



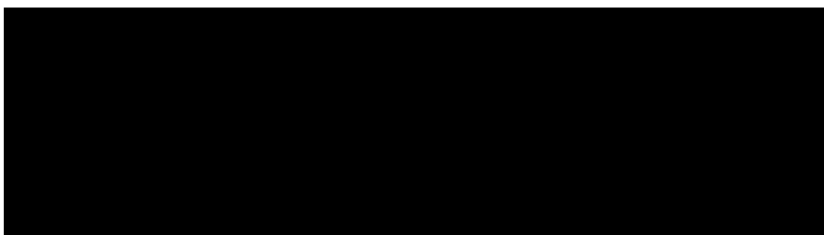
Sime Darby (London) Ltd.

**Proposed Access Track for former LEC
Airfield**

Ecological Constraints Report

20 June 2014

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Executive Summary

Contents	Summary
Site Location and Development Proposals	The proposed works area is located within the Arun District of West Sussex. The development proposal is to construct a maintenance access track. A vehicle and pedestrian bridge is to be constructed over the Rife. The route and location of the proposed access track and bridge is shown in Appendix 1. The proposed track will run from the south through amenity grassland and grazing paddocks, then cross the Lidsey Rife to run through rough grassland and connect to the south of the existing airfield runway. The area in which the proposed maintenance access track is located lies between the village of Felpham and the town of Bognor Regis, West Sussex, central grid reference SU 944 006. Lidsey Rife and Bognor Regis Golf Course lie to the north-east, playing fields and a local wildlife area to the east, and Felpham Leisure Centre to the south-east. There is a railway to the north west, and an industrial estate and arable fields, and to the south west the urban area of Bognor Regis. The Lidsey Rife crosses the proposed track route.
Previous Survey and Assessment	A suite of ecological surveys were carried out in the area surrounding the proposed access track by WYG ecologists in 2012, covering all protected species groups and assessing the habitat on site. These have been used to form the baseline information for the current report.
Results	Several species present on the site are likely to constitute a direct constraint to the proposed works, notably nesting birds, water voles, bats and reptiles. These species will require appropriate mitigation in order to protect their populations during the construction phase of the proposed works.
Mitigation and Enhancement Options	• Update badger survey prior to works. • Update survey to within 50m of proposed bridge to ensure no active water vole or kingfisher holes. • Works should be avoided overwinter, as reptiles will be hibernating. Within the reptile's active season (March to October, although note constraints due to nesting birds, discussed below), the route should be strimmed or cut (by a large wheeled vehicle with a flail cutter driving slowly over the site), under the supervision of a suitably qualified ecologist to dissuade reptiles from the works area. The first cut should be to 15cm, with a second cut a week or two later down to 8cm. Both cuts should take place under an ecological clerk of works. • Site clearance works should avoid the breeding bird season if possible (usually considered to be March to September). However, as it is necessary to complete works while reptiles are not in hibernation, ideally works would take place either in late September or in October. If this is not possible, and works are to take place between March and early September, then the following recommendations are made: • If the clearance works must take place between March and August, a through check for nesting birds should be made by an ecologist prior to works commencing to confirm no active nests will be disturbed.



	• Keep a 10m buffer from patches of scrub that may support Cetti's warbler. Or, if this is not possible, all scrub within 10m of the proposed works area should be checked by an ecologist to confirm the absence of active Cetti's nests. • Bank side vegetation should be retained beneath the bridge to retain connectivity along the Rife, or allowed to regenerate naturally beneath the bridge. • Canopy connectivity should be retained where possible during the crossing of the species poor hedgerow. In the future, trees to either side of the track in this location should be allowed to grow tall to retain connectivity. • Recommendations are made to ensure badgers are not disturbed by the construction phase, and to ensure that best practice is followed with regards to avoiding the potential for sediment entering the Rife.
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1.0 Introduction

1.1 Background

WYG was commissioned by Sime Darby (London) Ltd. to prepare an ecological constraints report in relation to a proposed maintenance access track at the former LEC Airfield development site. This report is informed by the results of a suite of ecological surveys previously carried out by WYG on the site in 2012, which provide the baseline data for the site, and will be referred to as such. Any ecological constraints to the proposed maintenance access track works indicated by the previous surveys will be highlighted and summarised, and recommendations for mitigation and avoidance provided.

1.2 Site Location and General Description

The site is located within the Arun District of West Sussex. The development proposal is to construct a maintenance access track, including a vehicle and pedestrian bridge crossing over the Rife. The route and location of the proposed access track and bridge is shown in Appendix 1. The proposed maintenance track will enter the site from the south through grazing paddocks, and will then cross the Lidsey Rife to connect to the south of the existing airfield runway.

The area in which the proposed maintenance access track is located lies between the village of Felpham and the town of Bognor Regis, West Sussex, central grid reference SU 944 006. Lidsey Rife and Bognor Regis Golf Course lie to the north-east, playing fields and a local wildlife area to the east, and Felpham Leisure Centre to the south-east. There is a railway to the north west, and an industrial estate and arable fields, and to the south west the urban area of Bognor Regis.

The site location is shown in Appendix 1.

1.3 Proposed Development

The development proposal is to construct a maintenance access track across the site from the A259, heading north across the Lidsey Rife where a vehicle and pedestrian bridge is to be constructed to allow the track to continue northwards and connect to the south of the existing runway. The route and location of the proposed maintenance access track and bridge is shown in Appendix 1.

The track will make use of an existing gateway to enter the site from the south, and will also pass through an existing gateway approximately a 3rd of the way up the site, between the Rife and some adjacent tennis



courts. The Rife itself will be crossed as outlined above, and then, finally, a dry ditch and hedgeline will be crossed, prior to the track passing through an existing hedgeline gap (and across an existing culvert) to join onto the end of the former airfield runway.

1.4 Legislation

Introduction

The UK has ratified a number of Conventions and implemented legislation pertaining to the protection of biodiversity and habitats, either independently or as member state of the European Union. These are defined and summarised below. Lists of threatened, endangered and extinct species are also provided, together with a summary explanation of each.

Bern Convention (1982)

The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in Bern, Switzerland in 1979, and was ratified in 1982. Its aims are to protect wild plants and animals and their habitats listed in Appendices 1 and 2 of the of the Convention, and regulate the exploitation of species listed in Appendix 3. The regulation imposes legal obligations on participating countries to protect over 500 plant species and more than 1000 animals.

To meet its obligations imposed by the Convention, the European Community adopted the EC Birds Directive (1979) and the EC Habitats Directive (1992 – see below). Since the Lisbon Treaty, in force since 1st December 2009, European legislation has been adopted by the European Union.

Biodiversity Action Plan (BAP)

The UK Biodiversity Action Plan (UKBAP – UK Steering Group, 1995; UK Biodiversity Group, 1998 - 2000) lists and prioritises habitats and species and sets national targets to be achieved. The intent of the UKBAP, however, is much broader than the protection and enhancement of less common species, and is meant to embrace the wider countryside as a whole.

The UKBAP has recently undergone a review (Biodiversity Reporting and Information Group, June 2007) resulting in the identification of 391 'Priority' Species Action Plans (SAPs), 45 'Priority' Habitat Action Plans and 162 Local Biodiversity Action Plans. Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities.



Birds Directive (BD)

The EC Directive on the Conservation of Wild Birds (791409/EEC) or 'Birds Directive' was introduced to achieve favourable conservation status of all wild bird species across their distribution range. In this context, the most important provision is the identification and classification of Special Protection Areas (SPAs) for rare or vulnerable species listed in Annex 1 of the Directive, as well as for all regularly occurring migratory species, paying particular attention to the protection of wetlands of international importance.

Birds of Conservation Concern (BoCC)

This is a review of the status of all birds occurring regularly in the United Kingdom. It is regularly updated and is prepared by leading bird conservation organisations, including the British Trust for Ornithology (BTO), Joint Nature Conservation Committee (JNCC) and The Royal Society for the Protection of Birds (RSPB).

Red list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of more than 50% in the last 25 years.

Amber list species are those that have shown a decline of the breeding population, non-breeding population or breeding range of between 25% and 50% in the last 25 years. Species that have a UK breeding population of less than 300 or a non-breeding population of less than 900 individuals are also included, together with those whose 50% of the population is localised in 10 sites or fewer and those whose 20% of the European population is found in the UK.

Green list species are all regularly occurring species that do not qualify under any of the red or amber criteria are green listed.

Bonn Convention

The Convention on the Conservation of Migratory Species of Wild Animals or 'Bonn Convention' was adopted in Bonn, Germany in 1979 and came into force in 1985. Participating states agree to work together to preserve migratory species and their habitats by providing strict protection to species listed in Appendix I of the Convention. It also establishes agreements for the conservation and management of migratory species listed in Appendix II.



In the UK, the requirements of the convention are implemented via the Wildlife & Countryside Act 1981 (as amended), Wildlife (Northern Ireland) Order 1985, Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 and the Countryside and Rights of Way Act 2000 (CROW).

Global IUCN Red List

The International Union for Conservation of Nature (IUCN) Threatened Species was devised to provide a list of those species that are most at risk of becoming extinct globally. It provides taxonomic, conservation status and distribution information about threatened taxa around the globe. The system catalogues threatened species into groups of varying levels of threat, which are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CE), Endangered (EN), Vulnerable (VU), Near Threatened (NT), Least Concern (LC), Data Deficient (DD), Not Evaluated (NE). Criteria for designation into each of the categories is complex, and consider several principles.

Habitats Directive

The Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, or the 'Habitats Directive', is a European Union directive adopted in 1992 in response to the Bern Convention. Its aims are to protect approximately 220 habitats and 1,000 species listed in its several Annexes. In the UK, the Habitats Directive is transposed into national law via the Conservation of Habitats and Species Regulations 2010 in England, Scotland and Wales, and via the Conservation (Natural Habitats, &c) Regulations (Northern Ireland) 1995 (as amended) in Northern Ireland.

Protection of Badgers Act 1992 (PBA 1992)

The main legislation protecting badgers in England and Wales is the Protection of Badgers Act 1992 (the 1992 Act). Under the 1992 Act it is an offence to: wilfully kill, injure, take or attempt to kill, injure or take a badger; dig for a badger; interfere with a badger sett by, damaging a sett or any part thereof, destroying a sett, obstructing access to a sett, causing a dog to enter a sett or disturbing a badger while occupying a sett. The 1992 Act defines a badger sett as: "any structure or place which displays signs indicating current use by a badger"

Species of Principal Importance in England

Section 41 (S41) of this Act requires the Secretary of State to publish a list (in consultation with Natural England) of habitats and species which are of principal importance for the conservation of biodiversity in England. The S41 list is used to guide decision-makers such as public bodies including local and regional



authorities, in implementing their duty under Section 40 of the Natural Environment and rural Communities (NERC) Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal (e.g. planning) functions. The S41 list includes 65 habitats of principal importance and 1,150 species of principal importance.

The Conservation of Habitats and Species Regulations 2010

This is the main piece of legislation which transposes the Habitats Directive into national law. The Regulations place a duty on the Secretary of State to propose a list of sites which are important for either habitats or species (listed in Annexes I or II of the Habitats Directive respectively) to the European Commission. These sites, if ratified by the European Commission, are then designated as Special Protection Areas (SPAs) within six years. The Regulations also make it an offence to deliberately capture, kill, disturb or trade in the animals listed in Schedule 2, or pick, uproot, destroy, or trade in the plants listed in Schedule 5 (see Table B1). The 2010 Regulations consolidate and update the Conservation (Natural Habitats, &c.) Regulations 1994 (the 1994 Regulations) and any amendments. It also contains new provisions to implement aspects of the Marine and Coastal Access Act 2009 (the "Marine Act"), giving powers to the Marine and Coastal Access Act and Marine Enforcement Officers.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 were made under Section 97 of the Environment Act 1995 and came into force in 1997. They introduced new arrangements for local planning authorities in England and Wales to protect important hedgerows in the countryside, by controlling their removal through a system of notification. Important hedgerows are defined by complex assessment criteria, which draw on biodiversity features, historical context and the landscape value of the hedgerow.

Wildlife and Countryside Act 1981 (as amended)

This is the principal mechanism for the legislative protection of wildlife in the UK. This legislation is the chief means by which the 'Bern Convention' and the Birds Directive are implemented in the UK. Since it was first introduced, the Act has been amended several times. The Act makes it an offence to (with exception to species listed in Schedule 2) intentionally:

kill, injure, or take any wild bird,

take, damage or destroy the nest of any wild bird while that nest is in use, or



take or destroy an egg of any wild bird.

In addition, the Act makes it an offence (subject to exceptions) to:

intentionally or recklessly kill, injure or take any wild animal listed on Schedule 5, interfere with places used for shelter or protection, or intentionally disturbing animals occupying such places.

The Act also prohibits certain methods of killing, injuring, or taking wild animals. Finally, the Act also makes it an offence (subject to exceptions) to:

intentionally pick, uproot or destroy any wild plant listed in Schedule 8, or any seed or spore attached to any such wild plant, unless an authorised person, intentionally uproot any wild plant not included in Schedule 8,

sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Following all amendments to the Act, Schedule 5 'Animals which are Protected' contains a total of 154 species of animal, including several mammals, reptiles, amphibians, fish and invertebrates. Schedule 8 'Plants which are Protected' of the Act, contains 185 species, including higher plants, bryophytes and fungi and lichens. A comprehensive and up-to-date list of these species can be obtained from the JNCC website.

Part 14 of the Act makes unlawful to plant or otherwise cause to grow in the wild any plant which is listed in Part II of Schedule 9. It is recommended that plant material of these species is disposed of as bio-hazardous waste, and these plants should not be used in planting schemes. Wildlife (NI) Order 1985 The Wildlife (Northern Ireland) Order 1985 is the principal legislative instrument concerned with the protection of wildlife in Northern Ireland; it is somewhat equivalent to the Wildlife & Countryside 1981 (as amended) in England, Wales and Scotland.

The Order makes it an offence to intentionally kill, injure, or take any wild bird or their eggs or nests, and special penalties apply for offences related to birds listed in Schedule 1 of the Order. The Order also makes it an offence to intentionally kill, injure, or take, possess, or trade in any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection or intentionally disturbing animals occupying such places.



In addition, the Order makes it an offence to pick, uproot, trade in, or possess any wild plant listed in Schedule 8, and prohibits the unauthorised intentional uprooting of such plants. It also prohibits the release of animals and the planting of plants listed in Schedule 9.



2.0 Baseline Survey Methodologies

2.1 WYG Ecological Surveys 2012

The following sections summarise the methodologies used in the suite of ecological surveys carried out at the LEC Airfield site by WYG ecologists in 2012.

2.2 Desk Studies

Details of designated sites of conservation interest and protected and notable species records from within 2 km of the central grid reference of the site were obtained from Sussex Biodiversity Record Centre (SxBRC). In addition, searches for designated sites and protected species were made using Natural England's interactive, web-based MAGIC (Multi Agency Geographic Information for the Countryside) database and the National Biodiversity Network (NBN) database respectively.

2.3 Extended Phase 1 Habitat Survey

An extended Phase 1 habitat survey was conducted within the area of the track and the wider area on 26th April 2012, and updated throughout the 2012 survey season. All areas of the proposed access track route were investigated, including those parts that are not expected to be affected directly by the works but may be indirectly impacted upon, as recommended in English Nature (2002).

The vegetation and habitat types which are present were noted during the walkover survey in accordance with the categories specified for a Phase 1 Vegetation and Habitat Survey (JNCC, 2007). Dominant plant species were recorded for each habitat present.

The site was inspected for evidence of and its potential to support protected or notable species, especially those listed under the Conservation of Habitats and Species Regulations 2010, the Wildlife & Countryside Act 1981 (as amended), including those given extra protection under the Natural Environment and Rural Communities (NERC) Act 2006 and Countryside & Rights of Way (CROW) Act 2000, and listed on the UK and local Biodiversity Action Plans.

2.4 Great Crested Newts

During the Extended Phase 1 survey, the site was appraised for its suitability to support great-crested newts. The assessment was based on guidance outlined in the Joint Nature Conservation Committees'



published Herpetofauna Workers' Manual (Joint Nature Conservation Committee, 2003) and the Great Crested Newt Conservation Handbook (Langton, Beckett & Foster, 2001). As recommended by Natural England, the Oldham *et al.* (2000), Habitat Suitability Index (HSI) was applied to ponds and ditches on site and within 500m of the site where access was possible. Off site ponds within 500m of the site were identified using Ordnance Survey maps and aerial images.

In May and June 2012 great crested newt presence / likely absence aquatic surveys were undertaken on seven waterbodies within 500m surrounding the site considered potentially suitable to support breeding great crested newts. These surveys were undertaken in accordance with the recognised guidelines set down in the Herpetofauna Workers Manual, (JNCC, 1998), The Great Crested Newt Conservation Handbook (Froglife, 2001) and the Great Crested Newt Mitigation Guidelines (English Nature, 2001). Bottle traps were set on the evening before sunset, whilst torchlight surveys were conducted after sunset. Bottle traps were then checked the following morning, when egg searches were also conducted. The surveys set out to confirm presence or likely absence of GCNs at the LEC Airfield Park site.

2.5 Reptiles

In accordance with the guidance outlined in the Herpetofauna Workers' Manual (Joint Nature Conservation Committee - JNCC, 2003), Advice Sheet 10 – Reptile Survey (Froglife, 1999) and the Handbook of Biodiversity Methods: Survey, Evaluation and Monitoring (Hill et al., 2005) surveys were undertaken to establish the presence or absence of reptile species. This involved seven visits during the months of July, August and September 2012 in suitable weather conditions. Approximately 338 clearly numbered artificial refugia (sections of bituminised roofing felt) were placed across the wider area throughout May in areas considered to have habitat suitable for reptiles. Mats were placed at a density of 13 per hectare. The refuges were then left undisturbed on the site for 2 weeks prior to survey; to allow for reptiles on the site to find and utilize. Each refuge was then first checked for basking individuals from a distance before being slowly approached and searched for sheltering reptiles.

Terrestrial habitat between artificial refugia was also searched for reptile species on each visit. The location of each reptile sighting was then recorded to allow for analysis of population distributions across the site. As a guideline it is recommended that the optimal time to survey reptiles is between 8:30am to 11:00am and between 16:00pm and 18:30pm and when air temperature is between 9°C and 18°C. Strong rain and wind are deemed unsuitable (Froglife, 1999). As reptile activity is heavily dependent on weather conditions the following conditions were recorded during each survey: air temperature, rain levels, and the cloud cover.



2.6 Bats

Bat Activity Survey

Bat activity surveys were completed in the wider area according to the guidance set out in the Bat Conservation Trust's Bat Surveys: Good Practice Guidelines, 2nd Edition (2012), with one visit per month, and one survey comprising a dusk and pre-dawn survey within one 24- hour period. Activity surveys were completed on 30th May, 27th June, 19th July, 20th July, 15 August, 24th September and 10th October. Two surveyors were used for each survey on each of the two transect routes, which incorporated habitat in the wider area likely to be used by foraging and commuting bats such as grassland, hedgerows, scrubland and marginal areas along water bodies.

Dusk surveys commenced 15 minutes prior to sunset and concluded approximately two hours and forty five minutes after. Dawn surveys commenced two hours before sunrise and concluded at sunrise. Weather conditions (temperature, precipitation and wind speed) were recorded on each survey. The surveyors made a note of bat activity, using both visual observation and audio bat detectors to identify foraging and/or commuting behaviour. Surveyors recorded the time and a description of any activity.

Although the proposed access track covers only a part of the airfield park site, the suite of surveys are relevant in characterising the site as a whole in terms of bat use as well as the immediate footprint of the access track, and are useful in highlighting any potential impacts associated with the works.

Additionally, where bats could be seen, the patterns/directions of the bats' flight were also recorded. Surveyors were qualified ecologists and were either experienced at undertaking bat surveys or were in training and were supported by experienced surveyors. All surveyors used a Batbox Duet (frequency division and heterodyne) bat detector and walked along the transect routes at a steady pace. The direction in which the transects were walked varied between survey visits to record activity in different locations at different times. Surveyors also stopped in a number of places along the transect route. Any notable calls were recorded on Zoom H2 digital audio recorders and later analysed using specialist software (BatSound) on a PC. The recordings and the field notes were used to help build a picture of bat use across the site and to identify areas of relatively higher use.

In accordance with BCT (2012) guidelines, automatic bat detectors (Song Metre 2) were left for five nights per month to record bat passes at two locations along each of the two transects. These were analysed to gain further information on the species present and relative amount of activity through the night.



2.7 Badgers

A badger survey was conducted within the wider area on 23rd August 2012. All areas of the site were investigated, including those parts that are not expected to be affected directly by the works but may be indirectly impacted upon. The site was surveyed for evidence of badger setts or other badger activity such as paths, latrines, footprints or signs of foraging. Methodologies used and any setts recorded were classified according to the published criteria (Harris, Cresswell & Jefferies, 1989).

2.8 Aquatic Invertebrates

The site was visited on the following dates: 28th June, 18th July, 2nd August and 30th August 2012 to sample the aquatic invertebrates at four sample points within ditches in the wider area, one of which will be crossed by the track, using an existing culvert. The Rife itself was not sampled.

Aquatic sampling: an invertebrate sample is collected using a standard pond net with a mesh diameter of 0.5 mm by sweeping the net through the various different habitats within the water body. The sample collected is then sorted within a white plastic tray to extract the invertebrates.

Another sampling method is the kick sample which is used for flowing water, whereby the surveyor stands up-stream of the net and kicks the stream substrate to dislodge the invertebrates which will be swept into the net again the sample being sorted within a white plastic tray to extract the invertebrates (Eyre, 1996; Hill et al., 2005, Sutherland, 2004).

2.9 Otter

The otter survey followed that of the National Otter Survey by JNCC (2008) and Chanin (2003). The general survey methodology for locating presence of otter requires the surveyor to walk over a given area usually along a 600m stretch of watercourse searching for signs indicating the presence of the animal. It is usual to conduct the search within the immediate river channel and up to 10m strip of the adjacent riparian habitat. For the purpose of the study the entire length of the Lidsey Rife and associated drainage ditches on site were surveyed for otter signs.

2.10 Barn Owl

The surveys were carried out in accordance with published methodology (Shawyer 2011, BOT 2010), as follows:

- 



During the surveys, the surveyors monitored the site for flying or calling barn owls. Any barn owls recorded would be observed to see if they returned to a nest site.

2.11 Water Vole

Water vole surveys were carried out in accordance with the standard guidance described in The Water Vole Conservation Handbook 2nd Edition (2006). For the purpose of this survey the entire length of the Lidsey Rife and associated drainage ditches on site were surveyed for water vole signs.

2.12 Terrestrial Invertebrates

Terrestrial invertebrate surveys were undertaken on four days during the summer of 2012, with visits made on 31st May, 28th June, 26th July, and 23rd August. All visits were made in good weather conditions conducive to high levels of insect activity.

Survey methods included visual searching, the use of a hand net and/or pooter to capture individual species, sweeping vegetation, beating foliage and grubbing.

Additionally, two series of pitfall traps were placed on the site, following Natural England guidelines (Drake et al. 2007). Each series comprised a row of five pitfall traps, spaced approximately two metres apart. Each trap consisted of a plastic half pint tumbler, diameter 7.5 cm and depth 11 cm. Each was filled to a depth of around 2cm. with undiluted ethylene glycol, to which a few drops of washing-up liquid were added to help reduce surface tension. The traps were buried so that the rim of each trap slightly below ground level. The traps were covered with wire mesh to prevent small mammals from falling in and drowning.

2.13 Invasive Species

The site was searched for evidence of invasive plant species, such as Japanese knotweed (*Fallopia japonica*), Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*), NewZealand pygmyweed (*Crassula helmsii*), horizontal cotoneaster (*Cotoneaster horizontalis*), rhododendron (*Rhododendron ponticum*) and floating pennywort (*Hydrocotyle ranunculoides*).

2.14 Limitations

All surveys were completed within the correct time periods, and according to the relevant guidelines throughout 2012 and into winter 2012 / 2013. Due to the number of surveys within the site, there is relatively strong confidence in the survey findings, and there are considered to be no limitations to their



findings. In the event that the works have not proceeded by spring 2015, it may be necessary to complete an updated assessment of the site's ecological potential.



3.0 Baseline Survey Results

3.1 WYG Ecological Surveys 2012

The following sections summarise the relevant field survey results obtained from the suite of ecological surveys carried out in the wider area by WYG ecologists in 2012. Some of the previous species surveyed in 2012 have been omitted from this report where adverse impacts are considered unlikely to arise as a result of the proposed access track works. The surveys referred to have been used to determine if any ecological constraints to the proposed works are likely to arise, and to inform mitigation and avoidance measures. An evaluation of these constraints and appropriate mitigation is discussed in section 5.

3.2 Desk Studies

Felpham SSSI is the closest statutory site and lies approximately 0.6km south and south west of the proposed works area. It is of great geological interest, containing new Palaeocene aged flora, one of only three known in the country, has recently been discovered in the Reading Beds at this site.

Bersted Brooks LNR is a statutory site that lies 0.8km from the proposed works area. It is designated for its mosaic of areas of meadow, narrow reedbeds and ditches, a permanent pond and a temporary pond, and an extensive newly planted floodplain woodland. The Brooks floods every winter, making it important for wetland wildlife.

There is also a conservation area approximately 200m to the northeast of the proposed works area (adjacent to the golf club), which it is understood is being managed and enhanced for local wildlife.

As summary of the notable species and habitats identified by the desk study are provided below:

Great Crested Newts

Within 2km of the site, there was one record of great crested newt (*Triturus cristatus*) in 2004, this being 1.53 km away.

Reptiles

Within 2km of the site, there are 5 records of slow worm (*Anguis fragilis*) between 1995 and 2002 (the closest being 1.92 km away), one record of the common lizard (*Zootoca vivipara*) in 1996 (being 1.12 km



away), and three records of grass snake (*Natrix natrix*) between 1993 and 2002 being 1.92 km away. (SBRC, 2012).

Barn Owl

There are 12 records of barn owl within a 1km grid square of SU9400. These species are protected under Schedule 1 of the Wildlife and Countryside act 1981 (as amended).

Bats

Within 2km of the site, there are 2 records of unknown bat species (Chiroptera) noted between 1993 and 2005, one record of whiskered bat (*Myotis mystacinus*) in 2004, seven records of pipstrelle species (Pipistrellus) between 1988 and 2009, one record of the common pipstrelle (45Hz) (*Pipistrellus pipistrellus*) in 2006 and four records of brown long-eared bat (*Plecotus auritus*) between 1953 and 2009; the closest record is 1.10km away from the site (SBRC, 2012).

Dormice

The SBRC (2012) data search returned no records of dormice (*Muscardinus avellanarius*) within a 2km distance from the site. However, an absence of records does not indicate an absence of dormice. The lack of evidence may be due to under recording in the area.

Badgers

The SBRC (2012) data search returned no records of badger (*Meles meles*) within a 2km distance from the site. However, an absence of records does not indicate an absence of dormice. The lack of evidence may be due to under recording in the area.

Otter

The SBRC (2012) data search returned no records of otter (*Lutra lutra*) within a 2km distance from the site. However, an absence of records does not indicate an absence of dormice. The lack of evidence may be due to under recording in the area.

Water Voles

The SBRC (2012) data search returned 7 records of water vole (the closest being 1.3km from the site) with records between 1892 and 2009.



Other species

Vascular plant species

A number of rare and notable vascular plant species were noted within 2km of the site, however, none were in the immediate vicinity of the site (SBRC, 2012).

Invertebrates

The UK Biodiversity Action Plan (BAP) species; Silver-studded blue butterfly (*Plebejus argus*), wall butterfly (*Lasiommata megera*) and the cinnabar moth (*Tyria jaco baeae*), were noted within 2km of the site (the closest being less than 1km from the site).

Hedgehog

The UK Biodiversity Action Plan (BAP) species the hedgehog (*Erinaceus europaeus*) was noted within 1.17km of the site.

Brown hare

The UK Biodiversity Action Plan (BAP) species, brown hare (*Lepus europaeus*) was noted within 1.3km of the site.

3.3 Extended Phase 1 Habitat Survey

The wider area consists of a matrix of many habitat types including short and long semi-improved grassland, species poor hedgerows with associated ground flora, marginal vegetation associated with the ditches and the Lidsey Rife watercourse.

The proposed access track passes mainly through areas of semi-improved grassland, some of which is regularly grazed, and other parts that have developed into rougher grassland.

The track will make use of an existing gateway to enter the site from the south, and will also pass through an existing gateway through a species poor hedgerow approximately a 3rd of the way up the site, between the Rife and adjacent tennis courts.

The Rife itself, comprising running water and marginal reeds along the bank will be crossed. Near to the northern extent of the track, it will cross a dry ditch and species poor hedgerow, prior to the track passing



through an existing hedgeline gap (and across an existing culvert) to join onto the end of the former airfield runway.

Semi-improved Grassland

This was the dominant habitat type throughout the proposed works area. Species present included Yorkshire fog (*Holcus lanatus*), red fescue (*Festuca rubra*), dandelion (*Taraxacum agg.*) and vetch sp. (*Vicia sp.*). The vegetation was commonly in tussocks.

Marginal Vegetation

This was present along the length of Lidsey Rife and was dominated by reeds.

Running Water

The Lidsey Rife was approximately 12m in width throughout the site with steep banks. The current ran south to north, but was controlled by sluices and the water is understood to be partially brackish.

Species-poor intact Hedgerow

Intact hedgerows are present on site, interspersed with mature trees. Dominant species include crack willow (*Salix fragilis*), bramble, hawthorn (*Crataegus monogyna*), ivy (*Hedera helix ssp.*), elder (*Sambucus nigra*) and blackthorn (*Prunus spinosa*).

Wet Ditch

A wet ditch is crossed via an existing culvert, near to the northern extent of the proposed route. This ditch is bordered by dense brambles and reeds.

Dry ditch

A dry ditch is present in the northern part of the proposed route, which was shaded at the time of the survey by the hedgerow and did not support any aquatic vegetation.

Scrub

Dense and patchy bramble scrub are present in the wider area, with occasional patches of scrub adjacent to ditches and hedgerows.



3.4 Great Crested Newts

A number of ditches were identified on site, these were considered to be of low potential to support great crested newts as they were largely linked directly to the Lidsey Rife, and as such accessible to predatory fish. A number of water bodies were identified within a 500m radius of site, considered to hold moderate potential for great crested newts.

Results for the Habitat Suitability Index revealed twenty two ponds in the 'poor' category, two ponds in the 'below average' category and three in the 'average' category.

A suite of aquatic surveys for great crested newts were completed on all accessible waterbodies within 500m of the site, and no great crested newts were recorded, although smooth and palmate newts were found to be present in small numbers at several ponds.

3.5 Reptiles

Reptile presence/likely absence surveys were completed between July and September 2012. Slow worms were recorded during all of the seven survey visits, common lizards were recorded during six of the seven survey visits, while grass snakes were recorded during three of the seven survey visits. Both adult and juvenile slow worms, common lizards and grass snakes were recorded during the reptile presence / likely absence survey indicating a successful breeding population of all of these species. A maximum of 24 adult slow worms were recorded in any one visit. A maximum of 11 adult common lizards were recorded in any one visit and a maximum of 2 adult grass snakes were recorded in any one visit. The latter were found at the south of the site.

3.6 Bats

During the course of the Extended Phase 1 Habitat survey, several mature willow trees (*Salix sp.*) were found to be present in hedgerows in the wider area (although not in proximity to the proposed track route). These contained large cracks offering potential for roosting bats. These were classified as category 2a under the Bat Conservation Trust Guidelines. The proposed access track works are not likely to affect these trees; however the route of the track will bisect a strip of species-poor hedgerows and trees (intact and defunct) to the south-west of the former airfield site.

Grassland, hedgerow and watercourses present in the wider area are considered to be of moderate potential for bats to use for foraging and commuting. During bat activity surveys, up to seven species of bat



were recorded using the habitats across the LEC Airfield Park site. The species recorded include; common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, Myotis (likely whiskered/ Brandt's), Leisler's, noctule and Daubenton's.

Common pipistrelle bats were the most frequently encountered species, as they were recorded on all transects on each survey visit as well as recorded by the automatic bat detector on every evening that bats were recorded. Soprano pipistrelle was the second most frequently recorded bat at the site.

Over the seven bat activity survey visits, the majority of the wider area seemed to support commuting or foraging bats to some extent. Highest levels of bat activity were along the entire length of Lidsey Rife, with greatest densities around the mid section where it runs east/west (to the south of the proposed bridge). Bats were commonly recorded along hedgerow features in both the north and south of the site.

Based on the BCT (2012) assessment criteria, the commuting and foraging bat score for the wider area is 21, therefore bat commuting and foraging activity was deemed to be of up to county level importance during the surveys, with small numbers of bats recorded at any one time. Commuting and foraging bats occurred throughout the area, predominantly along linear features. These were within areas of tussocky grassland, along hedgerow features and aquatic/marginal habitat along Lidsey Rife. The majority of bats recorded were common species including common and soprano pipistrellus. A number of rarer bats were also recorded intermittently, including noctule and Myotis species (whiskered or Brandt's) Daubenton's, Leisler's and Nathusius's pipistrelle.

3.7 Badgers

Anecdotal evidence from dog walkers existed for the presence of badgers using the site. During the walk over of the site, no evidence of badger setts was identified on site or within 30m of the proposed works area.

Evidence confirming badger activity was noted in an isolated area in vegetation to the east of the runway. This was in the form of a dung pit. Several mammal runs were also noted in the wider area. Although it was not possible to conclusively distinguish if these were in fact from a badger or from other mammals seen on site such as deer species, European rabbit, fox, dogs being walked on site or indeed human beings, it is likely that badgers will use such trails.

No other evidence of badger was recorded, either during the badger survey, or during other protected species surveys within the site, and in the wider area. Access to and from the area for badgers is relatively



unrestricted, except for the Rife bordering the east of the northern part of the site and the west of the southern part of the site which is considered to represent a barrier to badger movement, except where bridges are present. The surrounding areas to the east and west are residential, while agricultural land and a well managed golf course are present to the north.

The Lidsey Rife that bisects the site, and associated ditches provide water resources for badgers. The grassland, scrub and hedgerow habitat on site was identified during the extended phase 1 habitat survey to offer potentially suitable badger foraging and commuting habitat. Although no badger setts were identified during the Phase 1 survey, a number of earth banks were noted on site which would offer potentially suitable sett-forming habitat for this species. In addition anecdotal evidence exists for the presence of badgers (Badger Trust West Sussex, pers. comm). On this basis the site is considered to be of moderate potential for badgers. The existing field signs for this species do not however represent a constraint to the proposed access track works.

3.8 Breeding Birds

During the Extended Phase 1 Habitat survey carried out in 2012, it was observed that there was a mosaic of habitats present in the wider area (such as hedgerows, scrub, grassland habitats and marginal vegetation associated with riparian habitats), which offer suitable nesting and foraging habitats for birds. A number of birds were noted during the walk over of the site including sky larks (*Alauda arvensis*), green woodpeckers (*Picus viridis*), large flocks of gull species and many species of passerine birds. The site is considered to be of potentially high value for both breeding and wintering birds.

During the breeding bird survey in 2012, a total of 50 bird species were recorded within the wider area. A summary of the species recorded during the survey is as follows:



Wildlife and Countryside Act (WCA) 1981 (as amended) Schedule 1 Species

On the first three survey occasions, two male Cetti's warblers were recorded singing simultaneously, consistently in two locations in the centre of the site, adjacent to Lidsey Rife, and approximately 150-200m NE of the proposed access maintenance track. The habitat in both areas was dense scrub. As the birds were recorded defending their territories consistently on each visit, this species is considered to be a probable breeder within the site.

NERC Section 41, UK BAP

Twelve species were recorded within the wider area that are listed on both Section 41 of the NERC Act and the UK Biodiversity Action Plan (BAP) (see Section 1.5 of the breeding birds report); bullfinch, cuckoo, dunnock, grey partridge, herring gull, house sparrow, linnet, reed bunting, skylark, song thrush, starling and yellowhammer. Of these species, song thrush and starling are included in the Sussex BAP, along with swift and barn owl. One male bullfinch (BoCC Amber List) was recorded on the fourth survey occasion and, as suitable habitat exists, this species is considered to be a possible breeder within the wider area. A cuckoo (BoCC Red List) was recorded on the third survey occasion crossing the air strip. As dunnocks and reed warblers are a favoured host species for the cuckoo and these were abundant within the site, the cuckoo is considered to be a possible breeder within the wider area.

As male dunnocks were heard defending the same territories consistently on multiple occasions, this species is considered to be a probable breeder in the wider area. A grey partridge (BoCC Red List) was heard on the airstrip within the northern part of the site during a night time barn owl survey on 11th July 2012. As suitable nesting habitat exists on the periphery of the site, this species is considered to be a possible breeder within the wider area.

Herring gulls (BoCC Red List) were recorded very frequently flying over the site, as would be expected in a coastal location. A group of up to 150 herring gulls were recorded on the ground in a playing field to the east of the site on three survey occasions, and on one occasion, seven herring gulls were recorded on the grassland south of the Rife. This species is not considered to have been breeding within the site.

Four groups of house sparrows (BoCC Red List) were recorded. Two of the groups were within scrub vegetation within the site and two were associated with residential properties outside the site. As sparrow colonies were consistently recorded within the site, this species is considered to be a confirmed breeder.



Linnets were noted in groups of up to eight individuals in the northern part of the site on all survey occasions. As suitable nesting habitat (scrub and hedgerow) exists within the site, this species is considered to be a probable breeder within the site.

Reed buntings were recorded abundantly on all survey occasions, including at least two pairs. As suitable breeding habitat is present, particularly along Lidsey Rife, this species is considered to be a probable breeder within the site.

Skylarks were recorded singing in four locations; two within the site and two adjacent to the site. The locations within the site were both in fields in the southern part of the site. Outside the site, skylarks were recorded singing over an arable field to the north-west of the site and over the golf course to the west of the site. A skylark was recorded singing in the northern of the two territories identified within the site on the first three occasions and therefore this species is considered to be a probable breeder within the wider area.

Song thrushes were recorded in three locations within the wider area, each on different occasions. As suitable nesting habitat exists but individuals were not recorded in consistent territories, this species is considered to be a possible breeder within the proposed works area. Starlings were recorded frequently flying over and in groups of up to twenty-five within and adjacent to the site. This species was observed entering a nest in trees and residential buildings adjacent to the west of the site.

A single male yellowhammer was recorded singing in the northern corner of the site on one occasion. As suitable nesting habitat exists within the site, this species is considered to be a possible breeder.

Other notable species

In addition to the above species, a further nine species listed on the BoCC Amber List were recorded during the surveys; black-headed gull, green woodpecker, lesser black-backed gull, little grebe, mallard, mistle thrush, swallow, swift and whitethroat. Twenty black-headed gulls and one lesser black-backed gull were recorded on the final survey occasion only in the playing field adjacent to the east of the site, associated with a flock of one-hundred and twenty herring gulls. As neither species was recorded within the site, these species are considered to be nonbreeding within the site.

Green woodpeckers were recorded frequently within the wider area, including juvenile birds, indicating that this species is a confirmed breeder, although the nests themselves may have been located outside the site,



potentially within the golf course. Little grebes were recorded at various points within the Lidsey Rife on all survey occasions. As a pair was seen within the Rife, this species is considered to be a probable breeder. Mallards were recorded within the Rife on all survey occasions, in pairs, groups of up to 9 and females with young ducklings. It is estimates that four families of mallards were present. This species is a confirmed breeder within the wider area.

A single mistle thrush was recorded within the site on one occasion. As suitable nesting and foraging habitat exists, this species is considered to be a possible breeder.

Swallows were recorded occasionally foraging over the site in groups of up to three. As swallows were seen attacking magpies on a shed in the south of the wider area, this species is considered to be a confirmed breeder in the wider area.

Common and widespread species

A further twenty-seven species were recorded in the wider area that are included on the BoCC Green List of species that are not currently of conservation concern in the UK.

3.9 Wintering Birds

A total of 52 bird species were recorded within and adjacent to the site during the surveys.

Wildlife and Countryside Act (WCA) 1981 (as amended) Schedule 1 Species

During the December survey occasion, a male Cetti's warbler was recorded singing in scrub habitat in the centre of the site, to the east of the southern end of the runway. The scrub habitat is approximately 150-200m NE of the proposed maintenance access track. It is likely that this individual is resident within these scrub habitats in the wider area, as at least two Cetti's warblers were present there during the previous breeding bird surveys. During the January survey, fieldfare were present in relatively high numbers – up to 227 individuals were recorded within the wider area. During the February survey only 2 were recorded and none in the November and December surveys. This migratory species is considered very unlikely to breed within the site but the habitats within and adjacent to the site appear to offer a useful feeding resource for over-wintering birds.

A peregrine falcon was recorded flying over the site from east to west during the December survey. The individual was not observed to stop within the site. As the site does not contain suitable breeding habitat



for this species, the proposed works to the site would not be considered likely to impact this species significantly.

A single redwing was observed within the site during the November survey. This migratory species is considered very unlikely to breed within the site and was not seen in significant numbers.

NERC Section 41, UK BAP

Eleven species were recorded within the site that are listed on both Section 41 of the NERC Act and the UK Biodiversity Action Plan (BAP); bullfinch, dunnock, house sparrow, linnet, reed bunting, skylark, song thrush and starling. Of these species, song thrush and starling are included in the Sussex BAP. The two wading species – curlew (BoCC Amber List) and lapwing (BoCC Red List) – were recorded outside the site boundary to the west, in a partially flooded field. Up to twenty-seven curlew and five lapwing were recorded. These two species were not recorded during the breeding bird surveys but this field (not within the proposed works area) appears to provide a winter feeding resource.

Herring gulls (BoCC Red List) were recorded very frequently flying over the site, as would be expected in a coastal location. A group of one-hundred-and-seventy-five herring gulls was recorded on the ground outside the site boundary to the west, in a partially flooded field and on the same date a group of fifty-five herring gulls was recorded on the ground in the southern-most field within the site boundary. Both fields were partially flooded and this wet habitat provides an ideal feeding habitat for this species during the winter. Starlings were recorded in significantly higher numbers in the winter than in the summer – a group of up to two-hundred birds was recorded in winter on telegraph wires within the wider area, compared to up to twenty-five starlings within the site during summer. This trend is to be expected as higher numbers of starlings reside in the UK during the winter, often forming large flocks near the coast. The wider area as a whole is considered to offer good foraging resources for starlings during the winter. The remaining seven NERC Section 41 and UK BAP species were all recorded within the wider area during the breeding bird surveys as confirmed, probable or possible breeders. Therefore the birds recorded during the winter bird surveys are likely to be resident throughout the year.

Other notable species

In addition to the above species, a further ten species listed on the BoCC Amber List were recorded during the surveys; black-headed gull, common sandpiper, great black-backed gull, green woodpecker, kestrel, lesser black-backed gull, little grebe, mallard, mistle thrush and snipe. Black-headed gulls were recorded in the partially flooded fields in the south of the site and beyond the north-west of the site, in maximum



numbers of approximately five-hundred. Seventeen great black-backed gulls and up to six lesser black-backed gulls were recorded in the partially flooded field to the north-west of the site.

A single little grebe was recorded within the Lidsey Rife on one occasion during the winter surveys. This species was considered to be a probable breeder within this habitat during the summer. A single common sandpiper was recorded in the partially flooded field to the north-west of the site on one occasion. At least one green woodpecker was recorded frequently across the wider area, particularly to the east. During the breeding bird surveys, this species was considered to be a probable breeder off-site.

A single kestrel was seen hunting within across the site on the first three winter survey occasions. The tussocky grassland habitats of the site offer an ideal hunting resource for this species.

Up to twelve mallards were recorded within the Lidsey Rife on one occasion during the winter surveys. This species was previously confirmed as breeding within this habitat during the summer. Up to two mistle thrushes were recorded within the wider area on two winter survey occasions. In January a single snipe was recorded and in February a group of ten snipe was recorded in wet grassland and scrub habitats in the wider area. This species is likely to be under-recorded by the surveys as snipe are inconspicuous and are often only apparent when flushed at close range. This species was not recorded during the breeding bird surveys and is more likely to breed in moorland habitats. However, the wider area offers ideal winter feeding habitats.

Common and widespread Species

The remaining twenty-six species are included on the BoCC Green List of species that are not currently of conservation concern in the UK. The exception is pheasant, which is not classified as it is an introduced species. None of the remaining species were recorded in notably high numbers in the wider area.

3.10 Aquatic Invertebrates

During the surveys any invertebrates that could be readily identified were noted along with family groups for other invertebrates. The invertebrates collected during the surveys were sub-sequentially identified. The survey results indicate that the stream has BMWP scores ranging from 2 through to 31, indicating water quality ranging from very poor to moderate. These BMWP scores suggest that the water bodies sampled may have been polluted in the past and are now recovering. The ASPT scores range from 2.0 to 4.4 indicating that there are a greater number of the lower scoring invertebrates which are more tolerant to pollution.



The Lidsey Rife itself however was not sampled during this survey.

It is therefore considered that the site is not of significant importance for aquatic invertebrates. However, the stream does form an integral part of the mosaic of habitats within the site.

3.11 Otter

The otter survey followed that of the National Otter Survey by JNCC (2008) and Chanin (2003) and was carried out on 21st August 2012. The general survey methodology for locating presence of otter requires the surveyor to walk over a given area usually along a 600m stretch of watercourse searching for signs indicating the presence of the animal. It is usual to conduct the search within the immediate river channel and up to 10m strip of the adjacent riparian habitat. For the purpose of the study the entire length of the Lidsey Rife and associated drainage ditches on site were surveyed for otter signs.

The presence of the Lidsey Rife and its associated vegetation and bridges on site create potential habitat suitable for otters to utilise, and the site is considered to be of moderate potential to support otters. Surveys did not record any field signs of this species on the site. The available habitats are sub-optimal for this species and unlikely to support breeding, although the Rife is likely to be used as a foraging resource and as a transit corridor between other areas of more suitable habitat by this species.

3.12 Barn Owl

The marginal vegetation associated with the waterways, hedgerows and expansive grassland areas was identified during the extended phase 1 habitat survey to provide good foraging habitats for barn owl. During the walk over a barn owl was noted to be hunting within the boundary of the airfield site.

This confirms the presence of barn owl in the wider area and that the site is of high potential for this species. Information gained indicates that barn owls forage occasionally within the site, although no nesting places were confirmed during the inspections of potentially suitable buildings and trees on site and in the wider area.

Large quantities of barn owl pellets were identified at Sack Barn (approximately 0.7 km north of the site), both old and new, indicating ongoing presence of barn owls in the area, roosting at the Barn. SBRC returned five historic records of barn owls within 2km from the site in a north easterly, easterly and south westerly direction, confirming that barn owls are present in the wider area.



No evidence of nesting barn owls was found either on site or within 250m of the proposed maintenance access track.

3.13 Water Vole

The length of the Lidsey Rife surveyed showed positive signs of water vole in the form of feeding stations. Three individuals were also noted cleaning themselves during the survey. Numbers of burrows and latrines were noted along the water's edge. As recorded during the extended phase 1 habitat survey, the Phragmites-dominated marginal habitat along the waterways on the site create ideal conditions for water voles. During the Extended Phase 1 Survey water vole evidence (such as feeding stations) were noted in waterways adjoining Lidsey Rife. Additionally, a number of individual water voles were observed using the Rife during the walk over. This confirms the presence of water vole on site. The following summarises the field signs found on the Rife itself during the surveys.

3.14 Terrestrial Invertebrates

The terrestrial invertebrates recorded on the Airfield site during the surveys are considered unlikely to present a direct constraint to the proposed access track works. Hence, they will not be considered further in this section.

3.15 Invasive Species

No invasive species were identified on or near the boundaries of the proposed works area. Japanese knotweed and parrots feather were noted on a neighbouring site and within an adjoining waterbody. These species are not likely to constitute a constraint to the proposed works, either directly or indirectly.



4.0 Evaluation and Recommendations

4.1 Statutory and Non-statutory Sites

Felpham SSSI is the closest statutory site and lies approximately 0.6km south and south west of the proposed works area. It is of great geological interest, containing new Palaeocene aged flora, one of only three known in the country, has recently been discovered in the Reading Beds at this site. Bersted LNR is a statutory site that lies 0.8km from the site. It is designated for its mosaic of areas of meadow, narrow reedbeds and ditches, a permanent pond and a temporary pond, and an extensive newly planted floodplain woodland. The Brooks floods every winter, making it important for wetland wildlife. No direct impacts on these two designated sites are anticipated from any proposed development on the LEC Airfield Site. There is also a conservation area to the northeast of the site, which it is understood is being managed and enhanced for local wildlife.

4.2 Extended Phase 1 Habitat Survey

The results of the habitat survey elements of the phase 1 are summarised in section 4. The wider area consists of a matrix of many habitat types including short and long semi-improved grassland, species poor hedgerows with associated ground flora, marginal vegetation associated with the ditches and the Lidsey Rife watercourse. The extended phase 1 habitat survey also considered the site in regard to its potential to support vascular plant species.

No protected habitats or notable plant species will be adversely affected by the proposed access track works, and consequently will not present a direct constraint to the proposed works. However, there will be some loss of existing habitats within the development site, notably areas of semi-improved grassland.

The track will make use of an existing gateway to enter the site from the south, and will also pass through an existing gateway approximately a 3rd of the way up the site, between the Rife and some adjacent tennis courts. The Rife itself will be crossed as outlined above, and then, finally, a dry ditch and hedgeline will be crossed, prior to the track passing through an existing hedgeline gap (and across an existing culvert) to join onto the end of the former airfield runway.

The loss of a small section of species poor hedgerow is considered to be insignificant, and the dry ditch did not support any notable vegetation.



Should a great crested newt be discovered it is likely that works will be delayed, but it is imperative these procedures are followed immediately to avoid an offence occurring under the Wildlife and Countryside Act 1981 (as amended) and/or the Conservation of Habitats and Species (Amended) Regulations (2012). If construction works do not commence within two years of this report, it is recommended that the water bodies be reassessed for GCN to ensure information remains up to date.

4.4 Reptiles

All species of native reptiles are protected by law, including the *Wildlife and Countryside Act 1981* (as amended) which makes it illegal to intentionally, or recklessly, kill or injure these animals.

Slow worms, common lizards and grass snakes have been found in the wider area, and measures are proposed to ensure that they are not killed or injured during works to create the access track.

Works should be avoided overwinter, as reptiles will be hibernating.

Given the small size of the proposed works area, it is recommended that where the proposed route crosses areas known to support reptiles (to the north of the Lidsey Rife), reptiles are dissuaded from the works area through strimming or cutting (by a large wheeled vehicle with a flail cutter driving slowly over the site).

These displacement works can only take place during the reptiles active season (March to October; although please note restrictions with regards to breeding birds, in next section), under the supervision of an ecological clerk of works. The first cut should be to 15cm, with a second cut a week or two later down to 8cm. Both cuts should take place under an ecological clerk of works.

The presence of the gravel track is not considered to represent a barrier to reptile connectivity across the site, and may even enhance basking opportunities for these species by creating open spaces within the grassland.

4.5 Bats

All species of British bats and their roosts are fully protected under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended). Additional protection is offered under Schedule 2 of the *Conservation of Habitats and Species Regulations 2010* which defines "European protected species of animals", Under currently accepted interpretations of these two items of legislation, as outlined in the Bat Workers' Manual (2004), a bat roost is 'any structure or place which any wild animal ... uses for shelter or protection.'

Paragraph 14 of Planning Policy Statement 9: Biodiversity and Geological Conservation (2005) states that 'Development proposals provide many opportunities for building-in beneficial biodiversity or geological



features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate.’ Therefore, where developments requiring planning permission may affect protected species, such as foraging or commuting bats, it is preferable that an appropriate mitigation strategy is produced to ensure bats are protected from the adverse effects of development and options to negate the impact should be considered.

Bats are known to use the Rife to commute and forage. The proposed bridge across the Rife will still allow bat passage below and above the bridge, and is not considered to represent a barrier to bat movement. There will be no new lighting associated with the access track.

A hedge (with an existing gateway) will be crossed near to the tennis courts in the southern part of the track. The presence of a gravel track within this gap is considered extremely unlikely to have any impact on foraging and commuting bat behaviour or connectivity to the wider environment.

A small section of species-poor hedgerow will be removed towards the northern extent of the route. This is not required likely to significantly impact bat behaviour within the wider area, particularly as the Rife itself was the main commuting route through the wider area. However, we would recommend that canopy connectivity is retained as far as possible across this gap, through allowing the trees to either side of the gap to grow tall, and meet above the track.

4.6 Badgers

Badgers and their setts are protected under the Protection of Badgers Act 1991 (see Appendix D) which makes it illegal for any person to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a badger’s sett, or to disturb animals whilst within a sett. In addition, the likelihood of disturbing a badger sett, or adversely affecting badgers’ foraging territory or links between them, or significantly increasing the likelihood of road casualties amongst badger populations, are capable of being material considerations in planning decisions.

No badger setts were recorded on or around the works area or wider area, however evidence that badgers are using the site was recorded in the form of dung pits. Considering the highly mobile nature of badgers and the seasonality of their activity it is recommended that an update survey is carried out prior to a known development date to update the information collected in this survey, and to ensure that no badger setts will be impacted by the proposed access track.



During the construction phase, consideration should be given to the placement of any topsoil storage, or piles of materials that may create mounds suitable for sett creation. We would advise that any such piles are placed on hard standing, such as the existing runway, and are checked on a daily basis by construction staff to ensure that no badger activity has taken place.

It is recommended that night working is kept to a minimum whenever possible to avoid disturbance to badgers, any works within 30m of a sett should cease at least two hours before sunset.

4.7 Breeding Birds

Bird records were abundant throughout the wider area and the diversity of species recorded (fifty species) reflects the range of habitats present. Bird records were at the highest density along the Rife and in areas of dense scrub, although species such as skylark, starling and swallow were found in open areas.

The Rife was confirmed as supporting breeding little grebe, mallard, coot, reed warbler (particularly abundant) and sedge warbler, with moorhen, reed bunting and mute swan also potentially breeding. There are also historic records of kingfisher and snipe within the Rife and the habitat present is considered to offer suitable feeding habitat for both species, with some potential for breeding (although less likely for snipe). This habitat provides an ecological corridor across the site and links the site to other valuable habitats within the landscape. This habitat is also likely to be important to other flora and fauna, as assessed in the 2012 surveys.

Habitats in the wider area include various areas of dense scrub and hedgerow in which a high diversity of bird species were recorded, including confirmed breeding blue tit, goldfinch, magpie and robin, with probable breeding Cetti's warbler, blackbird, chiffchaff, dunnoek, great tit, greenfinch, lesser whitethroat, linnet, whitethroat and wren.

The majority of the proposed works area comprises fairly open areas of vegetation; short semi-improved grassland in the south of the site and tall unmanaged semi-improved grassland with scattered scrub in the north. Within the short grassland areas, bird records were fairly sparse, although skylark were recorded, as well as groups of starlings and feeding swallows.

The unmanaged grassland in the north of the site was considered to offer valuable foraging habitat to the following notable species, all of which have been recorded within the site or nearby, either during the breeding bird surveys or historically: barn owl, short eared owl, curlew, snipe and green woodpecker.

All wild birds in the UK are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or



destroy the nest (whilst being built or in use) or its eggs. To avoid an offence being committed, it is recommended that any removal of vegetation should ideally be undertaken outside the bird nesting season which runs from March to September inclusive.

However, this overlaps with the reptile hibernation season, when works are NOT recommended for this site. Therefore, ideally site clearance would take place in September to avoid both nesting birds and hibernating reptiles. If this is not possible, and vegetation removal is required within the bird nesting season, it is recommended that it is inspected for nests by a suitably experienced ecologist beforehand. Should active nests be found, they must be left in situ with at least a 5 m buffer of intact vegetation (dependent on species and nest location) until all the young have fledged and cease to return to the nest.

4.7.1 Wildlife and Countryside (WCA) Act 1981 (as amended) Schedule 1 Species

During surveys, Cetti's warblers were recorded defending territories in the wider area of dense scrub in the middle of the site and are considered likely to breed in the local area. The data search also returned eight records of this species in the wider area adjacent to the Rife habitat. This species nests in tall dense vegetation and reeds, often near water.

As this species is listed on Schedule 1 of the WCA, it is an offence to disturb it whilst it is nesting. Therefore, as above, it is recommended that any construction within 10 m of dense scrub habitat is commenced outside the nesting season. If this is not possible, then any patches of scrub within 10m of the proposed works area should be carefully checked, to ensure no active cetti's warbler nests are present, which could be disturbed by the proposed works. In the event that active cetti's nests were found, then works within 10m of the nest should cease and be delayed until all the young have fledged.

The unmanaged grassland at the northern end of the proposed track has been identified as suitable foraging habitat for barn owls, and a barn owl was seen on two occasions within this area, as well as historically in areas to the north and east of the site. The construction and use of a gravel track is not considered likely to impact barn owl behaviour.

There are ten historic records of kingfisher relating to the Rife. Kingfisher was not recorded during the surveys, but this species is quiet and elusive, so likely to be under-recorded. The Rife habitat is considered to provide optimal foraging habitat for this species and moderate breeding habitat (kingfishers prefer sandy banks where tunnels can be built). Kingfishers nest in underground tunnels and are particularly susceptible to vibrations in the ground. As this species is listed on Schedule 1 of the WCA, it is an offence to disturb it whilst it is nesting. Kingfishers may nest later in the year than other species, particularly when nesting has been unsuccessful earlier in the year. Kingfishers may nest into October in some years. To prevent



disturbance of nesting kingfishers, it is recommended that a check is made of the Rife banks prior to works commencing to confirm the absence of any active kingfisher holes.

4.7.2 NERC Section 41 and BAP Bird Species

Bullfinch, dunnock, reed bunting, skylark, starlings, house sparrow, linnet, song thrush and yellowhammer were all recorded during the surveys and are all likely to breed within the wider area. Additionally, historic records of tree sparrow (BoCC Red List UK BAP, NERC S41) and corn bunting (BoCC Red List UK BAP, NERC S41) exist close to the site. To avoid disturbance to all these species, it is recommended that any vegetation clearance takes place in September, or is preceded by a ecologist completing a nesting bird check.

4.8 Aquatic Invertebrates

The following best practise measures should be adhered to during the crossing of the stream to the north of the site (making use of the existing culvert) to minimise the risk to local biodiversity. The same precautionary measures should be applied while constructing the bridge over the Rife.

- No construction is allowed with 5m of the stream so as to minimise the potential for any pollutant entering the stream, other than in the area of the culvert.
- Spill kits are available and used immediately should a pollution incident occur.
- During works any siltation to the stream is kept to an absolute minimum.
- Following construction the Rife banks should be returned to their original height and shape (profile) and allowed to re-vegetate naturally from the surrounding area.
- Best management practices such as temporary sediment traps, silt fences and diversion trenches are all means to reduce runoff pollution and sedimentation.

4.9 Otter & Water Vole

The *Wildlife and Countryside Act 1981* (as amended) protects burrows occupied by water voles from damage or disturbance. Changes implemented by the Department for Environment, Food and Rural Affairs (DEFRA) in April 2008 have extended this protection to individual animals in addition to their places of rest or shelter.



The otter and its breeding and resting places are protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation of Habitats and Species Regulations 2010*. The European sub-species is listed as globally threatened on the IUCN/WCMC RDL.

To ensure suitable habitat is retained along the Rife for otters and water vole, it is recommended that undisturbed vegetation is retained along the banksides of the Rife and beneath the footbridge.

Prior to bridge construction, an update survey for otter and water vole evidence is recommended to inform mitigation measures and any licensing requirements. If water vole are found to be using the banks within the proposed works area, recommendations will be made to dissuade water voles from using the development footprint. If this is not possible, or is unsuccessful, then a licence may be required from Natural England to translocate the water voles away from the works area, into an enhanced receptor area elsewhere on the site.

4.10 Dormouse

All nest tube boxes were checked from July to October 2012 and then May 2013. This gave a score of 20 'survey points'. Although potentially suitable habitat for dormice was identified during the Extended Phase 1 Habitat Survey of the site, no dormice were found during the nest tube survey. Several wood mice, and wood mice nest and food stores were found during the surveys.

The survey work did not identify any evidence of hazel dormice at the survey site between July and October 2012 and May 2013. Therefore, it is considered that hazel dormice are likely to be absent from the survey site.

4.11 Terrestrial Invertebrates

Some scarce and threatened invertebrates have been recorded associated with the grassland at the northern extent of the proposed access maintenance track. However, given the localised nature of the proposed works, no significant impacts are envisaged to these populations, and it is possible that the gravel track will enhance the habitat for certain invertebrate species, by forming an edge habitat within the grassland.

4.12 Invasive Species

No invasive species were reported on site during the survey, although Japanese knotweed was noted on land adjacent to the site. In addition Parrots feather was noted in a water-course adjoining Lidsey Rife,



- » Any potential siltation can be significantly minimised by the implementation of a buffer zone of approximately 5m either side of the stream, with storage of all materials taking place outside this buffer zone.
- » When constructing the crossing points material removed should also be stored outside this buffer zone thus minimising the potential for any material to re-enter the water body.
- » Any potential pollutant should be contained and dealt with as quickly as possible and appropriately for the pollutant type following an Emergency Response Procedure.
- » Following the construction of the bridge, it is recommended that the banks be reinstated to the same height and profile as prior to works, and allowed to vegetate naturally from the surrounding area (unless the banks are deemed to be unstable and subject to erosion in which case additional measures such as hydro-seeding with an appropriate native seed mix may be more appropriate to encourage a faster growth in vegetation that will reduce silt water pollution). This will help to maintain the stream in as natural a condition as possible.



5.0 Conclusions

In conclusion, species which are likely to constitute a direct constraint to the proposed access maintenance track and bridge works are nesting birds, water voles, reptiles and bats; which will require mitigation measures to be applied in order to safeguard their populations on site. The other species surveyed may constitute indirect constraints to the proposed works (such as otter), however since these species have not been recorded on site, best practice methods and general mitigation measures to safeguard water quality are considered to be adequate to safeguard these species.

- Update badger survey prior to works.
- Update survey to within 50m of proposed bridge to ensure no active water vole or kingfisher holes.
- Works should be avoided overwinter, as reptiles will be hibernating. Within the reptile's active season (March to October, although note constraints due to nesting birds, discussed below), the route should be strimmed or cut (by a large wheeled vehicle with a flail cutter driving slowly over the site), under the supervision of a suitably qualified ecologist to dissuade reptiles from the works area. The first cut should be to 15cm, with a second cut a week or two later down to 8cm. Both cuts should take place under an ecological clerk of works.
- Site clearance works should avoid the breeding bird season if possible (usually considered to be March to September). However, as it is necessary to complete works while reptiles are not in hibernation. Ideally works would take place either in late September or in October. If this is not possible, and works are to take place between March and early September, then the following recommendations are made:
 - If the clearance works must take place between March and August, a through check for nesting birds should be made by an ecologist prior to works commencing to confirm no active nests will be disturbed.
 - Keep a 10m buffer from patches of scrub that may support Cetti's warbler. Or, if this is not possible, all scrub within 10m of the proposed works area should be checked by an ecologist to confirm the absence of active Cetti's nests.
 - Bank side vegetation should be retained beneath the bridge to retain connectivity along the Rife, or allowed to regenerate naturally beneath the bridge.



- Canopy connectivity should be retained where possible during the crossing of the species poor hedgerow. In the future, trees to either side of the track in this location should be allowed to grow tall to retain connectivity.
- Recommendations are made to ensure badgers are not disturbed by the construction phase, and to ensure that best practice is followed with regards to avoiding the potential for sediment entering the Rife.



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Appendices

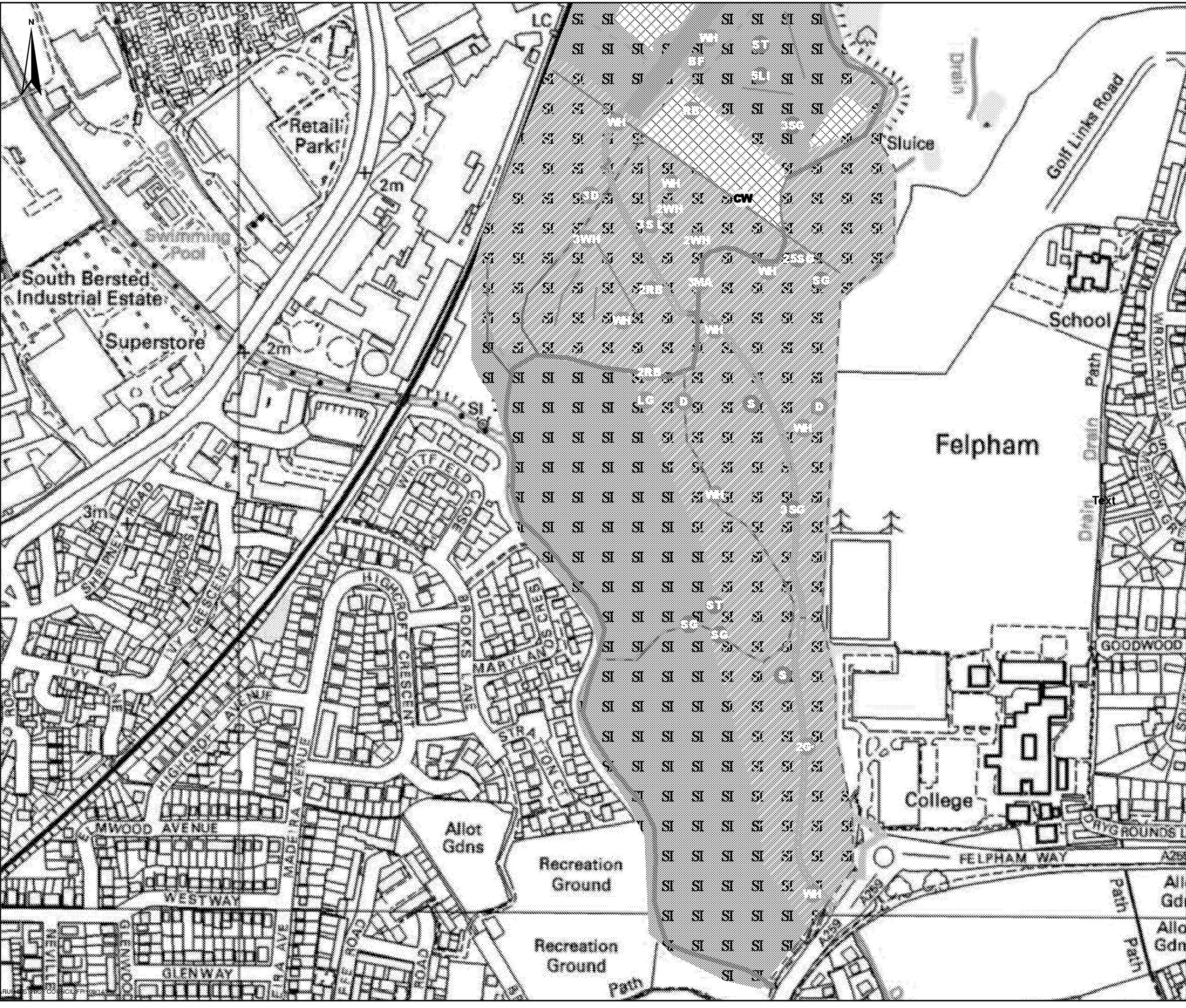


Appendix 1 Site Plan and Access Track Location



Appendix 2 – Extended Phase 1 Habitat Map (including species results where appropriate)





Key

- BOCC Red list
- BOCC Amber list
- CW** WCA schedule 1 species
- Species-poor defunct hedge
- Species-poor intact hedge
- Mammal paths
- Access road
- Dry ditch
- Wet ditch
- Runway
- Dense scrub particularly valuable for Cetti's warbler
- Lidsey Rife
- Reptile habitat
- Semi-improved neutral grassland

BF- Bullfinch

CW- Cetti's Warbler

D.- Dunnock

G.- Green Woodpecker

LG- Little Grebe

Li- Linnet

RB- Reed Bunting

S.- Skylark

SG- Starling

SL- Swallow

ST- Song Thrush

WH- White Throat

0

25

50

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150 m

Drawing title: Access road constraints map			
Project: A076230-4 Airfield Park Winter Birds			
Client: Sime Darby (London) Ltd.			
Scale (A3): 1:3,510	Created by: ESH June 2014	Reviewed by:	Verified by:
Office: 4094	Drawing number: PLAN ##		Revision: Rev.--
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