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Ecological Phase 1 Habitat Survey

Southend Airport Runway Extension and Associated Development

London Southend Airport Company Limited

April 2009

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Contents

1 Introduction

1.1 Background to the Scheme

London Southend Airport Company Limited (LSACL) is proposing to extend the runway at London Southend Airport, together with the construction of associated infrastructure. The runway extension would facilitate the growth to around 2 million passengers per annum by approximately 2020, with around 50,000 aircraft movements.

Jacobs Engineering (UK) Ltd has been commissioned to undertake an ecological Phase 1 habitat survey of the site in support of proposals for the development.

1.2 Survey Location / Areas

London Southend Airport ('the site') is situated north of Southend-on-Sea, Essex, and centred on approximate Ordnance Survey (OS) grid reference TQ 872 895. The location of the site is shown on Figure 1.

The site has been divided into four discrete areas, based on the location of proposed development works. These are as follows:

- Runway extension and new link road ('Area A').
- Water attenuation location ('Area B').
- Relocation of flying clubs ('Area C').
- Passenger terminal and parking areas ('Areas D and E').

Figure 2 (sheets 1-3) shows the location of survey areas A - E.

1.3 Survey Objectives

The purpose of the survey is to provide an ecological assessment of the survey areas and surroundings (where necessary) to assist in demonstrating compliance with wildlife legislation and planning policy objectives.

The key objectives are as follows:

- Identify all relevant statutory and non-statutory designated sites and features of ecological significance within the site and its surroundings.
- Categorise habitat types within the site in accordance with JNCC Phase 1 Habitat Survey methodology.
- Assess the potential for the presence of protected species and species of principal conservation importance within the site and its surroundings.
- Provide recommendations for further surveys where assessed as necessary.

A summary of wildlife legislation and planning policy has been included in Appendix A.

1.4 Limitations

The findings of this report represent the professional opinion of qualified ecologists and do not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this document.

This reports records flora and fauna observed on the day of the visit. As such, the flora and fauna that may be present at other times of year will not have been recorded.

2 Methodology

2.1 Desk Study

A review of the following information and historical records for Southend Airport was undertaken:

- Southend Airport 2003 Environmental Statement.
- Ecology Solutions Ltd (2004). Southend Airport Terminal Development Area, Essex. Ecological Assessment.
- Ecology Solutions Ltd (2005). Land adjacent to Southend Airport, Essex. Ecological Assessment.
- The Adams Loxton Partnership Ltd (2008). Phase 1 Habitat Survey and Protected Species Assessment. Southend Airport.
- Biological records provided by Essex Mammal Surveys in 2004
- Biological records provided by Essex Ecology Services Ltd in 2004
- Biological Records provided by Amphibian, Reptile and Mammal Conservation Ltd in 2004
- Biological information provided by Southend on Sea Borough Council in 2004
- Biological information provided by Natural England (formerly English Nature) in 2004.

In addition to this information, a search of designated sites was completed using the Multi-Agency Geographic Information for the Countryside (MAGIC) website. All statutory designated sites within 5km and all non-statutory sites with 2km of the site were recorded. The location of these sites is included in Appendix B.

2.2 Scoping Survey

The survey areas (A to E) and the site's immediate surroundings were considered in terms of habitats, protected species and species of principal conservation importance during a walkover survey undertaken on 17th March, 2009.

Habitat types within the site were categorised using the standard Phase 1 Habitat Survey Methodology terminology (JNCC) and have been listed.

Habitats were also assessed in terms of their potential to support protected species or species of principal conservation importance, and evidence of the use of the site by such species was recorded (i.e. field signs).

3 Results

3.1 Desk Study

3.1.1 Designated Nature Conservation Areas

There are no statutory or non-statutory designated nature conservation sites within or immediately adjacent to Southend Airport. Within 5km of the site there are 5 Sites of Special Scientific Interest (SSSI), 2 Ramsar sites, 2 Special Protection Areas (SPA) and 1 Special Area of Conservation (SAC). These sites are listed in Table 3.1.

Other notable statutory designated sites in excess of 5km from the site include Dengie SSSI / SPA / Ramsar, Foulness SSSI, SPA, Ramsar and Thundersley Great Common SSSI.

Within 2km of the site, the nearest non-statutory site is the Sutton Ford Bridge Pasture County Wildlife Site (CWS), located approximately 0.8km east of the survey area.

Table 3.1: European/ Internationally Designated Sites within 5km of the survey area.

Site	Designation	Approximate Distance from Site	Features of Interest
Essex Estuaries	Special Areas of Conservation	1700m	This site has been designated because it supports habitats and species which are threatened within a European context. Namely: Atlantic salt meadows; estuaries, Mediterranean and thermo-Atlantic halophilous scrub, mudflats and sandflats not covered by seawater at low tide, *Salicornia* and other annuals colonising mud and sand, sandbanks which are slightly covered by sea water at all times, and *Spartina* swards.
Crouch and Roach Estuaries	SSSI	1700m	This site is comprised of inter-tidal habitats, salt marsh, grazing marsh and a freshwater reservoir. It supports rare and endangered species of plants and invertebrates and is of major importance for feeding and roosting waders and wildfowl.
	Ramsar Site	1700m	This site supports an important population of migratory dark-bellied Brent geese, is regularly used by over 20 000 waterfowl and supports an appreciable assemblage of rare, vulnerable or endangered species of plant and invertebrate.
	Special Protection Areas	1700m	This site supports an important population of migratory dark-bellied Brent geese and is regularly used by over 20 000 waterfowl.
Benfleet and Southend Marshes	SSSI	4250m	Benfleet and Southend Marshes comprise an extensive series of salt marshes, mudflats, scrub and grassland which support a diverse flora and fauna. Outside the sea walls there are extensive salt marshes and mud-flats, on which wintering wildfowl and waders reach both nationally and internationally important numbers. Nationally uncommon plants occur in all of the habitats and parts of the area are of outstanding importance for scarce invertebrates.
	Ramsar Site	4250m	This site supports Internationally important assemblages of waterfowl and comprises habitats that support an outstanding assemblage of rare coastal plants and invertebrates.

	Special Protection Areas	4250m	This site supports Internationally important assemblages of ringed Plover, dark-bellied Brent Goose, grey plover and knot.
Garrold's Meadow	SSSI	4720m	An area of unimproved grassland with marshy influences.
Hockley Woods	SSSI	3820m	Ancient coppice woods incorporating Great Bull wood, Great Hawkwell Wood, Beeches Wood and Parson's Snipe. They form one of the most extensive areas of ancient woodland in South Essex.
Great Wood and Dodd's Grove	SSSI	4980m	This is one of the largest and best examples of ancient woodland in South Essex and the last known stronghold of the rare Heath Fritillary butterfly.

3.2 Protected Species Records

3.2.1 Bats

As reported in the 2003 Environmental Statement (ES), John Dobson, the Essex Field Club County Recorder for bats provided the following bat records from within the 2 km search radius:

There are three known roosts in the area of search. They are all pipistrelle (*Pipistrellus* spp.) roosts. The closest to Southend Airport is approximately 0.3km away in council offices (TQ 875 903). The other two roosts are located at TQ 852 891 in Eastwood and TQ 873 904 in Rochford.

Also, pipistrelle droppings have been found in recent years in St Laurence and All Saints Church, adjacent to the runway (TQ 862 889). It is highly likely from the evidence found that pipistrelle bats are roosting in the church.

Brown long-eared bats (*Plecotus auritus*) have been recorded foraging near Blatches Farm in 2002 (TQ 851 898). Pipistrelles were recorded foraging in two areas near Broomhills, just outside Rochford in 1999 (TQ 886 899 and 886 901).

In addition, there are four other records of individual bats found within the search area: two pipistrelles (TQ 865 875 and 885 908), one brown long-eared (TQ 861 874) and one noctule *Nyctalus noctula* (TQ 873 906).

3.2.2 Great Crested Newt

A number of historical records are available for great crested newts however all records are in excess of 500m from the airport. Great crested newts have been confirmed from the following locations:

- Manchester Drive, Southend TQ8486 (1988)
- Sutton Court Road, Rochford TQ878890 (2000)
- Westcliff Park Drive TQ866867 (2001)
- Leigh, Cliffsea Grove TQ847863 (2002)
- Doggetts Pond TQ878915

3.2.3 Reptiles

Recent records of reptiles include 6 common lizards (*Zootoca vivipera*) translocated from an area which is approximately 0.5 km from Southend Airport (TQ 857 890). There are older historical records for common lizard and slow worm (*Anguis fragilis*)

3.2.4 Badgers

Historical records for badgers indicate that there are approximately 2 known setts within 0.5km of Southend Airport. These setts are separated from the development site by urban infrastructure and development (i.e. roads, residential properties).

Further records of badgers are available, dating from between 1994 to 2002 and include 3 for Stroud Green, the closest of these was approximately 0.5 km from Southend Airport, and a record for approximately 1 km west of the airport.

3.2.5 Other Historical Records

The Essex Mammal Group in 2004 provided records for a number of mammal species within 2km of the airport, including wood mouse, harvest mouse, field vole, hedgehog, water vole, weasel and a polecat-ferret.

As reported in the 2003 ES, three records for water vole were provided. These are from along Eastwood Brook, close to Southend Airport, at approximately 0.3km, 0.75km and 1km from the airport. These records arise from the Essex Water Vole Survey in 1998, which sampled rivers at 3 km intervals. Therefore, these records are indicative of water vole presence on the brook rather than an exhaustive picture of their distribution.

There is one other record which is approximately 1.75 km south of Southend Airport (TQ 877 874), and one from Doggetts Pond Wildlife Site (TQ 878 915).

There are three records of otters from within a 2km search radius, but these date back to 1959 and 1979. No recent records are available.

3.3 Phase 1 Habitat Survey

A Phase 1 habitat map is presented as Figure 2 (sheets 1-3) and clearly demarcates the key development areas within the airport (i.e. Areas A-E). The habitats and potential for protected species for each area is described in the sections below.

Within the survey areas as a whole, the following habitat types were recorded:

- Species poor neutral grassland (B2).
- Running water (G2).
- Arable land (J1.1)
- Amenity grassland (J1.2).
- Plantation woodland - orchard (A1).
- Defunct hedgerows (J2.2);
- Dry ditch (J2.6).
- Semi-improved neutral grassland (B2.2).

3.3.1 New Link Road and Runway Extension (Area A)

The dominant habitat in this section is species-poor semi-improved neutral grassland, particularly where the runway extension is proposed and north-west of the industrial / car park area. This habitat type is surrounded by a number of hedgerows.

A hedgerow (Target Note 1) adjacent to the road bordering the south-west boundary of the site has been replanted with blackthorn (*Prunus spinosa*), field maple (*Acer campestre*) and sycamore (*Acer pseudoplatanus*) as the dominant species.

The hedgerow (Target Note 2) adjacent to the industrial / car park area is planted with a range of ornamental species with a few natives such as hazel (*Corylus avellana*), dog rose (*Rosa canina*) and holly (*Ilex aquifolium*).

The hedgerow (Target Note 3) along the fence of the playground is defunct with a number of amenity shrubs such as *Cotoneaster* spp. Further east there is another hedgerow (Target Note 4) in which the dominant species is hawthorn (*Crataegus monogyna*) with some intermittent silver birch (*Betula pendula*) and hazel.

A fruit orchard exists south-east of residential properties (Target Note 5). This comprises a large number of mature trees with an understorey of tall ruderals and scattered scrub of predominantly nettle (*Urtica dioca*) and bramble (*Rubus* spp). The orchard is surrounded by frequently mown amenity grassland with scrub around the boundaries.

A small field (Target Note 6) exists west of the properties and comprises of overgrown semi-improved grassland and scrub.

3.3.2 Water Attenuation Location (Area B)

This section comprises an arable field, currently used for crops, which has approximately a 3m buffer area of grassland around its perimeter.

The hedgerow (Target Note 8) between this section and Area A has English elm (*Ulmus procera*) as the dominant species. Other species include hawthorn and elder (*Sambucus nigra*). A dry ditch is located towards the arable field side of the hedge, with a base layer of mainly bramble.

The northern boundary of this section adjacent to the road comprises post and rail fencing with a few scattered hawthorn bushes (Target Note 9). To the west, a defunct hedgerow follows the line of a post and rail fence with hawthorn as the dominant species, with a few scattered hazel and plane trees (*Platanus acerifolia*) (Target Note 10).

3.3.3 Relocation of Flying Clubs (Area C)

The habitats within this area comprise of species-poor semi-improved neutral grassland and a small running stream with no in-channel vegetation.

3.3.4 Passenger Terminal and Car Parking – West of Railway (Area D)

East of the access road is a small area of regularly mown amenity grassland in front of the flying clubs, currently used for recreation. Within this area are two coniferous hedgerows used as windbreaks (Target Note 11).

Parts of the area west of the railway, particularly north and south of the flying clubs, have not been managed and consequently have developed into tussocky grassland with areas of scrub. Species include stinging nettle, elder, bramble and creeping thistle (*Cirsium arvense*).

There are a number of hard-standing areas throughout this section, with rubble to the south where buildings have recently been demolished (Target Note 12). Two small derelict buildings exist (Target Note 13) behind the flying clubs.

Along the railway fence is a small embankment comprising tall grassland and ruderal vegetation with scrub (Target Note 14).

The secure area (Target Note 15) adjacent and west of the access road to the flying clubs that forms part of the airfield comprises amenity grassland. This is subject to regular mowing and is dominated by species including perennial rye-grass (*Lolium perenne*).

3.3.5 Passenger Terminal and Car Parking – East of Railway (Area E)

This area is dominated by heavily grazed semi-improved grassland, with patches of tall ruderal vegetation and scrub (i.e. hawthorn, blackthorn, elder and bramble) around its perimeter. Amongst the scrub are scattered oak (*Quercus* spp.) trees. In particular, the eastern boundary of the area comprises a defunct hedgerow, with hawthorn and blackthorn as dominant species, with some occasional elder.

3.4 Field Survey - Protected Species

3.4.1 New Link Road and Runway Extension (Area A)

Two blocks of residential dwellings within the survey area (Target Note 7a) and (Target Note 7b) are earmarked for demolition. These are relatively old and have a high potential to support roost sites for bat species.

Areas of grassland around hedgerows and scrub interfaces are considered to have a high potential to support common reptile species, notably common lizard (*Zootoca vivipara*) and slow worm (*Anguis fragilis*). The orchard enclosure provides particularly suitable habitat.

All of the hedgerows and orchards have a high potential to support breeding birds from mid-March to mid-August, inclusive. The area of semi-improved grassland also has a high potential to support ground nesting bird species such as breeding skylark (*Alauda arvensis*).

Habitats within this area provide suitable foraging opportunities for badger.

3.4.2 Water Attenuation Location (Area B)

The vegetation around the base of hedgerows is considered to offer medium potential to support common reptile species.

All of the hedgerows, particularly with associated dry ditch (Target Note 8), have a high potential to support breeding birds from mid-March to mid-August, inclusive.

The arable field also has a high potential to support ground nesting bird species such as breeding skylark (*Alauda arvensis*).

Habitats within this area provide suitable foraging opportunities for badger.

3.4.3 Relocation of Flying Clubs (Area C)

The grassland and stream embankments have a medium potential to support common reptile species. The stream supports little in-channel vegetation and in the vicinity of Area C is considered to have low potential for water voles.

Habitats within this area provide suitable foraging opportunities for badger.

3.4.4 Passenger Terminal and Car Parking – West of Railway (Area D)

The areas of scrub and tussocky grassland west of the railway have a medium potential to support common reptile species. However, surveys carried out by Ecology Solutions Limited (2004) found no reptile species, although did acknowledge an incidental record of a common lizard within this section. The survey concluded that reptiles are likely to use the railway corridor and therefore may occasionally utilise the area adjacent to this on a temporary basis.

Along the small embankment area (Target Note 14) there are a number of possible badger paths and mammal push-throughs along the fence running adjacent to the railway. Ecology Solutions Limited (2004) reported that badger hairs, an inactive sett and a latrine had been found in this section however concluded that the site was unlikely to be occupied by badgers. Instead it was concluded that this species was more likely to be occasionally commuting through, *en route* to foraging grounds or setts located outside of the survey area.

The small buildings to the north of the section (Target Note 13) have a low potential to support bat species and no signs of bats were observed inside, such as droppings. However, these buildings, together with the scrub have the potential to support breeding birds from mid-March to mid-August.

Within the secure area (Target Note 15) it was noted that skylarks were present and are very likely to use this area for nesting. Areas of scrub along the eastern boundary of the site have a high potential to support breeding birds from mid-March to mid-August, inclusive.

Habitats within this area provide suitable foraging opportunities for badger.

3.4.5 Passenger Terminal and Car Parking – East of Railway (Area E)

Surveys carried out by Ecology Solutions Ltd (2005) recorded the presence of slow worm and common lizard within this area. However, since the completion of these surveys, the site appears to have undergone a reduction in its overall suitability (i.e. intensive grazing) with only the boundary habitats now offering suitable habitat for common reptile species.

The scrub, trees and hedgerow have the potential to support breeding birds from mid-March to mid-August.

Habitats within this area provide suitable foraging opportunities for badger and a potential outlier badger sett was observed on the eastern embankment of the railway line during the Phase 1 habitat survey in 2009.

4 Potential Impacts, Constraints and Opportunities

4.1 Overview

4.1.1 Construction

The survey area comprises a limited range of habitats, typical of improved lowland landscapes in southern England. The area is also relatively isolated, with no wildlife corridors linking to more semi-natural or ecological diverse habitats such as woodlands or species rich hedgerows.

There are no designated statutory or non-statutory sites of nature conservation interest within the survey area. However, there are a number of statutory designated sites within 5km and a single non-statutory site within 2km of the site.

Protected species that are considered likely to be present within the survey area include common reptile species, breeding birds, badger and bats. Should there be any impacts on the brook to the west of the airport then a water vole survey should be undertaken.

Habitats with potential to provide suitable conditions for foraging or hibernating great crested newts are largely restricted to the boundaries of the site. However, there are no historical records of great crested newts within 500m of the site, and the closest pond to the development is in excess of 400m away.

It is unlikely that the survey area is likely to support rare species of flora or those in decline.

The survey areas include the proposed locations of displaced activities already occupying the airport (i.e. local flying clubs).

4.1.2 Operational

The airport is currently in operation and as such, the proposed extension is considered unlikely to give rise to potentially significant impacts on ecological receptors within the boundaries of the site. However, the potential impacts of lighting and ancillary activities will be fully assessed, including the potential risk of increased bird strikes.

However, the proposed extension and growth of the airport has the capacity to impact on sensitive ecological receptors off-site. In particular, any increases in noise disturbance could potentially impact on the internationally important assemblages of birds, principally wintering populations, using the designated sites around the Essex coast to the north, east and south of the airport. However preliminary discussions with Natural England have indicated that this impact may be assessed as not significant subject to there being no substantial changes to the lateral and vertical arrangement of existing flight paths. This is accepting that there will be an increase in the frequency of flights to and from the airport. In this instance, an Appropriate Assessment would not be required.

The increased frequency of flights has the potential to adversely impact on air quality with increased deposition of emissions from aircraft. This has the potential to impact on sensitive floral communities, in particular those which are the subject of

SSSI designation. It is considered that there would be no significant impacts on inter-tidal habitats from elevated atmospheric emissions as these are naturally nutrient rich systems. However, the potential impact on air quality and ecological receptors, in particular terrestrial SSSI's, will be assessed through modelling. Preliminary discussions with Natural England have similarly indicated that the impact of emissions on terrestrial sites will not be assessed as significant due to their semi-urban location.

The increased area of hard-standing is likely to give rise to increased volumes of run-off with increased loadings of pollutants, in particular de-icing agents. The discharge of surface water run-off from the site will require consultation with the Environment Agency and any approved discharge consent will ensure the provision of measures to protect the ecological integrity of receiving watercourses and ultimately the coastal designated sites into which they discharge.

A copy of Natural England's response to the Joint Area Action Plan (JAAP) can be found in Appendix C.

4.2 Potential Impacts

The likely ecological receptors and potential impacts of the proposed Scheme are included in Table 4.2.

Table 4.2 – Ecological receptors and potential impacts of the proposed Scheme

Receptor	Potential Impacts
Construction and permanent land use change - potential impacts	
Bats	Demolition or disturbance to structures that my support roosting bats (e.g. residential dwellings in Area A). Disturbance / loss of foraging habitat and/or modification of commuting routes (e.g. hedgerows).
Badger	Impacts of disturbance and damage to active setts and direct mortality of badgers.
Reptiles	Direct mortality or disturbance of reptiles. Permanent habitat loss resulting in loss of foraging habitat and places of rest and hibernation.
Breeding birds	Damage or disturbance to nesting birds, nests, or their young by construction activities. Loss of nesting habitat (particularly hedgerows and trees).
Potential operational impacts	
Designated features of Interest	Increased impacts of disturbance resulting from an increase in the frequency of flights and alterations to flight paths, including height of descent and take-off. Increased atmospheric emissions and impacts on sensitive flora.
Bats	Disturbance to key commuting routes and foraging areas arising from additional lighting and increased number of night flights
Badger	Potential risk of injury or mortality arising from improved infrastructure and increased vehicle movements
Birds	Increase in risk of mortality through bird strike and disturbance to nesting birds (i.e. noise, lighting).
Aquatic Habitats	Increased surface water run-off and pollution

4.3 Recommendations for further work

To ensure a full ecological impact can be undertaken it is proposed to undertake a range of further surveys as described in Table 4.3.

Table 4.3: Recommended further ecological work

Species / Habitat	Recommended work
Bats	Surveys to confirm the presence / likely absence of potential roost sites however it is important to note that permission to access residential buildings to undertake internal inspections may not be forthcoming prior to scheme approval. Activity surveys to establish any key commuting routes across the site.
Badger	Surveys to confirm the presence / likely absence of badgers and setts.

	Assessment of fragmentation between any setts and foraging areas.
Reptiles	Surveys to confirm presence / likely absence and determination of population size.
Birds	Breeding bird survey to confirm species using the site and enable a valuation of the importance of the site to be made.
Designated Sites	Complete a Habitat Regulations Assessment, in particular assessing the potential impact of noise disturbance and atmospheric emissions. This will determine whether there are likely to be any significant impacts on the SPA, SAC and Ramsar sites and the need for an Appropriate Assessment. Assess the impacts of noise disturbance and atmospheric emissions on other designated sites. Assess the impacts of surface water discharges on aquatic sites.

Following the completion of the recommended surveys, an assessment of ecological impact will be undertaken in accordance with the Institute of Ecology and Environmental Management's 'Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM 2006)(Appendix D).

5 References

- Biological records provided by Essex Mammal Surveys in 2004
- Biological records provided by Essex Ecology Services Ltd in 2004
- Biological Records provided by Amphibian, Reptile and Mammal Conservation Ltd in 2004
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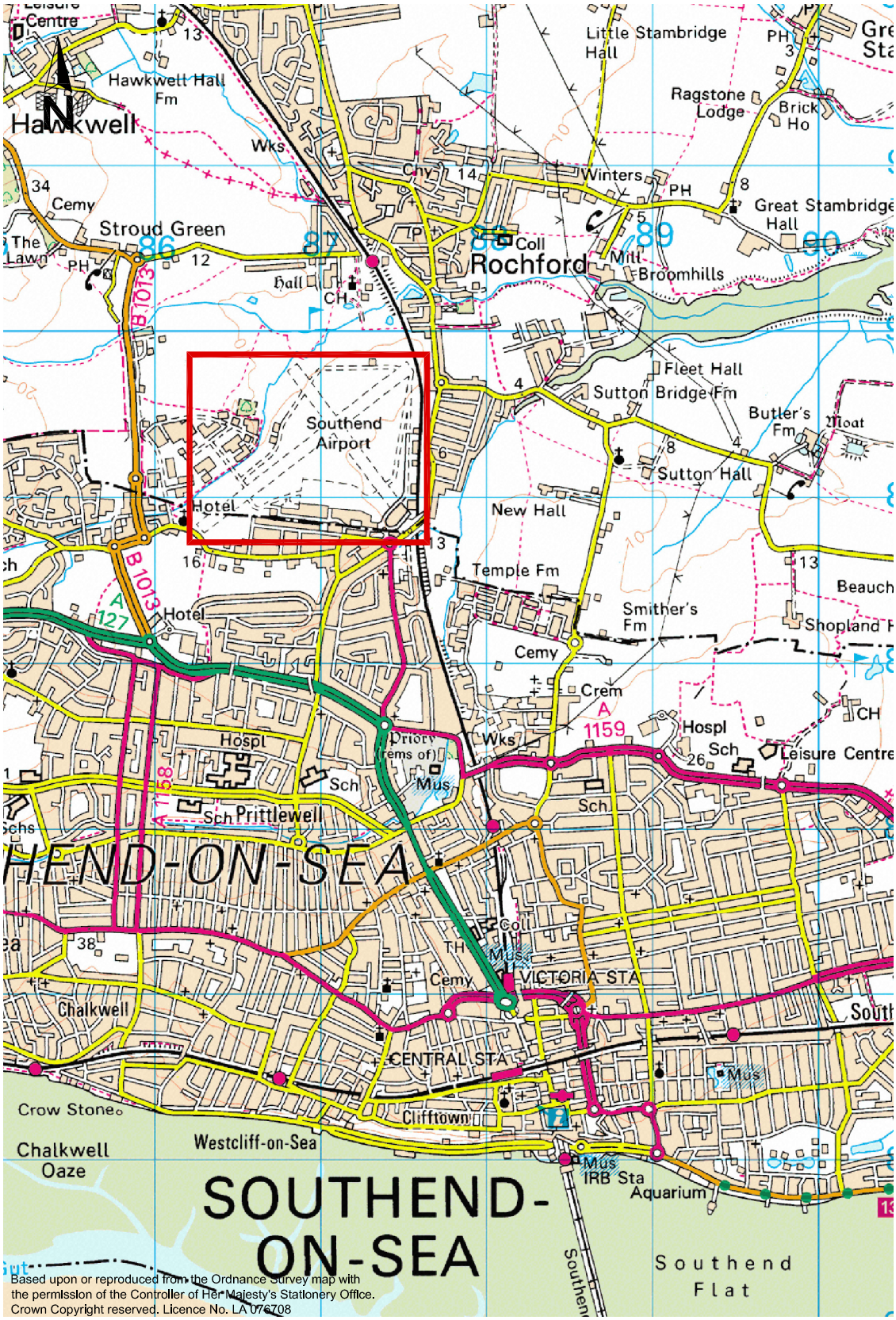

Rev	Revision Date	Purpose of revision	Drawn	Check'd	App'd
0	MAR 09	ORIGINAL ISSUE	JM	DH	EB

Client: LONDON SOUTHEND AIRPORT

JACOBS
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Tel: 01622 666000 Fax: 01622 695085 www.jacobs.com

Project: SOUTHEND AIRPORT RUNWAY EXTENSION

Drawing title: FIGURE 1 SITE LOCATION

Drawing status:

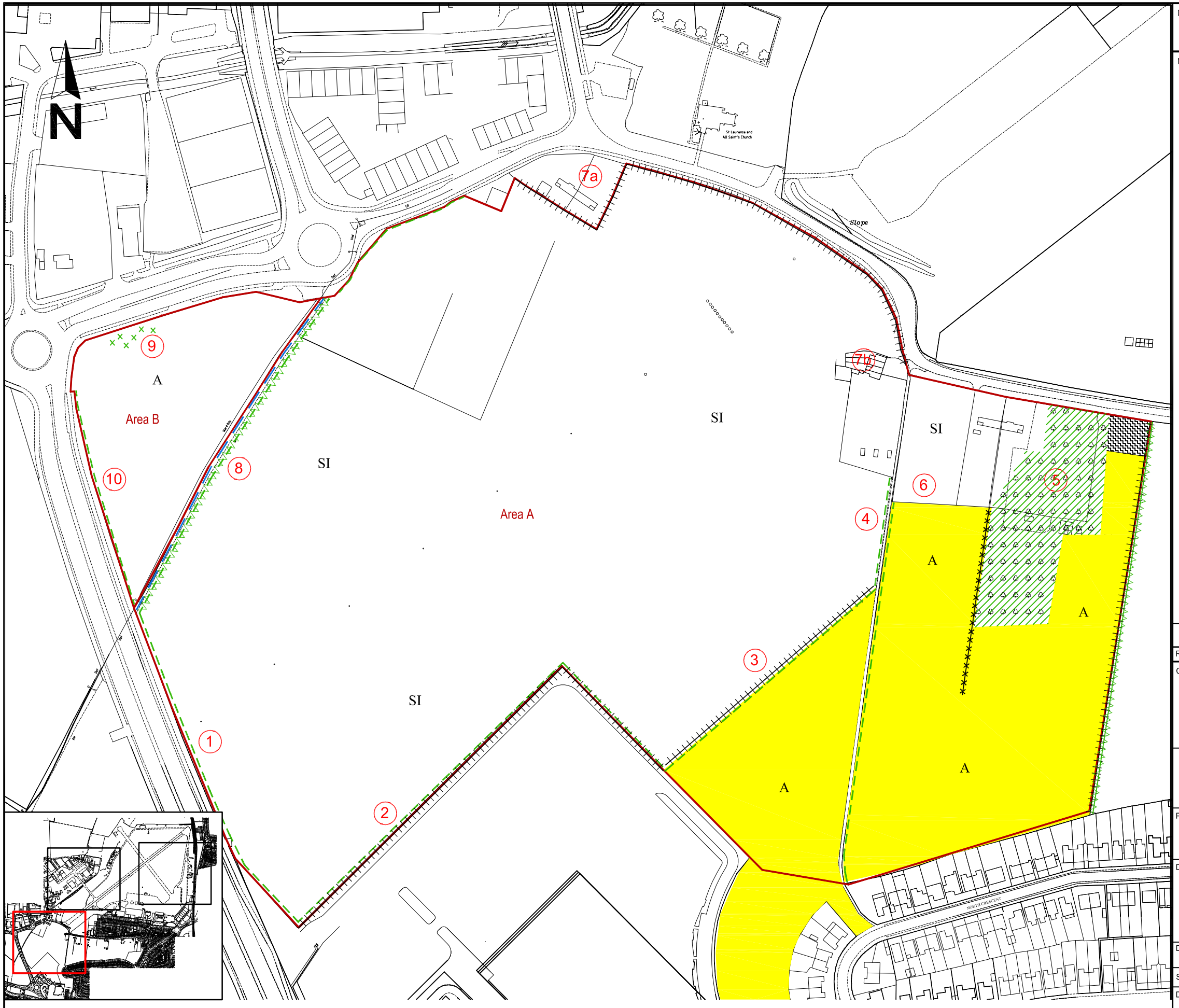
Scale	Not to scale	Do not scale

Drawing number: B01199200/LE/02

Rev: 0

P:\Environment\PROJECTS\B1199200 Southend Airport Runway Extension\Acad\Drawings

A4P



0 50 100 150 200 250 m

SCALE 1 : 2500

Drawing number

B01199200/LE/01

Notes

- A1.1.2 Broadleaved woodland - plantation
- A2.2 Scrub - scattered
- A3.2 Coniferous parkland/scattered trees
- SI B6 Poor semi-improved grassland
- G2 Running water
- A J1.1 Cultivated/disturbed land - arable
- A J1.2 Cultivated/disturbed land - amenity grassland
- J2.1.1 Intact hedge - native species-rich
- J2.2.1 Defunct hedge - native species-rich
- J2.2.2 Defunct hedge - species-poor
- J2.4 Fence
- J2.6 Dry ditch
- J2.7 Boundary removed
- J5 Other habitat - hard standing
- (2) Target note
- Corridor of ecological survey

Rev	Revision Date	Purpose of revision	Drawn	Check'd	App'd
0	MAR 09	ORIGINAL ISSUE	JM	DH	EB

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Project

SOUTHEND AIRPORT
RUNWAY EXTENSION

Drawing title

FIGURE 2
PHASE 1 HABITAT SURVEY
Sheet 1 of 3

Drawing status

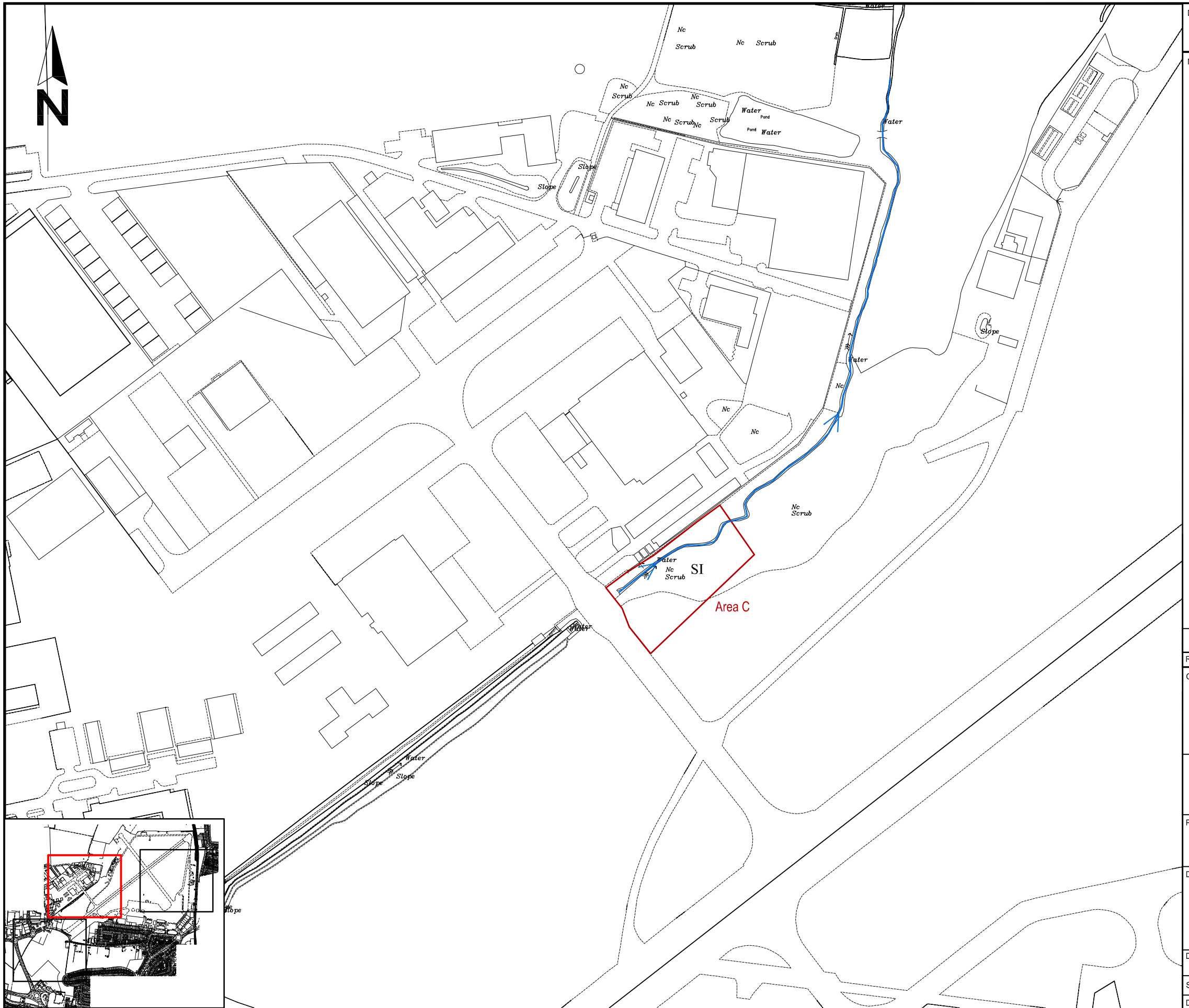
Scale	1:2500 @ A3	Do not scale

Drawing number

B01199200/LE/01

Rev 0

A3



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Drawing number

B01199200/LE/01

Notes

- A1.1.2 Broadleaved woodland - plantation
- A2.2 Scrub - scattered
- A3.2 Coniferous parkland/scattered trees
- SI B6 Poor semi-improved grassland
- G2 Running water
- A J1.1 Cultivated/disturbed land - arable
- A J1.2 Cultivated/disturbed land - amenity grassland
- J2.1.1 Intact hedge - native species-rich
- J2.2.1 Defunct hedge - native species-rich
- J2.2.2 Defunct hedge - species-poor
- J2.4 Fence
- J2.6 Dry ditch
- J2.7 Boundary removed
- J5 Other habitat - hard standing
- (2) Target note
- Corridor of ecological survey

Rev	Revision Date	Purpose of revision	Drawn	Check'd	App'd
0	MAR 09	ORIGINAL ISSUE	JM	DH	EB

Client

LONDON SOUTHEND AIRPORT

JACOBS
Miller House, 43 - 51 Lower Stone Street, Maidstone, Kent, ME15 6GB, England
Tel: 01622 666000 Fax: 01622 695085 www.jacobs.com

Project

SOUTHEND AIRPORT
RUNWAY EXTENSION

Drawing title

FIGURE 2
PHASE 1 HABITAT SURVEY
Sheet 2 of 3

Drawing status

Scale	1:2500 @ A3	Do not scale

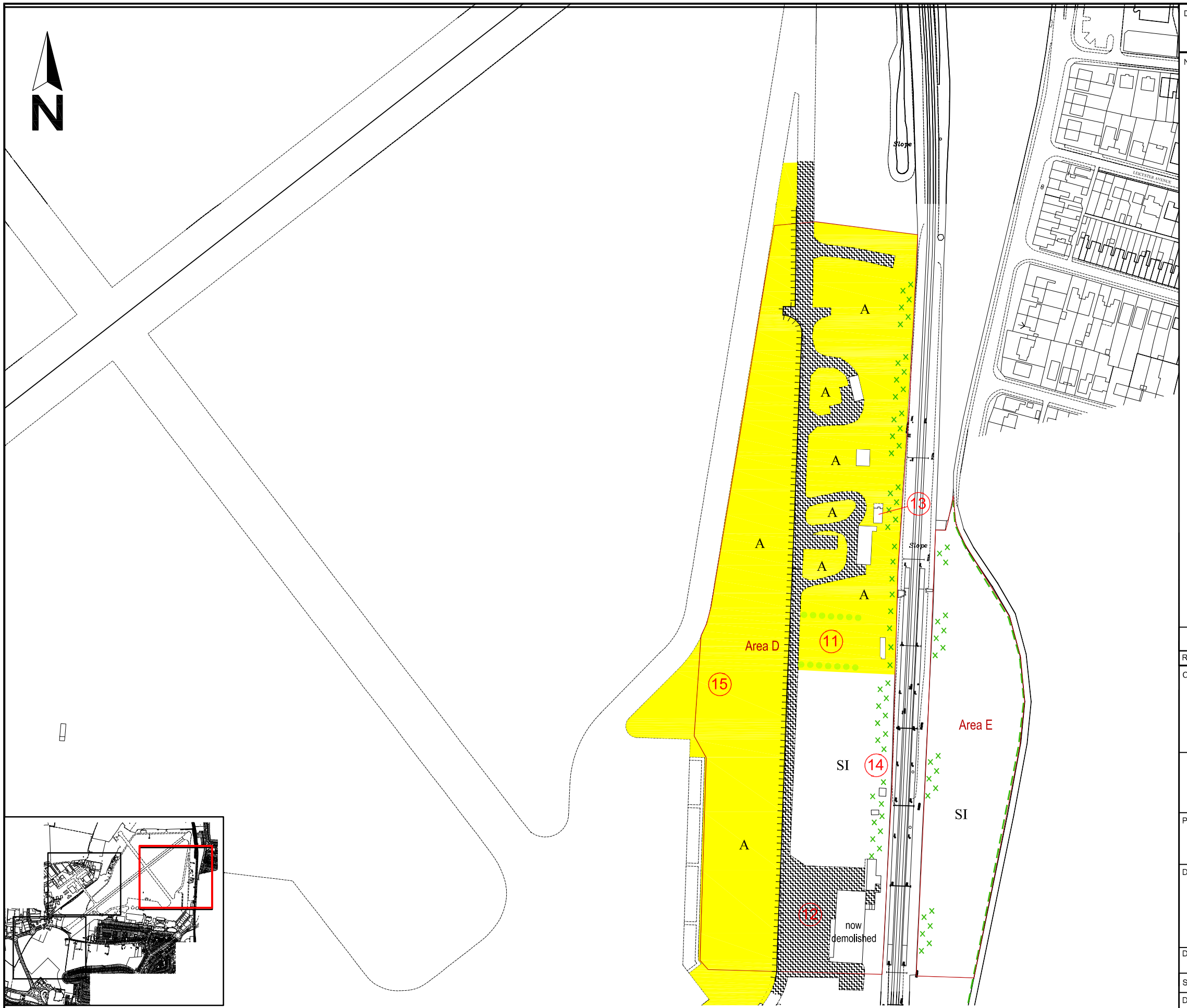
Drawing number

B01199200/LE/01

Rev

0

A3



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Appendix A Wildlife Legislation and Planning Policy

Statutory Legislative Context:

Statutory Legislation	**Implications**
The Conservation (Natural Habitats &c) Regulations (1994) (as amended)	The Conservation (Natural Habitats &c) Regulations 1994 transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (EC Habitats Directive) into UK law. The Regulations provide for the designation and protection of a network of 'European Sites' termed Natura 2000, the protection of 'European protected species', and the adaptation of planning and other controls for the protection of European Sites. Amendments to the Habitats Regulations for England and Wales and the new Offshore Marine Conservation (Natural Habitats &c) Regulations 2007 came into force in 2007 and 2009.
The Wildlife & Countryside Act (1981)(as amended)	The Wildlife & Countryside Act 1981 (as amended) is the principal piece of UK legislation relating to the protection of wildlife. It consolidates and amends existing national legislation to implement the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention), the Bonn Convention, the RAMSAR Convention and Council Directive 79/409/EEC on the Conservation of Wild Birds (Birds Directive) in Great Britain.
The Countryside and Rights of Way Act (2000)	The Countryside and Rights of Way Act 2000 (CRoW) was passed to provide additional levels of protection for wildlife whilst also strengthening the protection afforded to Sites of Special Scientific Interest. It also specifies that it is the duty of Local Authorities to further the conservation of listed habitats and species (UK BAP priority habitats and species)
Natural Environment & Rural Communities Act (2006)	The Natural Environment & Rural Communities Act 2006 (NERC) is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government policy. Section 40 of NERC carries an extension of the earlier CRoW Act biodiversity duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity. Section 41 requires the Secretary of State, as respects England, to publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity.
The Protection of Badgers Act (1992)	In the UK badgers are primarily afforded protection under the Protection of Badgers Act 1992. This makes it illegal to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so and to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it.
The Hedgerows Regulations (1997)	The Hedgerows Regulations 1997 were introduced to protect hedgerows of importance from destruction. However the legislation does not apply to any hedgerow (even if it is within the list above) which is within or marking the boundary of the curtilage of a dwelling house.
The Animal Welfare Act (2006)	Prior to the Animal Welfare Act 2006, people only had a duty to ensure that an animal didn't suffer unnecessarily. The new Act keeps this duty but also imposes a broader duty of care on anyone responsible for an animal to take reasonable steps to ensure that the animal's needs are met. This means that a person has to look after the animal's welfare as well as ensure that it does not suffer. With regards to development, this may have implications when translocations of animals are proposed. As such, care must be taken to ensure that any receptor sites are suitable for the species in terms of habitat and carrying capacity.

Non-Statutory Context

Non-Statutory System	Implications
UK Biodiversity Action Plan	Biodiversity Action Plans (BAPs) set out actions for the conservation and enhancement of biological diversity at various spatial scales. They consist of both Habitat Action Plans (HAPs) and Species Action Plans (SAPs). The UK BAP was the UK's response to the 1992 Convention on Biological Diversity in Rio de Janeiro. Following a review in 2007 a list of 1149 priority species and 65 priority habitats has been adopted, which are given a statutory basis for planning consideration under Section 40 of the NERC Act 2006.
The Population Status of Birds in the UK	Reviews the population status of birds regularly found in the UK. Species have been assessed with respect to seven quantitative criteria to assess the population status of each species and place it onto either the red, amber or green list of conservation priority.
British Red Data Book	British Red Data Books (RDB) are an additional method for determining rarity of species and are often seen as a natural progression from Biodiversity Action Plans. RDB species have no automatic legal protection (unless they are protected under any of the legislation previously mentioned). Instead they provide a means of assessing rarity and highlight areas where resources may be targeted. Various categories of RDB species are recorded, based on the IUCN criteria and the UK national criteria based on presence within certain numbers of 10x10km grid-squares. As with Biodiversity Action Plans, where possible, steps should be taken to conserve RDB species which are to be affected by development.

Planning Policy Context

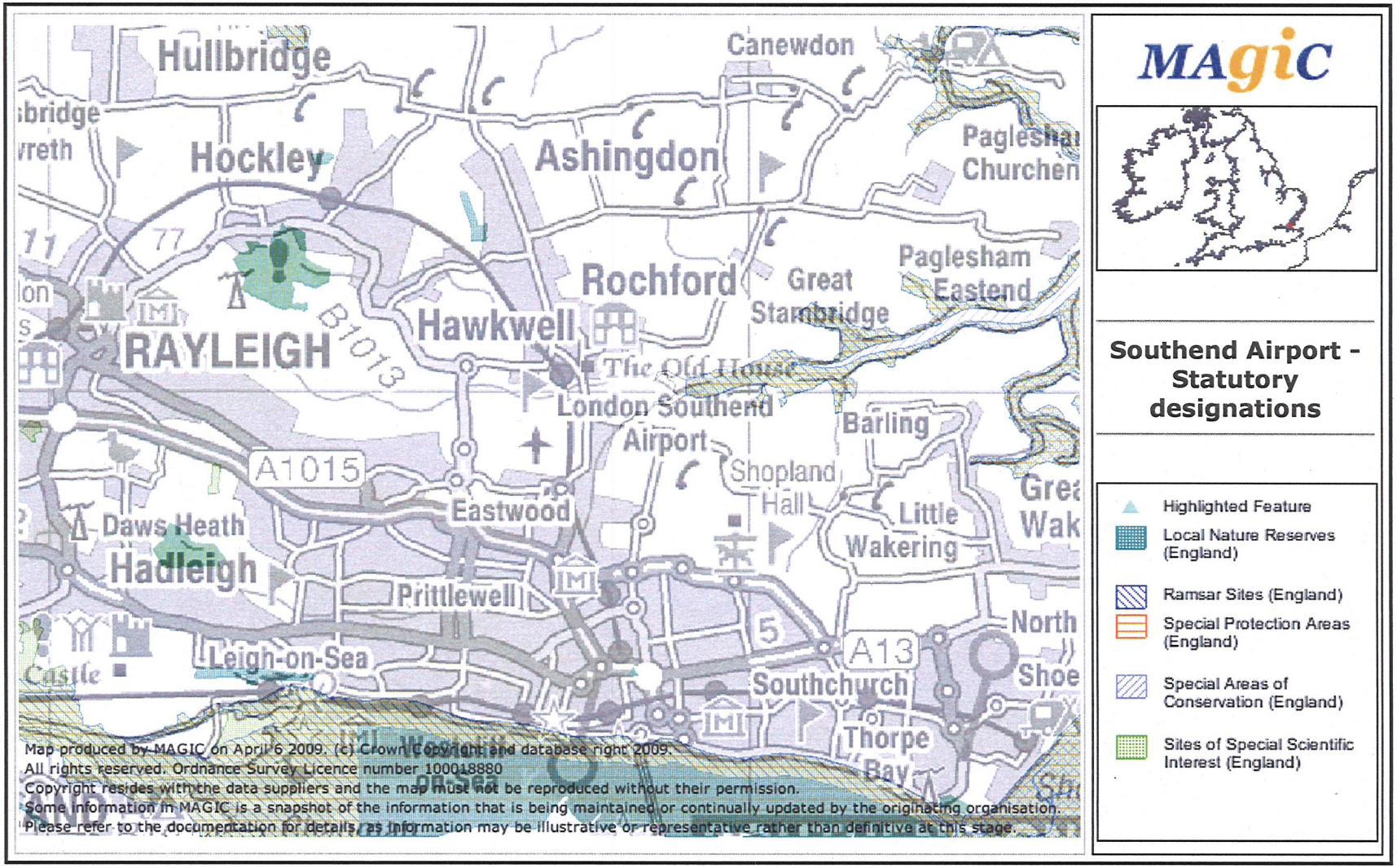
Planning Policy	Implications
East of England Plan (2008) POLICY ENV1: Green Infrastructure	Areas and networks of green infrastructure should be identified, created, protected, enhanced and managed to ensure an improved and healthy environment is available for present and future communities. Green infrastructure should be developed so as to maximise its biodiversity value and, as part of a package of measures, contribute to achieving carbon neutral development and flood attenuation. In developing green infrastructure opportunities should be taken to develop and enhance networks for walking, cycling and other non-motorised transport.
East of England Plan (2008) POLICY ENV2: Landscape Conservation	In their plans, policies, programmes and proposals planning authorities and other agencies should, in accordance with statutory requirements, afford the highest level of protection to the East of England's nationally designated landscapes – the Norfolk and Suffolk Broads, the Chilterns, Norfolk Coast, Dedham Vale, and Suffolk Coast and Heaths Areas of Outstanding Natural Beauty (AONBs), and the North Norfolk and Suffolk Heritage Coasts. Within the Broads priority should be given to conserving and enhancing the natural beauty, wildlife and cultural heritage of the area, promoting public enjoyment and the interests of navigation. Within the AONBs priority over other considerations should be given to conserving the natural beauty, wildlife and cultural heritage of each area. Planning authorities and other agencies should recognise and aim to protect and enhance the diversity and local distinctiveness of the countryside character areas identified.
East of England Plan (2008) POLICY ENV3: Biodiversity and Earth Heritage	In their plans, policies, programmes and proposals planning authorities and other agencies should ensure that internationally and nationally designated sites are given the strongest level of protection and that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation. Proper consideration should be given to the potential effects of development on the conservation of habitats and species outside designated sites, and on species protected by law. Planning authorities and other agencies should ensure that the region's wider biodiversity, earth heritage and natural resources are protected and enriched through

	the conservation, restoration and re-establishment of key resources.
Rochford District Replacement Local Plan 2006 POLICY NR4: Biodiversity on Development Sites	Applicants will be required to incorporate appropriate measures in development proposals to facilitate and encourage biodiversity. Measures will include the provision of features for the benefit of nature and landscape conservation, such as grassland, woodland, ponds and other aquatic features.
Rochford District Replacement Local Plan 2006 POLICY NR5: European & International Sites	Proposals for development which may affect a Special Area of Conservation (either candidate or designated), Ramsar site or Special Protection Area will be subject to the most rigorous examination. Development not directly connected with or necessary to the management of the site, and which would have significant effects on the site (either singly or in combination with other plans and projects), and where it cannot be ascertained that the proposals would not adversely affect the integrity of the site, will not be permitted unless it can be clearly demonstrated that there is no alternative solution and that the development is necessary for imperative reasons of overriding public interest.
Rochford District Replacement Local Plan 2006 POLICY NR6: Sites of Special Scientific Interest	Proposals for development which is likely to have an adverse impact, either directly or indirectly, on a Site of Special Scientific Interest (SSSI) will not be permitted unless the justification for the development clearly outweighs the national nature conservation interest of the site. If there is risk of damage to a designated site from development the local planning authority will endeavour to enter into a planning obligation with the developers to secure future site management or to make compensatory provision elsewhere for losses expected when development occurs.
Rochford District Replacement Local Plan 2006 POLICY NR8: Other Landscape Features of Importance for Nature Conservation	When considering proposals for development the local planning authority will protect the following landscape features, which are of importance for wild fauna and flora from loss or damage: i. Hedgerows ii. Linear tree belts iii. Plantations and woodlands iv. Semi-natural grasslands v. Marshes vi. Watercourses vii. Reservoirs viii. Lakes ix. Ponds x. Networks or patterns of other locally important habitats Development which would adversely affect, directly or indirectly, the landscape features listed above will only be permitted if it can be proven that the reasons for the development outweigh the need to retain the feature and that mitigating measures can be provided for, which would reinstate the nature conservation value of the features. Appropriate management of these features will be encouraged through the imposition of conditions on planning permissions where appropriate and/or the completion of a legal agreement to secure the provision of a replacement feature of equivalent value, and to ensure the future management thereof.
POLICY NR9: Species Protection	Planning permission will not be granted for development likely to cause harm to species protected under English and/or European Law. Development will not be permitted unless it can be demonstrated that the justification for the proposal clearly outweighs the need to safeguard the nature conservation value of the species or its habitat. In such cases the local planning authority will impose conditions and/or seek the completion of a legal agreement in order to: i. secure the protection of individual members of the species; ii. minimise the disturbance to the species; and iii. provide adequate alternative habitats to sustain at least the current levels of population.
Planning Policy Guidance 9: Biodiversity and Geological Conservation	Planning Policy Statement 9 (PPS9) sets out the view of central Government on how planners should balance nature conservation with development and helps ensure that Government meets its biodiversity commitments with regard to the operation of the planning system. It is a key objective of PPS9 to: "to conserve, enhance and restore the diversity of England's wildlife and

geology by sustaining, and where possible improving, the quality and extent of natural habitat and geological and geomorphological sites; the natural physical processes on which they depend; and the populations of naturally occurring species which they support."

PPS9 states that development plan policies and planning decisions should be based upon up-to-date information about the environmental characteristics of their areas, including biodiversity. It also states that the aim of planning decisions should be to prevent harm to biodiversity conservation interests and to “promote opportunities for the incorporation of beneficial biodiversity and geological features within the design of development".

Appendix B Designated Sites


Hullbridge
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Great
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The Old House
London Southend
Airport
Barling
A1015
Shopland
Hall
Eastwood
Little
Wakering
Daws Heath
Hadleigh
Prittlewell
North
Shoe
A13
Leigh-on-Sea
Southchurch
Thorpe
Bay
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Please refer to the documentation for details, as information may be illustrative or representative rather than definitive at this stage.
MAGIC
Southend Airport - Statutory designations
Highlighted Feature
Local Nature Reserves (England)
Ramsar Sites (England)
Special Protection Areas (England)
Special Areas of Conservation (England)
Sites of Special Scientific Interest (England)

Appendix C Natural England Joint Area Action Plan (JAAP) Response

Natural England
Harbour House, Hythe Quay, Colchester, Essex CO2 8JF
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Directorate of External Services
Head of Planning & Transportation
Rochford District Council
Council Offices
South Street
Rochford
Essex SS4 1BW

For the attention of: Sam Hollingworth

Our ref: GW/EE3265

1 April 2009

Dear Sir

Southend Airport & Environs Joint Area Action Plan (JAAP)

Thank you for consulting Natural England about the above document. Natural England's comments are as follows.

1. On-site impacts

Natural England notes that the land directly affected by the proposed airport expansion is of relatively limited nature conservation value. Protected species may be present, but any impacts upon such species could almost certainly be addressed through appropriate mitigation measures.

2. Potential impacts upon statutorily designated sites and areas

Noise and disturbance
The proposed development would result in a significantly increased frequency of overflights of the Dengie SSSI, SPA, Ramsar site and NNR; and of the Crouch and Roach SSSI, SPA and Ramsar site by aircraft during approaches. If the typical altitude of such overflights remains unchanged from that currently employed, and taking into account the ability of most birds to become habituated to regularly-occurring noise disturbance, Natural England is satisfied that the increased frequency of overflights would not be likely to result in any significant impact upon the interest features for which these sites are designated. However, Natural England reserves the right to object to any subsequent application if it becomes apparent that the approach path would be at a shallower slope than currently employed, resulting in overflights of these designated sites taking place at significantly lower altitudes than at present.

There would also be an increase of a similar scale in the number of overflights of the Benfleet and Southend Marshes SSSI, SPA and Ramsar site during departures. However, in view of the altitude at which such overflights normally take place, and also taking into account the ability of most birds to become habituated to regularly-occurring noise disturbance, Natural England is satisfied that this increased frequency of overflights would not be likely to result in any significant impact upon the interest features for which this site is designated.

Air quality
The proposed development would be likely to result in the above coastal designated sites being subjected to increased levels of exposure to oxides of nitrogen and other pollutants, both from the increased number of flights and from increased surface transport associated with the development. As a consequence, these sites would also be likely to be subjected to increased nitrogen deposition and acid deposition. However, Natural England does not consider that these coastal sites are particularly sensitive to this form of airborne pollution and, consequently, is satisfied that the proposed development would not be likely to result in any significant impact upon the interest features for which these sites are designated.

In addition to the above coastal sites, there are also a number of terrestrial designated sites in the vicinity, including Garrold's Meadow SSSI, Great Wood & Dodds Grove SSSI, Hockley Woods SSSI, and Thundersley Great Common SSSI. It is likely that these sites would also be subjected to increased levels of atmospheric pollutants and deposition as a result of increased flights and/or the associated increased surface transport; although probably to a lesser degree than the above coastal sites. In the absence of any detailed modelling of pollutants or deposition, it is not possible at this stage to determine the scale of any such impacts although, in view of the semi-urban locations of these SSSIs, it is unlikely that this would constitute a major proportion of the total pollution impact upon these sites. However, Natural England reserves the right to object to any subsequent application if modelling does show a significant impact upon any statutorily designated site.

Surface Water run-off
There is potential for the above-mentioned designated sites to be affected by the increased surface water run-off resulting from the increased area of hard surfaces and this would need to be addressed through the provision of suitable balancing ponds or storage tanks. During the winter months, run-off from the runway, taxiways and aircraft hardstandings may be contaminated by de-icing chemicals such as glycol or urea, and adequate measures would need to be put into place to deal with any such chemicals before the water is discharged to the wider environment.

Potential impacts resulting from displacement of existing activities
If the proposed development were to result in the relocation of existing activities such as flying clubs to other airfields then this could potentially result in impacts upon other designated sites. In the absence of any details, it is not possible to consider this issue further at the current time. However, Natural England reserves the right to object to any subsequent application if it becomes apparent that any such displaced activities would be likely to have a significant impact upon any statutorily designated site.

3. Wider environmental issues

Contribution to climate change
Natural England notes that the aviation sector is a significant and rapidly increasing contributor to climate change, due to its emissions of CO_2 and other greenhouse gases (GHGs). According to forecasts, aviation could be responsible for 10-15% of the UK's

carbon dioxide emissions by 2020; implying that aviation growth as envisaged in the Aviation White Paper is likely to be incompatible with meeting the UK's climate change targets.

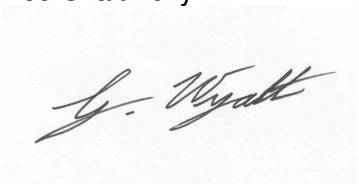
Natural England is, therefore, concerned about the potential impacts of the proposed expansion of airports across the UK. The debate on UK aviation is hampered by a lack of agreement on basic data and forecasting. This is identified in the recent Sustainable Development Commission (SDC) report which states that "*much basic evidence on which current and future [aviation] policy is based, is in dispute*". The SDC report highlights a disagreement on the economic arguments for and against aviation (for example, the extent and significance of the tourism deficit). Other research has highlighted that the cost-benefit analysis undertaken for the Aviation White Paper focused primarily on predicted time savings for passengers, but did not include monetary estimates for environmental disbenefits such as impacts on biodiversity and landscape. In addition positive and adverse impacts cannot be quantified and are not always represented in the cost benefit analysis of expansion so that, for example, the Department for Transport's cost benefit analysis for new runways at Stansted and Heathrow remained positive even when worst case GHG emissions scenarios were used.

Loss of tranquillity
The increased number of aircraft movements associated with the proposed airport expansion would be likely to result in a further degradation of the sense of tranquillity experienced by visitors to this part of the Essex coast and its estuaries.

Constraints on future habitat creation or enhancement
Natural England is concerned that the safeguarding requirements associated with the proposed airport expansion may potentially be more stringent than at present and could place restrictions upon future opportunities for habitat creation or enhancement in the vicinity of the airport, particularly of wetland sites likely to attract birds (eg managed coastal realignment sites). Both the '*Thames Estuary 2100*' report and the emerging Essex Shoreline Management Plan have identified the need for significant additional areas of new coastal and wetland habitats in order to compensate for the ongoing losses resulting from 'coastal squeeze' due to climate change and sea level rise.

I hope that the above comments are of assistance in progressing the JAAP. If you have any queries about the contents of this letter, please do not hesitate to contact me again.

Yours faithfully



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Appendix D Ecological Impact Assessment

Assessment Methodology

For all identified ecological receptors, an assessment of ecological impact will be undertaken in accordance with the Institute of Ecology and Environmental Management's 'Guidelines for Ecological Impact Assessment in the United Kingdom (IEEM 2006)'.

The IEEM guidelines provide a recommended procedure for the ecological component of Environmental Impact Assessment. The Guidelines set new standards for the assessment of the ecological impact of projects and plans, so as to improve the consideration of the needs of biodiversity and thereby reduce the impacts of any development.

In accordance with the IEEM guidelines, the assessment will follow the process outlined below:

- Ecological baseline and key attributes;
- Identification of legal protection offered to the feature;
- Evaluation of ecological receptor;
- Identification of construction and operational impacts;
- Characterisation of potential impacts;
- Assessment of the significance of impacts;
- Identification of mitigation measures; and
- Assessment of predicted residual impacts.

The assessment of ecological impact will be undertaken in full consultation with key stakeholders. In particular, this will include Natural England during the screening stage of an Appropriate Assessment.

Baseline and key attributes

The establishment of the ecological baseline will be determined following the completion of specific surveys and a review of previous survey information, literature, aerial photographs and OS maps.

Identification of legal protection offered to the feature

Independent of any assessment of biodiversity value, an assessment of the legal protection afforded to ecological receptors will be made.

European Directives and International agreements concerning biodiversity relevant to the proposed development include:

- EC Directive on the Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992) as amended (92/43/EEC);
- EC Directive on the Convention of Wild Birds (Birds Directive 1979) as amended (79/409/EEC) ;
- Bern Convention on the Conservation of European Wildlife and Natural Habitats. (Bern Convention 1979) ;
- Bonn Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979) ; and

These Directives and agreements are applied in the following UK Acts and Regulations:

- Wildlife and Countryside Act 1981 (as amended)
- Protection of Badgers Act 1992
- Conservation (Habitats etc) Regulations 1994 (as amended 2007) (known hereafter as the “Habitat Regulations")
- Wild Mammals Protection Act 1996
- Countryside and Rights of Way Act 2000
- Planning Policy Statement 9 (PPS9)
- Natural Environment & Rural Communities Act (2006)

Evaluation of Ecological Receptor

Assessing the value of an ecological receptor uses all collated information to determine the baseline status of the resource. The ecological evaluation of a receptor is determined by reference to statutory and non-statutory site designations, the results of consultation, literature review and field surveys. The value of the ecological receptor is then placed in a geographical context.

The criteria used in the ecological evaluation process includes reference to the legal protection conferred on species or habitats as well as the conservation status of the receptor, such as presence on national or local Biodiversity Action Plans. These factors give rise to a level of conservation importance being assigned to species/habitats that reflects the geographical framework used in the evaluation process. This approach is supported by IEEM.

The ecological evaluation of a feature or area of habitat takes into account the level of conservation importance of the species, as well as other factors such as the level of use of the habitat or feature by a species, whether the species or habitat is locally or regionally common or rare, as well as other criteria that contribute to a feature’s importance. In this way, the method of evaluation provides a system that combines legislative protection on species and/or habitats and conservation parameters which all contribute to the ecological importance of the receptor.

Identification of activities that may impact on the receptor

Professional judgment by an experienced ecologist will be used to identify those activities associated with the development that could potentially impact on the receptors. A list of potential activities is given below. This list is not exhaustive and the potential impacts of different activities may differ between receptors:

- Habitat Loss.
- Severance and reduced habitat connectivity.
- Direct mortality.
- Air / light pollution.
- Noise disturbance.

Impact Characterisation

Characterisation of each impact will be assessed for each element of the construction and operational phases. The characterisation of each impact will be based on the following parameters:

- Negative or positive impact.
- Impact extent/magnitude.
- Direct or indirect impact.
- Reversibility of impact: irreversible or reversible.
- Frequency of impact: single event, recurring or constant.
- Duration of impact: short term, medium term or permanent.

Impact Significance

The level of significance of predicted impacts on ecological receptors and confidence level of occurrence is an important factor in influencing the decision-making process and determining the necessity and /or extent of mitigation measures.

IEEM defines significant impact as “an impact (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats and species within a given geographical area” (IEEM, June 2006). An impact can therefore be significant at Local, County, National or International levels. It is important to consider the likelihood that a predicted impact will occur.

Impacts can be beneficial or adverse, either improving or decreasing the ecological status, health or viability of a species, population or habitat. Significance levels are determined for each impact at a geographical scale to act as a guide to the level of mitigation required.

The confidence with which a significant impact is likely to occur can be expressed as:

- certain/near-Certain: probability estimated at 95% chance or higher
- probable: probability estimated above 50% but below 95%
- unlikely: probability estimated above 5% but less than 50%
- extremely unlikely: probability estimated at less than 5%

Outlining proposed mitigation measures

Following the identification and quantification of impacts on ecological receptors, mitigation measures will be recommended to prevent, reduce or offset potentially significant impacts.

Assessing predicted residual impacts of the proposals

All assessments of predicted residual impacts will be based on, and dependent on, the successful implementation and maintenance of appropriate mitigation measures.

Assessment of significance will be defined as the geographical scale at which the impact would be considered to be of a material matter for decision makers in terms of maintaining the nature conservation status of the feature. An impact could therefore be significant at Local, District, County, Regional, National or International levels.

These levels of significance are similar to the levels of value assigned to ecological receptors as there is a clear link between the value of a receptor and the significance of impacts on it.