Absent	Absent
10	SU 9827 0345	480 metres west of the site	Small garden pond	N/A	N/A	Not accessible	Presence unknown

⁴ Based on historic reports (Phlorum, 2016)

⁵ Pond likely unsuitable based on personal communication with member of staff

⁶ Based on lack of pond network

1.12 Invertebrates

1.12.1 Desktop Study Results

Consultation with SxBRC produced records for notable and protected invertebrate species within the desktop study area, including nine *Hymenoptera* species, 48 *Coleoptera* species, 103 *Lepidoptera* species, wasp spider *Argiope bruennichi*, two *Hemiptera* species and two *Diptera* species. No records are associated with the site itself.

Five records of stag beetle *Lucanus cervus*, from between 2006 and 2017 were returned. The nearest record (from 2011) lies approximately 500 metres west of the site. A total of 54 invertebrate Species of Principal Importance have been recorded within two kilometres of the site. These species were considered when assessing the suitability of on-site habitats to support notable invertebrates/invertebrate assemblages.

1.12.2 Field Survey Results

The site is dominated by arable crops which has negligible suitability for notable invertebrates. Woodland, hedgerows and scattered trees on site provide suitable habitat for notable species including brown hairstreak *Thecla betulae*, grey dagger *Acrionicta psi*, green-brindled crescent *Allophytes oxyacanthae*, centre-barred sallow *Atethmia centrargo*, dark crimson underwing *Catocala sponsa*, dusky thorn *Ennomos fuscantaria*, August thorn *Ennomos quercinaria*, brindled beauty *Lycia hirtaria*, lackey *Malacosoma Neustria* and oak hook-tip *Watsonalla binaria*. In addition, deadwood associated with this habitat has suitability to support stag beetle.

1.13 Other Relevant Species

1.13.1 Desktop Study Results

Consultation with SxBRC produced records for common toad *Bufo bufo*, European hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus* and harvest mouse *Micromys minutus* within the desktop study area.

1.13.2 Field Survey Results

The Phase 1 habitat survey report (Artemis, 2016) (Technical Appendix 9.5) does not specifically make reference to common toad, European hedgehog, brown hare or harvest mouse, however, given the habitats present, including arable farmland and hedgerows, on-site habitats are suitable to support these species.

1.13.3 Incidental Records

No incidental records of any other relevant species were recorded during any of the species-specific surveys undertaken.

2.0 REFERENCES

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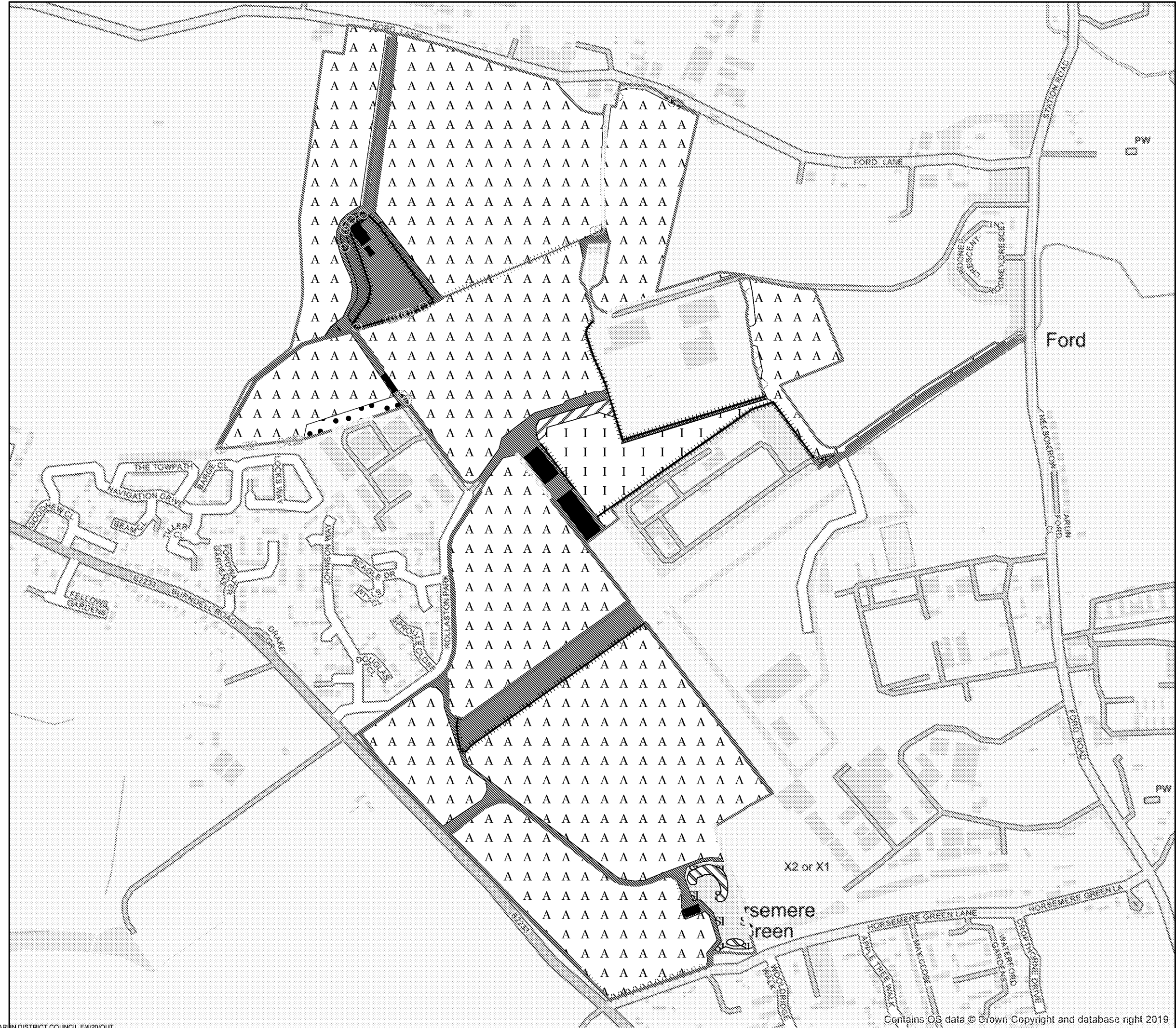
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Map 1 Phase 1 Habitat Map



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE

Map 1 - Phase 1 Habitat Map

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

KEY

- Site Boundary
- Scattered Trees
- Broad-leaved Woodland
- Broad-leaved Woodland Plantation
- Scattered Scrub
- Semi-improved Neutral Grassland
- Improved Grassland
- Poor Semi-improved Grassland
- Tall Ruderal
- Pond
- Arable
- Earth Bank
- Buildings
- Bare Ground
- Hardstanding
- Native Species-Rich Hedgerow
- Species-Poor Hedgerow
- Species-Poor Hedgerow with Trees
- Treeline
- Fence

Scale at A3: 1:6,500

0 50 100 200 300 Metres



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Map 2 Ground Level Tree Assessment Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE

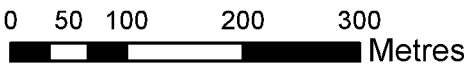
Map 2 - Ground Level Tree Assessment
Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

KEY

- Site Boundary
- Bat Roost Suitability**
- Moderate
- Low
- Negligible

Scale at A3: 1:6,500



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Map 3 Bat Transect Survey Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE

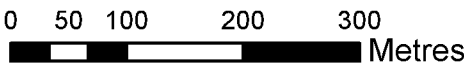
Map 3 - Bat Transect Survey Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

KEY

-  Site Boundary
-  Northern Transect
-  Southern Transect
-  Key Areas of Bat Activity
-  Five Minute Point Count

Scale at A3: 1:6,500



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Map 4 Hazel Dormouse Survey Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE

Map 4 - Hazel Dormouse Survey Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

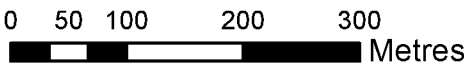
KEY

-  Site Boundary
-  Location of Hazel Dormouse Tubes 2017 (x100)

N.B. Dormouse tubes were erected on the 26th May 2017. A total of four hazel dormouse surveys were undertaken between the months of June and September 2017. At the time of writing the red line site boundary had been altered since the surveys were carried out; therefore, some dormouse tube locations appear outside of the red line site boundary.

No hazel dormouse individuals or their nests were recorded during the hazel dormouse surveys.

Scale at A3: 1:6,500



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Map 5 Breeding Bird Survey Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

**TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE**

Map 5 - Breeding Bird Survey Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

KEY

-  Site Boundary
-  Dunnock
-  Skylark
-  Song Thrush
-  Stock Dove
-  Dunnock Territory
-  Skylark Territory
-  Song Thrush Territory
-  Stock Dove Territory

N.B. Breeding bird survey visits were undertaken during May and June 2017. At the time of writing the red line site boundary had been altered since the surveys were carried out; therefore, some breeding bird territories recorded appear outside of the red line site boundary. The species symbol on the map indicates the approximate territory centre of red and amber listed bird species of conservation concern.

Scale at A3: 1:6,500

0 50 100 200 300 Metres



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Map 6 Wintering Bird Survey Results

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Map 7 Reptile Survey Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

**TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE**

Map 7 - Reptile Survey Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

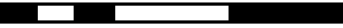
KEY

-  Site Boundary
-  Location of Reptile Refugia 2017 (x200)
-  Common Lizard (2017)
-  Common Lizard (2015)

N.B. Reptile refugia were distributed on the 31st May 2017 and the 1st June 2017. A total of six reptile surveys were undertaken between the months of June and August 2017. At the time of writing the red line site boundary had been altered since the surveys were carried out; therefore, some reptile refugia locations appear outside of the red line site boundary.

A single male common lizard was recorded during the surveys undertaken; no other species were recorded.

Scale at A3: 1:6,500

0 50 100 200 300
 Metres



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Map 8 Great Crested Newt Survey Results



FORD AIRFIELD, WEST SUSSEX

ENVIRONMENTAL STATEMENT

TECHNICAL APPENDIX 9.3 –
ECOLOGICAL BASELINE

Map 8 - Great Crested Newt Survey Results

Client:	Wates Development / Redrow Homes
Date:	October 2019
Status:	Final Rev. 1

KEY

 Site Boundary

 Great Crested Newt Buffer: 500m

Great Crested Newt Survey Results 2017

Great Crested Newt Status

 Absent

 Likely Absent

 Presence Unknown

N.B. At the time of the HSI assessment four of the ten ponds shown were considered suitable for great crested newt; eDNA surveys were carried out on the 28th June 2017 at Ponds 6, 7, 8 and 9 only.

Scale at A3: 1:10,000

0 100 200 400 Metres



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