

# **Southend Airport and Environs JAAP Study - Update**

**November 2009**

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### Notice

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# 1. Introduction

## 1.1 Background

Atkins Limited was commissioned in October 2009 by Rochford District Council and Southend-on-Sea Borough Council to update an ecological appraisal of London Southend Airport and the surrounding area. This appraisal provides information on baseline ecological conditions, evaluates the habitats, identifies any key ecological constraints, outlines opportunities for enhancement, provides an outline of potential mitigation measures and gives recommendations for further survey.

This report updates the ecology chapter in the London Southend Airport JAAP Evidence Report, produced by Halcrow Group Ltd in 2008. Halcrow Group Ltd carried out an ecological study of the London Southend Airport and surrounding land including a desk based study and a walkover survey in 2007. The key findings from The Halcrow Report are outlined in brief below:

- The site was split into four sections, north western, north eastern, central and southern, each section was assigned a value.
- The north western section includes hedgerows with potential designations under the Hedgerow Regulations. This section was assigned county value for its ecology. Four badger setts were also noted to be along the western boundary.
- The north eastern section was assigned district value for its ecology with a pipistrelle roost recorded on the golf course, potential for great crested newts in the ponds and water voles in the brooks.
- The central section was assigned local value for its ecology. The grasslands within the airport boundary were assessed using the Rochford District Wildlife Sites Review but failed to meet the criteria given.
- The southern section has hedgerows featuring in the Southend-on-Sea Local Biodiversity Action Plan (LBAP) and was assigned local/district level for its ecology.
- The constraints and opportunities specified within the Halcrow report include potential disturbance to internationally important estuary waterfowl populations, the need to integrate the hedgerows and ponds in the northern section into any future development and the need to carry out further survey for protected species.

The following report updates the above information and identifies any further constraints to potential development within the site boundary. Any information relating to badgers is detailed in the separate confidential badger report.

This report details the habitats and presence of or potential for protected species within the study area. The study area straddles the administrative boundaries between Rochford District Council and Southend-on-Sea Borough Council and lies within the Thames Gateway area. It essentially comprises of:

- London Southend Airport;
- The adjoining Aviation Way employment area;
- Open countryside, redundant brickworks and recreational facilities to the north;
- Residential premises and farm land to the south. The farmland is located within the Airport Runway Safeguarding Area.

## 1.2 Regulatory, Planning and Policy Context

### National Policy, Guidance and Legislation

The following legislation must be taken into account with regard to species and habitats mentioned in the report:

- The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended);
- Wildlife and Countryside Act 1981 (as amended);
- Natural Environment and Rural Communities Act 2006;
- The Countryside and Rights of Way Act 2000.

Planning Policy Statement 9<sup>1</sup> (PPS9) – Biodiversity and Geological Conservation – sets out planning policies on the protection of biodiversity and geological conservation through the planning system. These policies complement, but do not replace or override, other national planning policies and should be read in conjunction with other relevant statements of national planning policy.

The baseline surveys follow the nationally recognised Guidelines for Baseline Ecological Assessment<sup>2</sup>. The UK Biodiversity Action Plan (UK BAP) was also reviewed. Legislation relevant to each species detailed in the report can be found in Appendix 1.

### Regional Policy and Guidance and Legislation

The existing Regional Spatial Strategy (RSS) formerly Regional Planning Guidance (RPG) for the East of England was published in May 2008. The plan identifies the role that development plans have in protecting the countryside and in promoting biodiversity. It also establishes principals that the planning policies should take account of, for example the impact of development on landscape quality and the need to improve the built and natural environment in and around urban areas and rural settlements. With relevance to ecology Policy ENV 5: Woodlands, states the following:

*‘..planning authorities and other agencies should seek to achieve an increase in woodland cover by protecting and achieving better management of existing woodland and promoting new planting where consistent with landscape character. Ancient semi-natural woodland and other woodlands of acknowledged national or regional importance should be identified in Local Development Documents with a strong presumption against development that would result in their loss or deterioration. Aged or veteran trees should be conserved. The nature conservation and recreation value of woodland is recognised, and conversion to other land uses should be resisted unless there are overriding public and ecological benefits. Woodland unavoidably lost to development should be replaced with new woodland of at least equivalent area and composition, preferably in the same landscape unit.’*

<sup>1</sup> Planning Policy Statement 9: Biodiversity and Geological Conservation (ODPM, 2005).

<sup>2</sup> Environmental Impact Assessment (1995) *Guidelines for Baseline ecological assessment*  
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#### Local Policy and Guidance and Legislation

The Southend-on-Sea Borough Local Plan adopted in March 1994 includes the following policies relevant to the ecological assessment:

- G3 Landscape protection and improvements;
- G5 Special Landscape areas;
- C4 Conservation areas;
- C14 Trees, Planted areas and landscaping;
- U2 Pollution control.

The Rochford District Council Replacement Local Plan, adopted in June 2006 includes the following policies relevant to the ecological assessment:

- CS1 Sustainable development;
- CS2 Protecting and enhancing the built and natural environment;
- BC1 Conservation areas;
- NR1 Special Landscape areas;
- NR7 Local Nature Reserves and Wildlife Sites;
- NR8 Other landscape features of importance for nature conservation;
- NR13 Creation of intertidal habitats.

The Southend-on-Sea Local Biodiversity Action Plan (LBAP) contains information regarding Habitat Action Plans (HAPs) that have been produced for broad habitat categories including ancient and veteran trees, arable land and field margins and Species Action Plans (SAPs) for a range of species including bats, dormice and water vole.

## 2. Methodology

A desk study and initial walkover survey of the site and its immediate surrounds (up to 50 m), where accessible, were undertaken in October 2009 to update the previous report produced by Halcrow in 2007. The methodology is outlined below.

### 2.1 Desk study

The MAGIC (Multi Agency Geographical Information for the Countryside) website ([www.magic.gov.uk](http://www.magic.gov.uk)) was used to identify all statutory designated sites of importance for nature conservation within 2 km of the site boundary. A 2 km area of search was considered appropriate for this due to the close proximity of watercourses and the potential for impacts on any statutory designated sites downstream from the site. Ordnance Survey maps were used to identify the presence of any ponds within 500 m of the application boundary to establish if the site is suitable for use by great crested newt. Great crested newts can use suitable terrestrial habitat up to 500 m from a breeding pond, with suitable habitats within 250 m of a pond likely to be used most frequently (*Great crested newt mitigation guidelines*, English Nature, 2001).

A request was sent to The Essex Wildlife Trust in October 2009 for information regarding all protected species records within 1 km of the site boundary. In addition to these, records were requested for any non-statutory sites within 2 km of the site boundary.

### 2.2 Field Survey

An initial walk-over of the site was undertaken by two Atkins ecologists on the 15<sup>th</sup>, 16<sup>th</sup> and 28<sup>th</sup> October 2009, broadly following the 'Extended Phase 1' methodology as set out in *Guidelines for Baseline Ecological Assessment* (Institute of Environmental Assessment 1995). The extended Phase 1 habitat survey provides information on the habitats in and immediately surrounding the survey area, where accessible, and appraises the intrinsic value of the habitats and their ability to support notable fauna. Plant names follow *New Flora of the British Isles* (2nd edition, Stace 1997).

The survey area included land within the site boundary shown on Plan 1, Appendix 2.

The survey aimed to detect the presence of legally protected species including:

- a search for signs of badgers, including badger setts, footprints, worn pathways, latrines, feeding signs, hairs on fences etc within the application area and 50 m outside the boundary where accessible;
- a visual inspection of trees and buildings (external inspection only) on site for potential for bat roosts;
- assessment of suitable habitats for nesting birds;
- an assessment of terrestrial and aquatic habitat suitability for amphibians, particularly great crested newts
- assessment of suitable habitat for otters, water voles and white-clawed crayfish in watercourses and water bodies;
- assessment of the site for its potential to be used by reptiles;
- assessment of suitable habitats for dormice and;
- A search for evidence of the presence of invasive plants (Japanese knotweed and giant hogweed) listed on Schedule 9 of the Wildlife & Countryside Act 1981 and subject to strict legal control.

## 2.3 Limitations to Survey

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological survey of this site has not therefore produced a complete list of plants and animals and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future. Some areas within the site were inaccessible due to access restrictions; these areas are clearly marked on Plan 1 found in Appendix 2 of this report and include the housing and ponds P4 and P5. Where possible these areas were surveyed from the adjacent land and although land use was noted, no survey was possible to check for the presence of protected species. The Essex Wildlife Trust does not hold data for birds, bats, otters, invertebrates in this area. This is not considered to be a constraint at this stage. Nevertheless, the results of this ecological survey have allowed an evaluation of the nature conservation value of the site, it's likely use by legally protected species, the identification of issues for consideration within any subsequent EclA and the requirement for potential mitigation and further survey work.

## 2.4 Nature Conservation Evaluation

The nature conservation value or potential value of an ecological feature is determined within a defined geographic context:

- International importance (e.g. Special Areas of Conservation, Special Protection Areas, Ramsar sites);
- National importance (e.g. Sites of Special Scientific Interest);
- Regional importance (e.g. EA regional biodiversity indicators, important features in NE Natural Areas);
- County importance (e.g. Local Nature Reserves, Sites of Importance for Nature Conservation);
- Local (parish) importance (e.g. significant ecological features such as old hedges, woodlands, ponds);
- Important within the site and immediate environs e.g. habitat mosaic of grassland and scrub (i.e. within the zone of influence only);
- Negligible importance would usually be applied to areas such as built development or areas of intensive agricultural land.

It should be noted that it is usual to consider habitats and species together when ascribing a value to a feature using this geographic context. However, there are circumstances where an ecologist may feel it necessary to assign a value to a particularly valuable species. In assigning value to species it is necessary to consider the species distribution and status including a consideration of trends based on available historical records and to make use of any relevant published evaluation criteria. For instance, the presence of a significant population of European protected species such as bats and great crested newts may be worth separate consideration.



## 3. Baseline Conditions

### 3.1 Designated Sites

The desk study provided information on three statutory sites within 2 km of the site boundary. These are detailed in Table 3.1 below.

Table 3.1 - Statutory designated sites within 2 km of the site boundary

Site name and grid reference (if available)	Designation	Description (size/habitats present) (if applicable)	Distance (approximate) and direction from site boundary
Essex Estuaries	Special Area of Conservation (SAC)	46,140 ha including lagoons, sea inlets, mud flats, tidal rivers, salt marshes, salt pastures and salt steppes as well as improved grassland.	Approximately 450 m east
Crouch and Roach estuaries	Ramsar, Special Protection Area (SPA), Sites of Special Scientific Interest (SSSI), and Important Bird Area.	These estuaries are narrow compared to others in Britain with significant numbers of birds and invertebrates. Bird species include the migratory species Dark-bellied Brent Goose.	Approximately 1350 m east
Magnolia Fields	Local Nature Reserve (LNR)	A former brickwork site now with wildlife areas including ponds and trees	Approximately 1650 m north

The desk study records received from The Essex Wildlife Trust provided information on seven non-statutory sites within 2 km of the site boundary. These are detailed in table 3.2 below.

**Table 3.2 Non-statutory designated sites within 2 km of the proposed site boundary**

Site name and grid reference (if available)	Designation	Description (size, habitats present) (if applicable)	Distance and direction from site boundary
River Roach at Rochford TQ 883 903	Local Wildlife Site (LWS)	8.1 ha of costal and brownfield habitat supporting a diverse range of plan and invertebrate species. Fields to the north are divided by drainage ditches, one is an old landfill site and the others are overgrazed semi improved grassland.	Approximately 350 m east
Sutton Ford Bridge Pasture TQ882 895	LWS	2 ha of remnant grazing marsh and associated sea wall, with a very rich flora due to its lack of improvement. Locally and Nationally rare invertebrates have been found here as well as common lizards.	Approximately 490 m east.
Doggetts Pond TQ 878 915	LWS	7 ha of former gravel pits, now a large pond and associated beds of rush and reeds. Water vole and great crested newts have been recorded here as well as nationally scarce invertebrates.	Approximately 710 m north east
Potash Wood TQ 849 909	LWS and ancient and semi-natural woodland	13.8 ha of ancient and semi-natural woodland, dominant species including hornbeam, ash and oak.	Approximately 900 m north west
Cottons TQ 848 902	LWS	1 ha of lowland mixed deciduous woodland with species including hornbeam, oak and field maple and a ground layer including goldilocks buttercup, wood anemone and bluebell.	Approximately 1 km west

Primrose Wood TQ 846 904	LWS	1.3 ha of lowland mixed deciduous woodland includes species such as sweet chestnut and hornbeam with a ground flora including bluebell and wood millet.	Approximately 1170 m north west
The Scrubs TQ 841 902	Ancient and semi natural woodland	Not available	Approximately 1500 m west
Gustedhall Wood TQ 840 907	Ancient and semi natural woodland	Not available	Approximately 1600 m west
Oak Park Wood TQ 835 884	LWS	3.7 ha of ancient and semi natural woodland (bisected by the A127) the northern section is well used and very shaded with a limited ground flora and a dense canopy, the southern section has a more open canopy and being used less has a broader range of ground flora.	Approximately 1730 m west
No Name	Ancient and semi natural woodland	Not available	Approximately 1800 m west

Species records obtained from The Essex Wildlife Trust are incorporated into the survey results below to give an overall picture of the activity and potential activity of protected species within or near the site.

### 3.2 Site description

For the purpose of this site description the site has been split into four sections (as per the Halcrow Report, 2008). These sections are clearly marked on Plan 1, Appendix 2.

#### North Eastern Section

This section of the site is dominated by the Rochford Golf Course which covers approximately 40 ha and consists of mown amenity grassland, mature trees, small blocks of mixed woodland and three brooks; Rayleigh Brook and Eastwood Brook which join to create Hawkwell Brook. Hawkwell Brook then enters a large fishing lake (Rochford Reservoir Lake) to the east of the railway.

A row of detached residential properties lie along the northern boundary of the site all with large rear gardens to the south, backing onto the golf course.

The railway runs close to the eastern boundary of the site. The railway is set on a small embankment approximately 1 m in height and is bordered by the golf course to the west and grazed fields to the east. Between the railway and Rochford Road (which borders the site) are grazed pasture fields and some residential and commercial properties.

This north eastern section has two small blocks of young broadleaf plantation woodland, species poor hedgerows and areas of scrub.

#### North Western Section

This section is bordered by roads to the north and west. In the north western corner species poor hedgerows separate the road from amenity grassland (football pitches). These are bordered to the east by species rich hedgerows with frequent mature trees. Beyond these hedgerows are semi improved neutral grassland and arable fields. The Roach Valley Way runs through this section along with Rayleigh Brook. A disused brickworks site is situated just off Cherry Orchard Way (western boundary) with bare ground, brick piles, tall ruderal<sup>3</sup> and scrub species surrounded by grazed fields.

Some residential properties are situated to the south of the brickworks site. An industrial estate lies to the south of this section, bordering with the airport land.

#### Central Section

The central section consists mainly of the airport land. The land is dominated by semi improved neutral grassland with scattered scrub and hedgerows bordering the airport land to the north and west. The railway lies to the east along with buildings associated with the flying schools. To the south are the buildings and hardstanding associated with the Airport. The run way cuts through the centre of the grassland area and extends the entire length of the central section.

#### Southern Section

The southern section is predominantly poor semi improved grassland, arable and amenity land separated by species poor hedgerows with a small industrial estate to the south west. A plot of allotments lies in the south east corner of the site bordered by mature, unmanaged hedgerows and trees. This section is surrounded by residential properties and roads in all directions.

### 3.3 Habitats and Species

Habitats and species within the site boundary are detailed below with a conservation evaluation assigned according to the criteria set out in section 2.4. Habitats are shown on the Phase 1 Habitat Plan, Plan 1, Appendix 2. The habitats are referenced as follows; woodlands - W1, 2, 3 and 4, grasslands - G1, 2, 3 and 4, ponds - P1, 2 and 3 (P4 and P5 were not visited due to access restrictions).

#### Woodland

The land at the north eastern corner of the site supports two young broad leaf plantation woodlands, one to the eastern edge of the golf course (W1) and the other within the park (W2) surrounding Rochford Reservoir Lake (L1). These woodlands include species such as sycamore, oak and field maple with a limited understorey of bramble and tall ruderals including rosebay willowherb and common nettle. Although these woodland blocks are small, it is the only habitat of its type within the site and its immediate surrounds and offers good potential for use by protected species such as foraging bats, nesting and foraging birds, badgers, invertebrates and small mammals such as dormice. Therefore, it is considered to be important for nature conservation at a local level.

To the west of Rochford Reservoir Lake lies a block of mature mixed woodland (W3) species present include sycamore, Scots pine, oak and field maple with a developed understorey dominated by bramble and common nettle. A mature tree belt also lies to the north of the industrial estate (W4, in the north western section), with species including birch, sycamore, oak and field maple. The understorey is dominated by bramble scrub and tall ruderal species including rosebay willowherb and common nettle. Given the woodland's value for its potential to support protected species and as a landscape feature, the woodland is considered to be important for nature conservation at a local level.

<sup>3</sup> tall growing plants often associated with disturbed land e.g. common nettle  
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## Trees

The majority of trees are situated in the north eastern section of the site. These include large mature trees scattered throughout the golf course, species present include weeping willow, oak and sycamore. The trees in the golf course offer good opportunity for roosting bats with cracks, fissures and holes. A pipistrelle roost within the golf course was mentioned in the Halcrow report but no further information was provided. These trees also provide good habitat for nesting birds. Due to the high potential for these trees to support protected species and the lack of similar areas of trees within the site they are considered to be important for nature conservation at a local level.

The hedgerows to the north west and south east are unmanaged, with frequent mature trees, species present include species such as oak, hawthorn, field maple, sycamore and ash. These trees have high potential to support roosting bats and are a valuable addition to an already good wildlife corridor. Taking this into account these trees are considered to be of nature conservation value at a local level.

Occasional scattered young self set trees lie within the disused brickworks site to the west of the site and within the airport land, dominated by ash and sycamore. These trees are young and offer limited shelter for birds and no potential for bats other than for foraging. These trees are considered as being of value for nature conservation within the site and its immediate surrounds.

If, following subsequent surveys as recommended in section 5.3, these trees are found to supporting roosting bats, the assigned values may be revised to a higher level, depending on species, numbers and use.

## Hedgerows

There are many hedgerows within the site, ranging from species poor gappy hedgerows to species rich, mature hedgerows with frequent trees. The survey in October 2009 highlighted two hedgerows that could be of greater ecological importance than others on site; these are marked on Plan 1, Appendix 2 as H1 in the north western corner of the site and H2 in the south eastern corner of the site. These unmanaged hedgerows contain many species including mature oak, field maple, sycamore, hawthorn and blackthorn and have permanently dry ditches which run alongside them. As such both these hedgerows are assigned a nature conservation value at local level.

The hedgerows are well connected throughout the site and offer good habitat for many species including dormice, with food sources including hawthorn and elder, from the berries and areas of minimal disturbance for hibernation. The hedgerows also offer suitable habitat for many other species including foraging and commuting bats, nesting and foraging birds, badgers, invertebrates and reptiles, therefore as a whole they are considered to be of importance for nature conservation within the site and its immediate surrounds.

## Grassland

The site has many areas of semi improved neutral grassland (shown on the Phase 1 Habitat Plan, Plan 1, Appendix 2). The grassland surrounding the airport runway in the central section of the site (G1) is neutral semi improved grassland and contains species such as perennial ryegrass, false oat grass, bristly ox tongue, ribwort plantain and thistle. This grassland has very little potential for supporting protected species due to its management. The grassland is closely managed and kept at a certain length for safety reasons (near the runway the grassland is kept below 4cm in length and further from the runway it is kept between 8 and 10cms). Because of its close management this grassland is only considered to have a nature conservation value within the site and its immediate surrounds.

To the north west of the airport land (G2 on the Phase 1 Habitat Plan, Plan 1, Appendix 2) the grassland is less intensively managed with longer growth in places. This grassland,

along with areas of tall ruderal and scrub has created a mosaic habitat. This grassland offers good suitability to support protected species such as foraging bats, foraging and ground nesting birds, small mammals, invertebrates, foraging badgers and reptiles including grass snake, slow worm and common lizard. G2 has species similar to G1 but with less management and due to the mosaic it has formed which is of value to nature conservation at a local (parish) level.

An area in the north western corner of the site has a cluster of small semi improved neutral grassland fields G3, with tufted hair grass, cocks foot, broad-leaved dock, bristly ox tongue, creeping cinquefoil, common sorrel and thistle. These fields are separated by tall unmanaged hedgerows. These fields offer a good habitat for many species including invertebrates, small mammals, foraging badgers, nesting birds and foraging bats and reptiles. These fields are considered to have a wide range of flora; therefore, it is considered that these fields are important for nature conservation at a local (parish) level.

The fields surrounding the disused brickworks area (G4) are a mosaic of semi improved grassland grazed by horses, scrub and tall ruderal species along with longer swards of grasses; this area is considered to be of higher ecological interest than the other semi improved grassland on site. Due to the mosaic habitat and its potential to support protected species such as invertebrates, small mammals, foraging badgers, nesting birds and foraging bats and reptiles G4 is considered important for nature conservation at a local (parish) level.

G5 in the southern section of the site is dominated by poor semi improved grassland, used for grazing horses. To the west of this field and backing onto the industrial estate is G6, this area is made up of poor semi improved grassland and is used as a park land, frequented by dog walkers and children. Further west is an area of semi improved neutral grassland which is an airport safety zone G7 and is mown regularly. These grasslands (G5, 6 and 7) are assigned a lower nature conservation value than the G2, G3 and 4, of site and its immediate surrounds. They have a lower potential to support protected species due to the high level of disturbance (horses / dogs and people). They do however still offer habitat for invertebrates, small mammals and reptiles.

There are five main areas of amenity grassland within the site boundary; the golf course, the football pitches to the north west of the site, the rugby pitches along the western boundary, the football club to the south west of the site and the park surrounding Rochford Reservoir Lake. In addition to these areas some amenity grassland can be found in and around the residential housing and industrial estates. The amenity grassland on site is all closely managed and mown on a regular basis, for this reason it offers a low value to protected species and therefore has negligible value for nature conservation.

Improved grassland fields are present along the eastern boundary of the railway and to the south of the brickworks site; these are overgrazed by horses and offer low potential for protected species, they have a negligible value for nature conservation.

#### Scrub and Tall Ruderal Vegetation

The site has many areas of scrub and tall ruderal vegetation, all of which offer a good habitat for foraging and nesting birds, reptiles, badgers, small mammals and invertebrates. The main areas of scrub and tall ruderal species are to the north and west of the airport land, along its boundary with the golf course and the industrial estate, along the brooks, surrounding the lakes and within and around the disused brickworks site. The main species present include hawthorn, bramble, common nettle, rosebay willowherb, teasel, thistle and hedge bindweed.

These areas of scrub and tall ruderal are considered to have a nature conservation value at local level.

### Arable

Large arable fields within the site boundary are mainly found towards the north west of the site and to the south west, with all areas having been recently ploughed prior to the survey. The Southend-on-Sea LBAP lists arable land and field margins as one of its habitat action plans. Although the field margins in some places are nonexistent these arable fields are well linked to the surrounding land via hedgerows. This habitat along with the linking hedgerows offers good potential for birds, birds noted during the site visit in October 2009 include buzzard, blackbird, jay, kestrel and song thrush.

The arable land and margins offer good opportunity for ground nesting birds such as sky lark, reptiles, badgers and small mammals and therefore arable fields and their margins on this site are considered to be of local (parish) importance for nature conservation.

### Allotments

A plot of allotments lies in the south eastern corner of the site (T1); this is bordered to the north by an unmanaged hedgerow with frequent mature trees along its length and to the west by a species poor hedgerow. The allotment plot is made up of small vegetable plots with associated pathways, garden sheds and fences. Allotments are listed in Southend-on-Sea's LBAP and are important for a range of species including badgers, reptiles (slow worm, common lizard and grass snake) and birds. These allotments are important for nature conservation at a local (parish) level.

### Ditches

There are four ditches on site; Rayleigh Brook enters the site from the west and heads east towards the golf course, before being culverted under Cherry Orchard Lane. This Brook is heavily shaded by the unmanaged bankside vegetation which includes species such as bramble, crack willow, hawthorn, blackthorn, elder, field maple, sycamore, weeping willow and oak, along with tall ruderal species such as rosebay willowherb and common nettle. The channel itself is 1-2 m wide and was approximately 40 cm deep at the time of survey. The channel is heavily choked with tall ruderal species and contained very little aquatic vegetation, species present include water starwort. This brook has limited potential to support water vole and otter, as its banks are too shaded and overgrown for water vole with poor bank structure for their burrows. There is limited foraging for otters and little opportunity for holts<sup>4</sup> although the bank vegetation could be used for resting sites and cover. The vegetation along the brook is suitable for nesting birds and may provide a suitable foraging corridor for bats. Overall, the ditch is considered to be important for nature conservation within the site and its immediate environs.

Eastwood Brook enters the site south of the industrial estate in the north western section and flows north eastwards towards the golf course where it joins Rayleigh Brook. Eastwood Brook is heavily shaded by the trees and scrub on its banks and adjacent land where it enters the site and then opens up as it heads north towards the golf course. The channel is approximately 2 m wide and varied in depth between 10 cm and 60 cm at the time of survey on October. Aquatic vegetation includes water starwort, water mint and foals water cress. As this brook passes the airport, just south west of the golf course the channel opens up with steep, exposed earth banks to the north and more sloping vegetated banks to the south. Here, the brook becomes more suitable for water vole and otter with open, deeper channels and vegetated banks, fish were present in the brook, offering a food source for otters. This brook is considered to have a nature conservation value at local level.

Hawkwell Brook begins where Rayleigh Brook and Eastwood Brook meet. This brook has open, steep banks with frequent mature trees and occasional patches of emergent plants including lesser reedmace and soft rush. The channel varies in depth with sections of long

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<sup>4</sup> A cavity or hole in the bank, ground or under tree roots used by otters to sleep or breed and is a place of seclusion away from disturbance.

deep water and shallower meandering sections. Aquatic vegetation present includes water mint, foals watercress, water starwort, water figwort, brooklime, with greater reedmace and flag iris. There are occasional culverts where the golf course paths cross over the brook; these are passable underneath by water vole and otter. The brook is closely managed and mown regularly up to the very edge of the banks. The desk study provided records of water vole presence along this brook and burrows and latrines were found during the survey in October. The county council have mink control in place at various locations throughout the county and as a result water vole populations are particularly dynamic. It also offers a good habitat corridor for other species such as birds and bats with the link to the railway and River Roach. Overall, it is considered to have a nature conservation value at a local level.

The fourth brook, Bradley Way Channel, runs along the eastern edge of the park and Rochford Reservoir Lake and is approximately 2 m wide with steep banks vegetated with tall ruderal and scrub. Frequent semi mature to mature trees line the top of the banks, species present include ash, hawthorn and sycamore. The banks and channel are choked with Himalayan balsam, teasel, rosebay willowherb, common nettle, bramble and sycamore saplings. Further north this channel is canalised with no vegetation and large culverts under the roads. It has limited potential to support protected species such as otter and water vole. Overall, it is considered to have a nature conservation value within the site and its immediate environs.

The lack of fish (none were seen at time of survey) for the otters to feed and limited suitable areas for holts and resting sites lowers the chances of otters being present on these brooks. However, Hawkwell Brook leads into The Rochford Reservoir Lake and then into the River Roach to the east of the site and so the otters could use these brooks as commuting routes to other more suitable feeding grounds.

The brooks are fast flowing and often lacking in aquatic vegetation and are considered unsuitable for great crested newts, as they are not commonly found in fast moving water. The brooks have silt beds and the water quality was often poor, they therefore offer limited potential for the shelter and food for white-clawed crayfish. White-clawed crayfish require good water quality and favour sites with cobbled beds, it is therefore considered unlikely that this species would be present along any of the water courses.

Himalayan balsam, an invasive species, is present along all four brooks, shown on Plan 1, Appendix 2.

There are additional dry ditches on site including one that branches off the intersection of Rayleigh and Eastwood brooks mentioned above, this is 0.5 m wide, choked with greater reedmace and was dry at the time of survey. Other dry ditches run parallel to the hedgerows but appeared to have been dry for a long period of time.

If, following subsequent surveys as recommended in section 5.3, water vole and otters are found to be present, the assigned values may be revised to a higher level.

#### Waterbodies

There are five ponds and two fishing lakes within the site boundary. Ponds 1, 2 and 3 are situated within the golf course (P1, P2, P3, P4 and P5 are shown on Plan 2, Appendix 3). Ponds P4 and P5 were not surveyed due to access restrictions at the time of survey. The ponds surveyed on site were also considered for their suitability to support great crested newts. The desk study found no ponds within 500 m of the site boundary.

The Essex Wildlife Trust provided three great crested newt records within 1 km of the site boundary, the closest being 247 m to the east in a garden pond, this is separated from the site by the railway, arable land and housing; these are not considered to be physical barriers to newts and newts are known to move up to 500 m from their breeding ponds. The other records of great crested newts were found 500 m north and 980 m north east of the site boundary. The record 980 m to the north east is separated from the site by a number of roads, which are a physical barrier to newts.



Pond 1 is approximately 35 m by 40 m in size and has two water pumps coming from a nearby pump house; there is a large water fowl population and fish present. The banks are steep to the north with mature trees to the north and west. Aquatic and emergent vegetation present includes water mint, greater reedmace and water lily. The pond is situated within the heavily managed golf course but a cluster of trees nearby offers good terrestrial habitat for great crested newts.

Pond 2 lies approximately 5 m from pond 1 and is 5 m by 10 m, also within the golf course. Pond 2 has sloping banks with vegetation to the south bank including jointed rush, soft rush, flag iris, duck weed, fools watercress. This pond is suitable for great crested newts, its margins have suitable vegetation for egg laying and the terrestrial habitat is good.

Pond 3 lies to the west of the golf course and is approximately 15 m by 35 m in size with steep, sloping, grassy banks to all sides. Trees to the north west create shade over 40% of the pond. The southern banks are dominated by lesser and greater reed mace. Water fowl were present at time of survey and there is a possible fish population. Some of the banks are shaded and the trees offer good terrestrial habitat. The pond has good egg laying potential for great crested newts with plenty of aquatic vegetation. Overall, this pond is considered to have some potential for great crested newts, but the presence of waterfowl and fish reduce this potential.

Rochford Reservoir Lake (L1, shown on Plan 2, Appendix 3) is situated within a Council managed park. This lake is well stocked with fish and has fishing platforms around the edge. There were swans and geese present and a small island in the middle of the lake. The lake has a footpath surrounding the perimeter and semi mature trees around its edge.

The second fishing lake (L2, shown on Plan 2, Appendix 3) lies north of the industrial estate in the north west section of the site. This is a smaller lake, approximately 30 m by 50 m and has four fishing platforms. It is surrounded to the north by an area of dense scrub and woodland, to the east by Eastwood Brook and to the west by scrub leading to arable fields.

Both lakes were considered to have a limited potential to support great crested newts. Both have steep, high banks with limited vegetation. A large population of water fowl was present at time of survey in October and both were well stocked with large fish.

Given the potential for these waterbodies to support protected species such as great crested newts, water vole and otter as well as being valuable for foraging bats and birds and the quality of the aquatic habitat in its own right they are considered to have a nature conservation value at a local (parish) level.

#### Buildings

Within the site there are two industrial estates, one to the south and one to the west. Both of these have large industrial buildings mainly brick built with corrugated pitched roofs, associated hard standing and occasional areas of amenity grassland. The airport land in the central section of the site includes the terminal building and office buildings which are brick built with flat roofs. There are also many prefabricated temporary buildings used for storage as well as some wooden buildings used for the flying schools. These offer a limited potential for protected species such as roosting bats and nesting birds. The industrial buildings are assigned a negligible value for nature conservation.

Residential properties within the site lie to the north along the boundary road, to the east of the railway, south of the airport and along Cherry Orchard Way to the west. These buildings are mainly brick built with tiled roofs and associated gardens, roads and hardstanding. The residential properties within and surrounding the site offer moderate to high bat roosting potential, the majority of which have tiled roofs as well as soffit and fascia boards. The houses have a negligible value for nature conservation.

## 4. Constraints and Opportunities

This section provides detail of any potential ecological constraints identified based on the existing information available, from desk studies and walkover surveys. It also provides detail of opportunities for enhancement. Detail given below is based on the proposals map (shown on Plan 3, Appendix 4) from the JAAP Preferred Options, February 2009 provided by Rochford District Council and Southend-on-Sea Borough Council. As there is no detailed design for the study area, only high level potential constraints have been identified, further studies will be required in relation to any specific developments.

### 4.1 Designated Sites

The areas of search for designated sites were as follows:

- 2 km search from the site boundary for all international (e.g. Ramsar, SPA);
- 2 km area of search for all other statutory sites (e.g. SSSIs and LNRs);
- 1 km area of search for all non-statutory sites.

There are three statutory designated sites within 2 km of the site boundary detailed in table 3.1, section 3.1. Prior to any development, a Habitats Regulations Assessment should be undertaken, starting with a screening assessment to determine if the works have the potential to result in a likely significant effect upon the SAC, SPA and Ramsar designated areas and whether they will require full appropriate assessment. The SPA and SAC are designated under the European Community Habitats Directive to ensure that rare, endangered or vulnerable habitats or species of interest are either maintained at, or restored to a favourable conservation status. The Directive is transposed into national law by the Conservation (Natural Habitats &c.) Regulations 1994 (as amended)<sup>5</sup>, which also provides for the control of potentially damaging operations, whereby consent may only be granted by the competent authority once it has been shown through appropriate assessment that the proposed operation will not adversely affect the integrity of the site.

Under these regulations the competent authority is obliged to consider the following:

*“A competent authority, before deciding to undertake or give any consent, permission or other authorisation for, a plan or project which a) is likely to have a significant effect on a European site in Great Britain (either alone or in combination with other plans or projects), and b) is not directly connected with or necessary to the management of the site, shall make an appropriate assessment of the implications for the site in view of that site’s conservation objectives. The competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public“*

There are seven non-statutory sites within 1 km of the site boundary detailed in table 3.2, section 3.1, the closest of which is the River Roach LWS, 350 m to the east. Any proposed works should be assessed to determine the any likely impact on these locally designated sites. The assessment should involve consultation with the local authority ecologist and other disciplines involved with the assessment for this scheme. Although it is unlikely that there will be direct impacts, indirect impacts could include pollution of the watercourses by run off, contamination by chemicals or dust as well as light pollution.

## 4.2 Habitats

The proposed development (based on the proposals map provided, shown on Plan 3, Appendix 4) will change the land use of the site and existing habitat. There are habitats on site that have been valued as having nature conservation value within the site and its immediate environs and at a local level because of their value to nature conservation in their own right as well as for their potential to support protected species.

Habitats of value within the study area that could be potential constraints to the proposed development include the following (see Plan 1 for locations of the following habitats):

- Woodland, hedges and trees;
- Grassland (recognised as having potential ecological value during the survey in October 2009) areas G2, G3 and G4.
- Scrub and tall ruderal habitats due to their potential to support protected species;
- Ditches, Rayleigh Brook, Eastwood Brook and Hawkwell Brook due to their potential to support protected species;

Habitats surrounding the site including the River Roach to the east, the brooks to the west and the ancient woodland to the north west may also be affected by development within the study area, primarily through indirect effects. Further assessment should be undertaken when detailed design plans are known.

## 4.3 Species

The site offers a range of habitats suitable for protected species, some of which are to be lost / disturbed as a result of the proposed development. The following species could be a potential constraint to any proposed development within the study area and further study and assessment is likely to be required with respect to these species (relevant legislation for the following species can be found in appendix 1):

- Badgers - further details of the potential constraints posed by badgers are provided in the confidential badger report;
- Bats – loss of or damage to roost sites, foraging and commuting habitats. These features could be affected by the proposed development through habitat loss and severance of linear features such as hedgerows and brooks;
- Birds – loss of or disturbance to habitats including hedgerows, trees, scrub, grassland and arable land all provide suitable habitat for birds to feed and nest at the site;
- Dormice – loss of or damage of suitable habitat and hibernation sites within woodland, hedgerows and scrub;
- Great crested newts – disturbance to and / or loss of suitable terrestrial habitat for great crested newts. The current proposals map shows no direct disturbance to the waterbodies considered likely to support great crested newts; however newts are known to travel up to 500 m from their breeding ponds for terrestrial habitat;
- Reptiles – potential to harm reptiles during construction. Loss of habitats used by reptiles e.g. allotments, woodland, brooks and grassland
- Water vole and otters – potential disturbance to habitat used by water vole and otters along Eastwood Brook, Rayleigh Brook and Hawkwell Brook.

## 4.4 Opportunities for Enhancement

There are areas within the site that have some ecological value but that could benefit from enhancement to provide greater opportunities for protected species and rare or protected plant species to colonise. These areas of habitat value and opportunity for enhancement are highlighted on Plan 2, Appendix 3 and include grasslands G2, G3 and G4, the established trees, main hedgerows and ditches. These should be retained if possible especially around the boundaries of the site, this will benefit a number of species including bats, badgers and reptiles by maintaining the connectivity of habitat across the site. The bullet points below outline measures that can be followed to enhance these areas:

- Gappy hedgerows could be planted with native species such as oak, rowan and fruit bearing trees to encourage fauna to the site. Any new hedgerows planted as part of the landscaping should be planted with native species;
- Ditches could be cleared out to allow for standing or flowing water along with the introduction of new aquatic plant species. The invasive Himalayan balsam could be eradicated, using standard guidance recommended by the Environment Agency. Planting of the banks with native species would increase the value of the watercourses to invertebrates, amphibians, fish, mammals and birds;
- Eastwood Brook and Hawkwell Brook already offer potential habitat for water vole and otter. However, there are points on these brooks that could be improved for the species. The banks could be thinned of their tall ruderal and scrub vegetation and planted up with a variety of grasses and rushes, which would offer a better feeding resource for water voles and provides place for them to shelter. An unmown buffer zone of at least 2 m at the top of the banks could be maintained to reduce public access and thus reduce disturbance;
- The ponds and lakes could be enhanced by clearing some of the invasive, ruderal species such as common nettle and by planting more diverse aquatic and marginal species that are native to Britain and that will encourage fauna to the area;
- Incorporate new hedgerows and tree lines within the proposed development. Retention of habitat corridors, provision of new planting and the enhancement of grassland as a wildlife area would avoid any significant adverse long-term effects on badgers, bats, birds and reptiles.

These bullet points only provide an outline for enhancement measures; it is recommended that a detailed enhancement plan is produced for the site that can expand on these measures, providing details such as planting mixes.

The site is regularly used by the public for dog walking, recreational purposes, as well as for the golf course. This site therefore offers good opportunities that will not only benefit biodiversity in its own right but would also be of value to local people as a wildlife resource in an urban setting.

## 5. Recommendations and Outline Mitigation

This section provides a outline of potential mitigation measures and generic mitigation measures in relation to the proposals plan. Once the detailed design of the site is known, it is likely that further surveys will be required. Mitigation can be tailored once the results of these surveys are known.

### 5.1 Designated Sites

As discussed above, prior to any development, an assessment should be made to determine if the works have the potential to result in a likely significant effect upon the SAC, SPA and Ramsar designated areas, to determine if an appropriate assessment is required.

### 5.2 Water courses

Pollution incidents to watercourses within or adjacent to the site should be avoided through the implementation of the Environment Agency's Pollution Prevention Guidelines<sup>6</sup> (PPGs), with particular reference to PPG01 (general guide to the prevention of pollution) and PPG05 (works and maintenance in or near water).

### 5.3 Habitats

Grasslands G2, G3 and G4 have ecological value at local level and should any of these areas be affected by the potential development further vegetation survey is recommended. Vegetation survey should be undertaken at an appropriate time of year (April to August) and an assessment made using criteria for the county wildlife sites (either Rochford County or Southend-on-Sea county) to determine whether this area qualifies for designation as a county wildlife site. If these areas qualify as county wildlife sites, this could have further implications upon the proposed development as it is likely that mitigation provisions will be required. The mitigation would depend on the nature of the valued ecological features but could involve translocation of certain rare or protected plant species or the re-creation of the grasslands assemblage elsewhere on site.

### 5.4 Species

#### Bats

Information from the desk study relating to the bat population is limited. It is recommended that if linear habitat or landscape features such as hedgerows, woodland, brooks and their associated vegetation are to be lost, or if any of the trees on site with bat roosting potential are to be pruned or felled, further survey should be undertaken in advance of this work.

Bat survey work should be undertaken following published survey guidelines (English Nature's *Bat Mitigation Guidelines* and Bat Conservation Trust *Bat Survey Guidelines*). Surveys to determine the presence / absence of roosts in trees should include emergence / re-entry surveys at dusk and / or dawn on at least two occasions during the main active period for bats (April to October). Ideally one of these surveys should be undertaken between May and August to detect the presence of any important breeding / maternity roosts. Tree roosts are notoriously difficult to identify and as a precautionary measure a further dawn survey for bats at suitable trees may be required on the morning of their

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<sup>6</sup> <http://www.environment-agency.gov.uk/business/topics/pollution/39083.aspx>  
SP Southend Airport and Environs JAAP study Update SBJW  
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removal / pruning to check that no bats have returned to roost in these trees. Field surveys to determine the use of the site as foraging / commuting habitat should also be undertaken on at least two occasions during their main active period. This would involve an appropriate number of surveyors undertaking transect / point count surveys in areas of suitable habitat around the site that are likely to be lost /severed.

If any roosts are found then a disturbance licence may be required to disturb or remove the tree / roost. This could have implications on the development programme and may require specific mitigation measures to ensure that the conservation status of the bats is not threatened; this may involve some or all of the following:

- Provision of replacement habitat e.g. bat boxes on trees or retained buildings to compensate for short-term loss of roosts (i.e. during renovation) or permanent loss (e.g. as a result of tree felling);
- Measures to discourage bats from roosting in the structure prior to commencement of works;
- Timing of works to avoid sensitive seasons – maternity and hibernation seasons;
- Careful dismantling of features supporting roosting bats under ecologist supervision;
- Monitoring to confirm the success of the mitigation work.

The above approach would depend on the species and number of bats present and type of roost; the exact mitigation proposals and would be based on English Nature's (now Natural England) Bat Mitigation Guidelines, 2004.

As good practice, replacement habitat could be provided within the design to compensate for loss of 'potential' roost sites, even if roosting bats are not found to be present. This could take the form of bat boxes on trees and/or buildings and bat bricks incorporated into new buildings.

Depending on the level of activity on site as well as the presence / absence of roosts measures may be required to mitigate for the loss of feeding and commuting habitat, such as replacement hedges which can be included in the design.

#### Birds

The site contains habitats suitable for nesting birds, including woodland, trees, scrub, hedgerows, tall ruderal vegetation. Site clearance prior to the potential development has the potential to cause disturbance to nesting birds and should be programmed to be undertaken outside of the main nesting period for birds (1<sup>st</sup> February to 31<sup>st</sup> August, inclusive). If this is not possible, any suitable habitat should be checked up to 48 hours prior to clearance. If nesting birds are found, the area will need to be left undisturbed until the nest is no longer active.

#### Dormouse

If areas of the habitat on site that have been identified as having the potential to support dormice are to be lost, further survey is recommended. This will involve the installation of tubes and nest boxes within the habitat which should then be checked on a monthly basis between June and November. If dormice are found to be present during the survey and the habitat is to be lost or severed then mitigation may be required.

Suitable hedgerows and woodland should be retained, where this is not possible then replacement trees and hedgerows should be provided and planted with species such as hazel, oak and hawthorn. Connectivity between existing and remaining hedgerows and woodlands should be enhanced and maintained where possible. It may be necessary to move dormice if they are present on site and existing habitat would be lost, in which case a licence would be required from Natural England together with a full mitigation scheme. This may need to include provision of replacement habitat prior to loss of the existing with

sufficient time to allow for the replacement habitat to mature; provision of nest boxes in the replacement habitat; phased vegetation clearance to encourage dormice to leave the existing habitat and move into areas that will be retained; and if necessary translocation of dormice using traps and frequent inspection.

Disturbance to potential areas of dormouse hibernation habitat should avoid the hibernation season (which is generally October-March/April, although is weather dependant). The location and extent of these areas would be confirmed following the presence/absence surveys.

#### Great crested newts

The study area contains habitat suitable for great crested newts, the three ponds and in the terrestrial habitat within 500 m of these ponds. If the ponds or habitat within 500 m of these is likely to be lost or disturbed then surveys for great crested newts should be carried out. Great crested newt presence/absence surveys involve four survey occasions at each waterbody between March-June (with at least two of these between mid-April and mid-May) according to English Nature, Great Crested Newt Mitigation Guidelines, 2001. Survey techniques should include bottle trapping, torchlight surveys, egg searches and hand netting as appropriate for the conditions in each waterbody. If great crested newts are found to be present in any waterbody then a further two surveys will be required to allow for a population estimate according to the English Nature 2001 guidelines. These should also be between March-June with at least one (if possible) between mid-April and mid-May.

If great crested newts are found to be present on site then it may be necessary to apply for a licence from Natural England in order to undertake any works that may adversely affect the ponds or any terrestrial habitat. The scale of the mitigation measures will be dependent on the population size and the likely effects of the scheme, but may involve provision of replacement habitat and using amphibian fencing to capture and exclude great crested newts from the works area. A licence application would require appropriate mitigation plans to be in place and cannot be applied for unless full planning permission has been granted.

#### Reptiles

Suitable habitat for reptiles on site includes grassland, the allotments, the brooks and field boundaries and areas of hardstanding along with the scrub and tall ruderal vegetation. Some of these habitats are to be removed according the proposals map provided and therefore there is a potential risk of harm to reptiles and further survey work should be carried out to determine the presence / absence of reptiles at the site. The survey work is likely to involve laying tins or roofing felt in suitable habitat at the site which would then need to be checked on six separate occasions between March and September (generally excluding July and August). If reptiles are found to be present in an area where development is to take place, mitigation is likely to be necessary. This is most likely to comprise work being undertaken under a precautionary method of working. However, if rare species are present or if the population size is large, translocation may be necessary, including the provision of a suitable receptor area.

#### Water vole and Otter

The study area contains habitat suitable for water vole and otter, the three brooks and the terrestrial habitat to either site of these. It is recommended that if any of this habitat is to be disturbed or lost then survey for water vole and otter should be undertaken.

If water voles are found to be present, mitigation and/or obtaining a licence from Natural England could be necessary. Mitigation such as avoiding areas known to be used by water vole or discouraging colonisation by water voles through removal of bank vegetation in certain areas could be implemented without a licence and are the preferred option. However, if this is not an option, a licence for trapping and translocation can be obtained but will only be issued by Natural England if there are no reasonable alternative and

practical solutions. Habitat enhancement for water voles should be incorporated into any design, see section 4.4. A licence application would require appropriate mitigation plans to be in place and cannot be applied for unless full planning permission has been granted.

In the event that positive otter evidence is recorded, then measures should be taken to avoid disturbance to the species. These measures should include:

- As there is no determined seasonal breeding period for otters, the works cannot be timed to avoid periods of otter breeding or even their presence on a watercourse. However, in adopting a precautionary approach night working should not be undertaken to avoid the nocturnal and crepuscular (active at dusk and dawn) behaviour of otters. Work should not take place two hours after sunrise and two hours before sunset.
- If any temporary lighting is used for construction purposes, it should be fitted with shades to direct the beam exclusively onto the works area. This will prevent illumination of the watercourse and riparian habitats and minimise the effects of disruption.
- Any excavations should be covered in the evening to prevent animals falling in. While otters are particularly agile and although a lot of evidence suggests that otters will avoid the construction area; some curious individuals may come to site to investigate. Ensure that all trenches, trial pits, excavations and especially sewers and manholes are covered to prevent an otter casualty on site. Where pits and trenches cannot be closed or filled on a nightly basis, ensure that a plank is placed into the excavation so an animal can use this as a means of escape if necessary.
- Contractors should ensure all rubbish and construction materials are collected and removed from site on a regular basis to prevent trapping or injury to otters.
- In the unlikely event of discovering any evidence suggesting otter presence within the footprint of the works, work must stop immediately and the overseeing ecologist should be contacted for advice on how to proceed.

In the event that an otter resting site is recorded then mitigation should be designed to avoid disturbance or damage to the resting site, if this is not possible the a licence may be required from Natural England, along with a detailed mitigation plan.



## 6. Conclusions

Atkins Limited was commissioned in October 2009 by Rochford District Council and Southend-on-Sea Borough Council to update the London Southend Airport and Environs Study JAAP Evidence Report, June 2008 and indicate issues and mitigation that could be incorporated into the JAAP preferred options.

The study area surveyed comprises mainly neutral semi improved grassland and amenity areas with hedgerows, trees, woodland blocks, brooks, ponds, lakes, an airport and two industrial estates. As a whole this site is assigned a nature conservation value at local level.

The site and its surroundings are shown on the Phase 1 Habitat Plan, Plan 1, Appendix 2.

A desk study and ecological walkover survey were undertaken in October 2009. Some areas of the site were not surveyed due to access restrictions; these are clearly marked on Plan 1, Appendix 2.

As a result of the desk study and the walkover survey, designated sites and other ecological issues have been identified.

Within the study area the following species were confirmed to be present:

- Water vole
- Nesting birds

The study area was also identified as having potential to support the following species:

- Bats
- Dormice
- Great crested newts
- Reptiles
- Otters

Section 5 provides recommendations for further surveys that may be required when further details of the proposed development are available; many of these are seasonally dependent as indicated in section 5. Outline mitigation measures have also been provided. Plan 2, Appendix 3 shows areas of habitat value and opportunity for enhancement and Plan 3, Appendix 4 shows the proposals map.

# 7. Appendix 1

## 7.1 Simplified Summary of Relevant Legislation

Species	Legislation (England & Wales)	Offences	Licensing procedures (England & Wales)
<b>Bats</b> <i>European protected species</i>	Conservation (Natural Habitats &c.) Regulations 1994 (as amended) Reg.39	Deliberately <sup>1</sup> capture, injure or kill a bat; deliberate disturbance <sup>2</sup> of bats; or damage or destroy a breeding site or resting place used by a bat. [The protection of bat roosts is considered to apply regardless of whether bats are present.]	A Natural England (NE) licence in respect of development is required in England or a licence from the Welsh Assembly Government in consultation with Countryside Council of Wales (CCW) in Wales. <ul style="list-style-type: none"> <li>• <i>European Protected Species Guidance Note</i> (NE 2009)</li> <li>• <i>Bat Mitigation Guidelines</i> (English Nature 2004)</li> <li>• <i>Bat Workers Manual</i> (JNCC 2004)</li> </ul>
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a bat in such a place.	Licence from NE or CCW is required for surveys (scientific purposes) that would involve disturbance of bats or entering a known or suspected roost site.
<b>Otter</b> <i>European protected species</i>	Conservation (Natural Habitats &c.) Regulations 1994 (as amended) Reg.39	Deliberately <sup>1</sup> capture, injure or kill an otter; deliberate disturbance <sup>2</sup> of otters; or damage or destroy a breeding site or resting place used by an otter.	Licences issued for development by Natural England or from the Welsh Assembly Government in consultation with Countryside Council for Wales. <ul style="list-style-type: none"> <li>• <i>European Protected Species Guidance Note</i> (NE 2009)</li> </ul>
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb an otter in such a place.	No licence is required for survey in England or Wales. However, a licence would be required if the survey methodology involved disturbance.

Species	Legislation (England & Wales)	Offences	Licensing procedures (England & Wales)
<p><b>Dormouse</b> <i>European protected species</i></p>	<p>Conservation (Natural Habitats &amp;c.) Regulations 1994 (as amended) Reg.39</p>	<p>Deliberately<sup>1</sup> capture, injure or kill a dormouse; deliberate disturbance<sup>2</sup> of a dormouse; or damage or destroy a breeding site or resting place used by a dormouse.</p>	<p>A Natural England licence in respect of development is required in England of from the Welsh Assembly Government in consultation with the Countryside Council for Wales (CCW) in Wales.</p> <ul style="list-style-type: none"> <li>• <i>European Protected Species Guidance Note</i> (NE 2009)</li> <li>• <i>Dormouse Conservation Handbook</i> (English Nature 2006)</li> </ul>
	<p>Wildlife and Countryside Act 1981 (as amended) S.9</p>	<p>Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a dormouse in such a place.</p>	<p>Licence issued for survey and conservation by Natural England or Countryside Council for Wales.</p>
<p><b>Water vole</b></p>	<p>Wildlife and Countryside Act 1981 (as amended) S.9</p>	<p>Intentionally kill, injure or take water voles; intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection or disturb a water vole in such a place.</p>	<p>No licence is required for survey in England or Wales, unless you are likely to commit an action that is otherwise illegal.</p> <p>There are currently no licensing purposes that explicitly cover development activities or activities associated with the improvement or maintenance of waterways. However when a proposed lawful activity has no opportunity to retain water voles within a development site and their translocation would result in a conservation benefit then a licence from Natural England or the Countryside Council for Wales may be obtained.</p> <ul style="list-style-type: none"> <li>• <i>The Water Vole Conservation Handbook</i> (R. Strachan &amp; T. Moorhouse, Wildlife Conservation Research Unit, 2<sup>nd</sup> Edition 2006)</li> <li>• England: Water voles and development licensing policy -NE Technical Information Note TIN042 2008- <a href="http://naturalengland.communisis.com/naturalenglandshop/docs/ne86.pdf">http://naturalengland.communisis.com/naturalenglandshop/docs/ne86.pdf</a></li> <li>• Wales: Water Voles – Guidance for recent legislation changes (2008) <a href="http://new.wales.gov.uk/topics/environmentcountryside/consmanagement/conservation_biodiversity/watervoles/?lang=en">http://new.wales.gov.uk/topics/environmentcountryside/consmanagement/conservation_biodiversity/watervoles/?lang=en</a></li> </ul>

Species	Legislation (England & Wales)	Offences	Licensing procedures (England & Wales)
<b>Breeding birds</b>	Wildlife and Countryside Act 1981 (as amended) S.1	<p>Intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built; intentionally take or destroy the nest or eggs of any wild bird.</p> <p>[Special penalties are liable for these offences involving <b>birds on Schedule 1</b> (e.g. most birds of prey, kingfisher, barn owl, black redstart, little ringed plover).]</p> <p>Intentionally or recklessly disturb a Schedule 1 species while it is building a nest or is in, on or near a nest containing eggs or young; intentionally or recklessly disturb dependent young of such a species.</p>	<p>No licences are available to disturb any breeding birds in regard to development.</p> <p>Licences are available in certain circumstances to damage or destroy nests, but these only apply to the list of licensable activities in the Act and do not cover development.</p> <p>General licences are available in respect of ‘pest species’ but only for certain very specific purposes e.g. public health, public safety, air safety.</p>
<b>Great crested newt European protected species</b>	Conservation (Natural Habitats &c.) Regulations 1994 (as amended) Reg.39	Deliberately <sup>1</sup> capture, injure or kill a great crested newt; deliberate disturbance <sup>2</sup> of a great crested newt; deliberately take or destroy its eggs; or damage or destroy a breeding site or resting place used by a great crested newt.	<p>Licences issued for development by Natural England or from the Welsh Assembly Government in consultation with the Countryside Council for Wales.</p> <ul style="list-style-type: none"> <li>• <i>European Protected Species Guidance Note</i> (NE 2009)</li> <li>• <i>Great Crested Newt Mitigation Guidelines</i> (English Nature 2001)</li> </ul>
	Wildlife and Countryside Act 1981 (as amended) S.9	Intentionally or recklessly obstruct access to any structure or place used for shelter or protection or disturb a great crested newt in such a place.	Licences issued for science (survey), education and conservation by Natural England or the Countryside Council for Wales.

Species	Legislation (England & Wales)	Offences	Licensing procedures (England & Wales)
<b>Adder</b> <b>Common lizard</b> <b>Grass snake</b> <b>Slow worm</b>	Wildlife and Countryside Act 1981 S.9(1) (part); S.9(5)	Intentionally kill or injure any common reptile species.	No licence is required in England or Wales.  However an assessment for the potential of a site to support reptiles should be undertaken prior to any development works which have potential to affect these animals.

<sup>1</sup>Deliberate capture or killing is taken to include “accepting the possibility” of such capture or killing

<sup>2</sup>Deliberate disturbance of animals includes in particular any disturbance which is likely to impair their ability- to survive, to breed or reproduce, or to rear or nurture their young; or in the case of animals of hibernating or migratory species, to hibernate or migrate; or to affect significantly the local distribution or abundance of the species to which they belong. Lower levels of disturbance, not covered by the Conservation Regulations, remain an offence under the Wildlife and Countryside Act, however a defence is available where such actions are the incidental result of a lawful activity.

## 8. Appendix 2

### 8.1 Plan 1 – Phase 1 Habitat Plan and Constraints

## 9. Appendix 3

### 9.1 Plan 2 – Opportunities for Habitat Retention and Enhancement

## 10. Appendix 4

### 10.1 Plan 3 – Proposals map