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LONDON SOUTHEND AIRPORT

Southend Airport Runway Extension and Associated Development

Environmental Scoping Report

June 2009

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Southend Airport Runway Extension and Associated Development: Environmental Scoping Report

Non Technical Summary

Background and Project Description

A scoping exercise has been undertaken to assess the principal environmental impacts and benefits associated with a proposed project to extend the runway at Southend Airport. The scoping has been undertaken with a view to the preparation of an Environmental Statement (ES) to support a planning application to enable runway construction by May 2011. The objectives of the report are to:

- *Outline the essential and required supporting infrastructure for the proper and efficient operation of the airport as it grows to about 2 mppa over the period to 2020;*
- *Consider the appropriate "base case" for the EIA;*
- *Set out the known baseline environmental conditions within and adjacent to the airport;*
- *Identify key potential environmental impacts;*
- *Describe the proposed methodology for the EIA.*

The airport will continue to develop and grow even without an extension to the runway, and consents already exist for the construction of a new rail station and car parking (construction underway), a new 4,500m^2 passenger terminal and associated apron development and further car parking (planned for construction during 2010).

The base case for the Environmental Impact Assessment (EIA) assumes these consented developments would come forward irrespective of the proposed runway extension. Passenger growth in this base case is forecast to increase to around 740,000 passengers per year by 2020.

In the development case the runway extension will allow larger aircraft to operate from the airport, lead to the development of some new airline routes and thereby support additional passenger growth which would increase to about 2 mppa by 2020.

Annual air traffic movement (ATM) forecasts at 2020 for the base case and development case are 52,500 and 53,300 respectively. The relatively small difference in ATMs compared to passenger numbers is due to a forecast shift away from the current dominance of flying club activities towards increased commercial passenger flights which carry more passengers on larger (A319 size) aircraft which will be able to use the longer runway.

Additional infrastructure required for the runway extension project is likely to comprise:

Essential Infrastructure:

- *Runway extension and repositioning of landing lights;*
- *Diversion of Eastwoodbury Lane (this currently crosses the site of the proposed runway extension);*
- *Drainage/attenuation for the extended runway and road diversion;*
- *Demolition of four cottages on the south side of the runway extension area, and two on the north side;*

- *Possible demolition of part of the churchyard wall at St Laurence and All Saints Church which currently impinges on land adjacent to the runway which is required to be obstacle free.*

Required Supporting Infrastructure:

- *Further phased development of the terminal to expand capacity from 4,500 m^2 to 9,000 m^2;*
- *Additional apron space for aircraft parking;*
- *Additional car parking to support passenger and employee growth;*
- *New taxiways;*
- *Physical environmental mitigation works, which are anticipated to include balancing ponds and localised road access/junction improvements;*
- *Relocation of flying clubs from the site of the new parking area to the north side of the airport.*

It is the intention that a Planning Application will be submitted in 2009 to cover the Essential Infrastructure only. The Required Supporting Infrastructure will not be included in the application because these facilities may not be required for some years, and it is therefore inappropriate to prepare detailed designs for these elements at this stage. However the scope of the EIA will include an assessment of the potential impacts of all the Essential and Required Supporting Infrastructure. The EIA will not include other developments, including any considered as part of the Joint Area Action Plan (JAAP) for the airport and its environs (see below).

Planning Context

There is significant national, regional and local policy support for the development of Southend Airport. This support is contained within the UK's national aviation policy - *The Future of Air Transport* White Paper (2003), the East of England Plan (2008), the Thames Gateway South Essex Partnership's 'Delivering the Future', through to the adopted and emerging local development plans for Southend and Rochford. A Joint Area Action Plan (JAAP) is currently being prepared by Southend Borough Council (SBC) and Rochford District Council for the Airport and its surroundings up to 2021. The Authorities published their preferred option document in February 2009 which recommends a High Growth Scenario for the Airport based around an extended runway.

The Airport is aiming to submit an application for the runway extension in late summer/autumn 2009. This is likely to coincide with the Councils' approved JAAP Submission Document which will then, following pre-submission consultation, go forward to the Secretary of State for an Examination in Public (EiP). The EiP is expected to take place in early 2010 with the Inspector's Report in summer 2010. The runway extension application, and its associated ES, could help to inform the EiP.

Potential Impacts, Constraints and Opportunities

The principal impacts, constraints and opportunities that have been identified through this scoping study are summarised in Table 18.1 of the main report. Key issues are as follows:

Land Use & Amenity

- *Contours for runway Public Safety Zones (PSZs) may change from the published contours, and between the base and development cases. This could impact on third party development proposals and aspirations.*

- *Loss of Grade I agricultural land for runway extension and diversion of Eastwoodbury Lane; however this land is not currently used for agriculture as it comprises an airport safeguarded area and SBC amenity areas.*
- *Eastwoodbury Lane diversion would result in the loss of a children's play area and sports field in St Laurence Park; however the JAAP acknowledges this and identifies an alternative area for provision of public open space nearby.*
- *Eastwoodbury Lane diversion would sever the footpath/cycleway through St Laurence Park and a diverted route will need to be identified.*
- *Loss of four cottages along Eastwoodbury Lane for runway extension area, and an additional two on the north side of the runway extension.*

Surface Access

- *Increased local surface transport could exacerbate current peak hour congestion along the A127, A1159, A13 and at Hart House roundabout and Anne Boleyn roundabout.*
- *Provision of a new low cost carrier at Southend Airport could reduce car journeys to other regional airports, notably Stansted and Gatwick.*
- *A revised Airport Surface Access Strategy (including Green Travel Plan) will be required, compatible with other transport initiatives in the JAAP and with the proposed South Essex Rapid Transit (SERT).*
- *A diversion of Eastwoodbury Lane will be required and this will be assessed with a local transport study supported by traffic surveys and a road side interview survey.*

Noise

- *The runway extension will allow more modern, quieter aircraft (e.g. Airbus 319) to access the airport; preliminary impact assessment results indicate that average noise levels would be increased compared to 2007 but the noise footprint of individual aircraft would be less than current types.*
- *In terms of both averages and individual aircraft the noise levels would be very much less than was the case in the 1960s.*
- *The proposed development will allow the opportunity for a review of controls on the airport operation.*
- *Increased surface transport and changes to the alignment of Eastwoodbury Lane will cause additional noise impact in some locations e.g. North Crescent adjacent to the Eastwoodbury Lane diversion.*

Air Quality

- *A Detailed Air Quality Assessment is not likely to be required and the use of screening modelling is proposed.*
- *Potential air quality impacts on terrestrial SSSIs due to deposition of pollutants (issue raised by Natural England).*

Ecology

- *No statutory or non-statutory nature conservation sites lie within close proximity to the airport.*
- *The Crouch and Roach Estuary internationally designated site 1.7km to the east will require Appropriate Assessment screening under the Habitats Regulations; however Natural England have advised that noise may not be a significant issue provided flight paths and altitude remain the same.*
- *Potential air quality impacts on terrestrial SSSIs due to deposition of pollutants (issue raised by Natural England).*
- *Need for protected species surveys for the proposed development areas: reptiles, badgers, bats, and nesting birds (notably skylark).*

Cultural Heritage

- *There are potential impacts on the Grade I listed St Laurence and All Saints Church; the church building itself will not be directly impacted but there will be a need to assess impacts of the possible need for removal of part of the churchyard wall and any tree removal which would impact on the church's setting.*
- *There are known buried archaeological remains across the airport including World War II airfield defences.*
- *Possible need for trial trenching for areas to be covered by the planning application.*

Landscape & Visual

- *No significant landscape designations within close vicinity to site but extension to the planned and consented new terminal building and the Eastwoodbury Lane diversion provide new features requiring assessment.*
- *JAAP Preferred Option Report proposes a revision to the Green Belt so that it no longer impinges on the airport operational area.*

Water and Soils

- *Previous Phase I desk studies and ground investigations indicate no significant contamination at the runway extension area; some potential identified for contaminated soils in other areas but it is recommended that any further investigations be conditioned to the application.*
- *A drainage study will be carried out with a view to integrating new infrastructure with existing, and to upgrade the airport for the introduction of de-icer use.*
- *A Flood Risk assessment will be undertaken in line with PPS25.*

Socio-economic and Sustainability

- *Significant socio-economic benefits are envisaged with implementation of the runway extension; the latest study (in 2008) indicated that it could result in an additional 1700 jobs by 2020, generating £60 million of income.*
- *An Outline Sustainability Appraisal will be produced in support of the application.*
- *It is considered that the impacts on global climate change cannot be appropriately assessed for an individual development of this nature, such impacts being addressed through the Government's approach within the European Union's Emission Trading Scheme.*

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Contents

1 Introduction

1.1 Background to the Project

London Southend Airport Company Limited (LSACL) has recently been purchased by Stobart Airports who intend to seek planning permission for the extension to the runway and associated works which will support and accelerate an increase in the number of passengers using the Airport. The aim is to complete the extended runway by May 2011. Jacobs has been commissioned by LSACL to undertake an Environmental Impact Assessment (EIA) for the runway extension and associated infrastructure. The runway extension would facilitate growth to around 1.97 million passengers per annum (mppa) by about 2020, with some 53,300 total aircraft movements.

1.2 The Need for EIA

The development falls within the scope of projects described in Schedule 2 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. This requires an EIA to be undertaken if the development is judged likely to give rise to significant environmental effects. Given the project context it is considered appropriate that the development be considered as an "EIA Application," as defined by recent Government guidance, and accordingly an Environmental Statement will be submitted.

1.3 Purpose of the Report

The purpose of this report is to:

- *Briefly describe the proposed development;*
- *Identify and describe the appropriate "base case" for the EIA;*
- *Set out the known baseline environmental conditions within and adjacent to the airport;*
- *Identify key potential environmental impacts;*
- *Describe the proposed methodology for the EIA.*

It is intended that this report will be circulated to key statutory and non-statutory consultees to obtain feedback and to gain agreement on the proposed scope of the EIA.

1.4 Scoping Methodology and Consultations

The scoping phase identifies the key issues that will be addressed by the EIA and reported in the Environmental Statement. Consultation, desk based studies and initial site surveys have been used to analyse the issues and to determine the principal constraints and opportunities. This report therefore identifies the most significant issues, and those which should be included within the scope of the EIA. This report considers the potential effects of the scheme against the base case conditions that would prevail in the absence of the development. Consideration is given to impacts during both the operational and construction phases. The baseline conditions have been derived using data from historical and public records, preliminary results from site surveys, and a consideration of the future expansion of the airport without the runway extension.

The following organisations have been contacted for the purposes of data collection and/or discussion of potentially significant issues:

- *Southend-on-Sea Borough Council;*
- *Rochford District Council;*
- *Natural England;*
- *Environment Agency;*
- *Renaissance Southend.*

All studies have been undertaken by Jacobs with the exception of the Noise Impact Scoping Report at Appendix B which was prepared by specialist consultant Bickerdike Allen Partners, and the Third Party Risk which has been prepared by DNV. Air traffic forecasts have been prepared by Avia Solutions.

1.5 Layout of the Report

The Report is structured as follows:

- *Non Technical Summary;*
- *Chapters 1 and 2 provide the background and a description of the development proposals;*
- *Chapter 3 summarises the planning policy framework;*
- *Chapters 4 to 15 describe the baseline conditions, potential impacts, opportunities & constraints, and proposed EIA methodology for a number of key environmental areas;*
- *Chapter 16 introduces the need for assessment of cumulative impacts;*
- *Chapter 17 provides a summary table and identifies those topics which require further detailed study in the EIA, and those which can be excluded.*

Standalone reports are included as Appendices for the following specialist areas:

- *Noise Impact Scoping Report;*
- *Ecological Scoping Report;*
- *Contaminated Land Phase I Desk Study.*

2 Description of the Site and Proposed Development

2.1 Existing Airport

The airport occupies a site of some 125ha, just to the north of Southend-on-Sea. The majority of the Airport lies within the administrative area of Rochford District Council, but the south western extremity of the Airport (including the site of the proposed runway extension) lies within the administrative area of Southend-on-Sea (Unitary) Borough Council.

Around 37,000 aircraft movements a year currently use the Airport, 55% of which comprise flying club movements and 35% business aviation. About 40,000 passengers per year use the airport and around 500 tonnes of cargo were transported through the airport in 2007. The Airport is also a major maintenance base for the maintenance, repair and overhaul (MRO) of aircraft.

2.2 Site Area and Characteristics

The airport is situated on flat, open and largely un-vegetated land between the urban areas of Southend-on-Sea to the south, and the town of Rochford to the north. An industrial/business park area lies to the north-west with open agricultural land beyond. A strip of high grade agricultural land lies immediately to the south, between the airport and the A127, with the urban areas of Prittlewell beyond. St Laurence Park, an important amenity area is located in this strip of land. The eastern boundary of the airport is bounded by the mainline railway with a small residential area beyond. Further east lies open agricultural land bounded to the north by the Roach Estuary. This is an important ecological site with international designations for nature conservation. The majority of the undeveloped area surrounding the airport is covered by Metropolitan Green Belt. Figure 2.1 provides an Environmental Constraints Plan of the airport and its environs.

2.3 Developments Underway

Outline planning permission was granted in 1999 which included the following facilities:

- *New rail station (on the London Liverpool Street to Southend Main Line);*
- *New 4,500 m^2 terminal;*
- *Car parking between station and terminal for approximately 345 cars;*
- *New terminal apron to accommodate 5 aircraft.*

The new terminal will have a capacity to handle at least 700,000 passengers per year. Details of the above were approved through reserved matters applications in November 2004. Construction of the rail station and car parking is to take place through 2009. Construction of the new terminal is forecast to commence in 2010 for completion in 2011.

In addition to the above, a new air traffic control tower is to be built irrespective of the runway extension project. A new fire station is also to be built under permitted development rights. Permission was granted in November 2007 for the construction of a 130 bedroom hotel at the intersection of Eastwoodbury Crescent and Rochford Road (immediately south of the airport).

2.4 The Proposed Development and the EIA Base and Development Cases

Base Case

Development and growth of the airport will proceed even without the runway extension, to implement the projects described above for which permission has already been granted. The base case for the EIA will therefore assume these developments are in place. Passenger growth is forecast to increase to around 740,000 passengers per year by 2020 without the runway extension.

Development Case

An extension of the runway by about 300 metres, together with associated facilities, would support the growth of the airport to 1.97 mppa by 2020. The runway extension would allow larger aircraft, such as the Airbus 319, to be served.

Additional infrastructure proposed as part of the expansion would comprise:

Essential Infrastructure:

- *Runway extension and repositioning of landing lights;*
- *Diversion of Eastwoodbury Lane (this currently crosses the site of the proposed runway extension);*
- *Drainage/attenuation for the extended runway and road diversion;*
- *Demolition of four cottages on the south side of the runway extension area, and an additional two on the north side;*
- *Possible demolition of part of the churchyard wall at St Laurence and All Saints Church which currently impinges on the "Runway Strip" (see Section 2.5.1).*

Required Supporting Infrastructure:

- *Further phased development of the terminal to expand capacity from 4,500 m^2 to 9,000 m^2;*
- *Additional apron space for aircraft parking;*
- *Additional car parking to support passenger and employee growth;*
- *New taxiways;*
- *Physical environmental mitigation works, which are anticipated to include drainage infrastructure and localised road access/junction improvements;*
- *Relocation of flying clubs from the site of the new parking area to the north side of the airport.*

It is the intention that a Planning Application will be submitted in 2009 to cover the Essential Infrastructure only. The Required Supporting Infrastructure will not be included in the application because these facilities may not be required for some years, and it is therefore inappropriate to bring forward detailed proposals for these elements at this stage. However the scope of the EIA will include an assessment of the potential impacts of all the Essential and Required Supporting Infrastructure. The EIA will not include other developments, including any considered as part of the Joint Area Action Plan (JAAP) for the airport and its environs (see Section 3).

Figure 2.2 illustrates a Masterplan of the airport facilities, while Figure 2.3 illustrates planned (i.e. already consented) and proposed (i.e. not yet consented) developments, with the scope of the EIA identified as relating to the latter.

2.5 Outline Description of Proposed EIA Development

2.5.1 Runway (Plan Ref 6)

The runway extension will enable larger aircraft to operate to and from the airport. The typical aircraft size of aircraft that the extended runway will be able to handle will be an A319 or B737-300. The proposed runway extension will be in the order of 300m in length to the west end of the existing runway. The runway width will be the same as the existing runway (37m). At the west end of the runway extension, provision will be made for aircraft to turn to either line up for take-off towards the east, or to back-track back to the terminal area after landing. The surface of the runway will be grooved asphalt.

An area 150m either side of the runway centreline is to be protected and should be free of obstacles. This area is known as the Runway Strip and also extends 60m beyond the end of the paved surface of the runway. Impacts on existing houses and the church boundary are continuing to be discussed with the Civil Aviation Authority (CAA).

Beyond the paved surface to the west is an area known as the Runway End Safety Area (RESA) which is designed to mitigate risk to aircraft which either land short of the runway or overrun beyond the paved surface. This area must be kept clear of obstacles. The RESA at the west end of the runway is 150m wide by 240m long. The RESA at the east end of the runway is 150m by 150m.

All drainage from the existing and extended runway will have to be treated appropriately for de-icing activities. The airport currently does not use de-icers but plans to introduce their use when the runway is extended.

2.5.2 Taxiways (Plan Ref 10)

The existing taxiway network will be supplemented by additional taxiways to serve the new aircraft stands in front of the new terminal building. It is anticipated that the new taxiways will link the new stands to the eastern end of the runway via taxiway Alpha. A short section of parallel taxiway between the disused cross-wind runway and taxiway Alpha may be included during the second phase of development for the new terminal. The taxiways will be a minimum of 18m wide located within a taxiway strip extending 28.5m either side of the taxiway centreline.

2.5.3 Terminal Extension (Plan Ref 7)

The design of the second phase has not been confirmed, however it is assumed that it would replicate the Phase 1 designs to be implemented during 2010. An area equal to the footprint of the first phase has been safeguarded to the north of the proposed Phase 1 terminal.

2.5.4 Stands (Plan Ref 9)

During Phase 1 (not included in the scope of the EIA), new pavement will be required adjacent to the Phase 1 terminal building to accommodate five aircraft stands. These stands will be able to accommodate typical Code C aircraft such as the A319, B737-300 and BAe146–Q400. Code C aircraft typically carry between 120 and 150 passengers. Average aircraft dimensions are in the order of 35m in length, 35m wingspan and a tail height of approximately 12m. Aircraft may also park on existing pavement to the south of the disused cross-wind runway.

Additional stands (within the scope of this EIA) will be provided as part of the second phase of development for the terminal building. The exact number of additional stands will depend on the type of aircraft operating from the airport in the future and the rate of development of the airport. However, it is not unreasonable to safeguard for an additional five stands similar to those provided during Phase 1.

The stands will be served by a head of stand road. This will be a two way road in the order of 10m wide. The road will join the existing terminal and maintenance services on the south side of the airport.

The new stands will be designed so that drainage from the stands is appropriately treated in the event of de-icing occurring on the stands. It is unlikely that the existing stands in front of the terminal building will be upgraded for de-icing. All drainage from the aircraft stands will drain away from the new terminal building.

The existing aprons will continue to be used for aircraft maintenance, executive jets, and for overspill parking if required.

2.5.5 Car Parking (Plan Refs 11 & 12)

Car parking for the existing terminal provides approximately 500 spaces. It is estimated that the airport will need in the order of 2000 spaces to serve 1.97 mppa, although this will be confirmed through the Transport Assessment to be undertaken as part of the EIA. The area to the east (Phase 1) and north (Phase 2) of the new terminal building has been identified for car parking.

Current predictions for car parking spaces are as follows:

- *Plan Ref 3 – 345 spaces*
- *Plan Ref 11 – 450 spaces*
- *Plan Ref 12 – 590 spaces*

The EIA is to address parking for Map Ref 11 and 12 only.

All drainage from the new car parks will have to be treated appropriately.

2.5.6 Flying Clubs (Plan Ref 17)

The car parking to the north of the new terminal will require that the flying clubs be relocated to the north side of the airfield. The first phase of car parking will require that one of the flying clubs be relocated (not included within the scope of the EIA). The second phase will require that the two remaining clubs are moved. The relocated flying clubs will typically require a small building each to accommodate offices and briefing rooms. The aircraft will park on the grass. Typically there will be in the order of five to 10 small private aircraft per flying club. Access to the new flying clubs will be from the northern side of the airfield through the existing aircraft maintenance facility.

2.5.7 Drainage (Plan Refs 14 & 15)

All drainage from the existing runway, runway extension and new aprons will have to be treated appropriately for de-icing operations. Options for attenuating surface water are subject to current studies.

2.5.8 Eastwoodbury Lane Diversion (Plan Ref 19)

Eastwoodbury Lane currently runs along the west of the airfield. The runway extension requires that the lane be diverted. Jacobs has developed a potential new road layout which skirts around the north side of the new Royal Bank of Scotland (RBS) building. Part of the road is in cut in order to accommodate safeguarded aeronautical surfaces for aircraft landing and taking off at the west end of the airfield. The diversion crosses agricultural land, a public right of way, and amenity areas (St Laurence Park). The proposed off-take from Eastwoodbury Lane is located between an orchard and a residential property and would result in the loss of a small car park serving St Laurence Park. A football pitch and play area will require relocating to the area immediately to the east (which has been identified in the JAAP proposals map for new public open space), along with compensatory car parking.

2.5.9 Demolition of Eastwoodbury Lane Cottages

Four cottages on the south side of the runway extension (the Eastwoodbury Cottages) will need to be removed to provide the required runway clearance for the extended runway. Two cottages on the north side of the runway extension area will similarly also need to be removed. Compensation will be provided for the loss of those cottages not in airport ownership.

2.6 Aircraft and Passenger Forecasts

AVIA Solutions have produced passenger and air traffic forecasts for the base case (without runway extension) and the development case (with runway extension). Headline numbers are provided in Table 2.1 below.

	2008	2020 Base Case	2020 Development Case
Passengers (mppa)	0.46	0.70	1.97
ATM	37,200	52,500	53,300

Table 2-1 Forecast Passenger and Aircraft Movements

mppa = million passenger movements per annum
ATM = annual air traffic movements

The relatively small difference in aircraft numbers for the development case compared to the base case reflects a shift in the type of aircraft activity away from the current dominance of flying clubs to increased passenger flights. This reflects the ability of the airport to serve low cost airlines operating A319 type aircraft when the runway has been extended.

In arriving at these forecasts, AVIA noted the following:

- *Southend has a sizeable (and latent) local catchment area which could be exploited through the availability of an attractive network of airline routes, although competition from e.g. Stansted, is a significant obstacle;*
- *The 1.97 mppa forecast is ambitious compared with the record of traffic growth at other UK regional airports;*
- *The DfT has not made a specific forecast for Southend but the overall theme of 3% growth in the London area, combined with capacity restrictions at other airports in the south-east, provides a context within which such growth at Southend could be a possibility.*

The AVIA forecasts include additional information on the mix of aircraft, origin and destination, passenger profiling, and seasonal fluctuations, with a busy day forecast

taken as a Friday in August. These forecasts are considered to form a reasonable basis on which to assess the potential impacts of the growth of the airport.

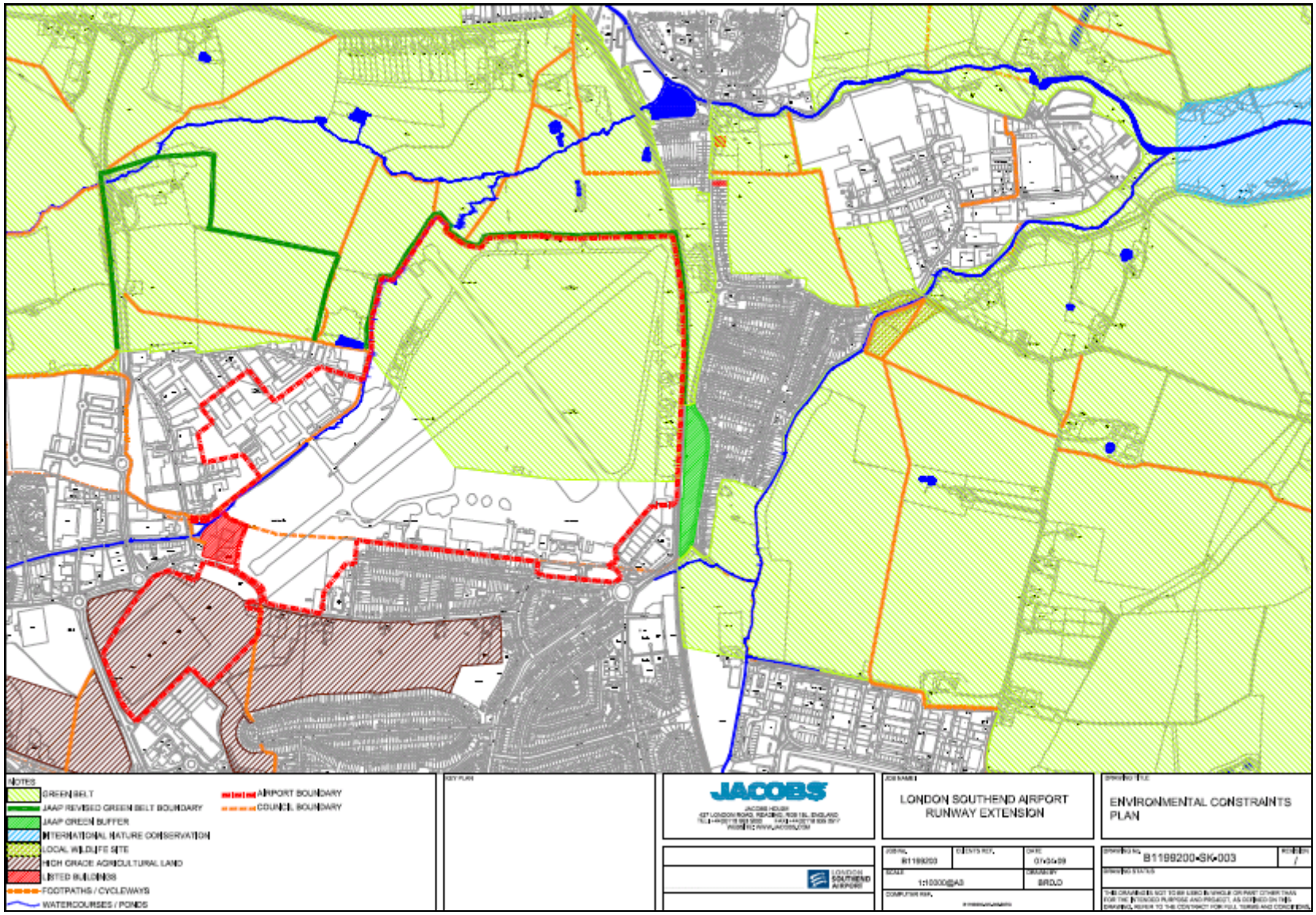


Figure 2.1 Environmental Constraints Plan

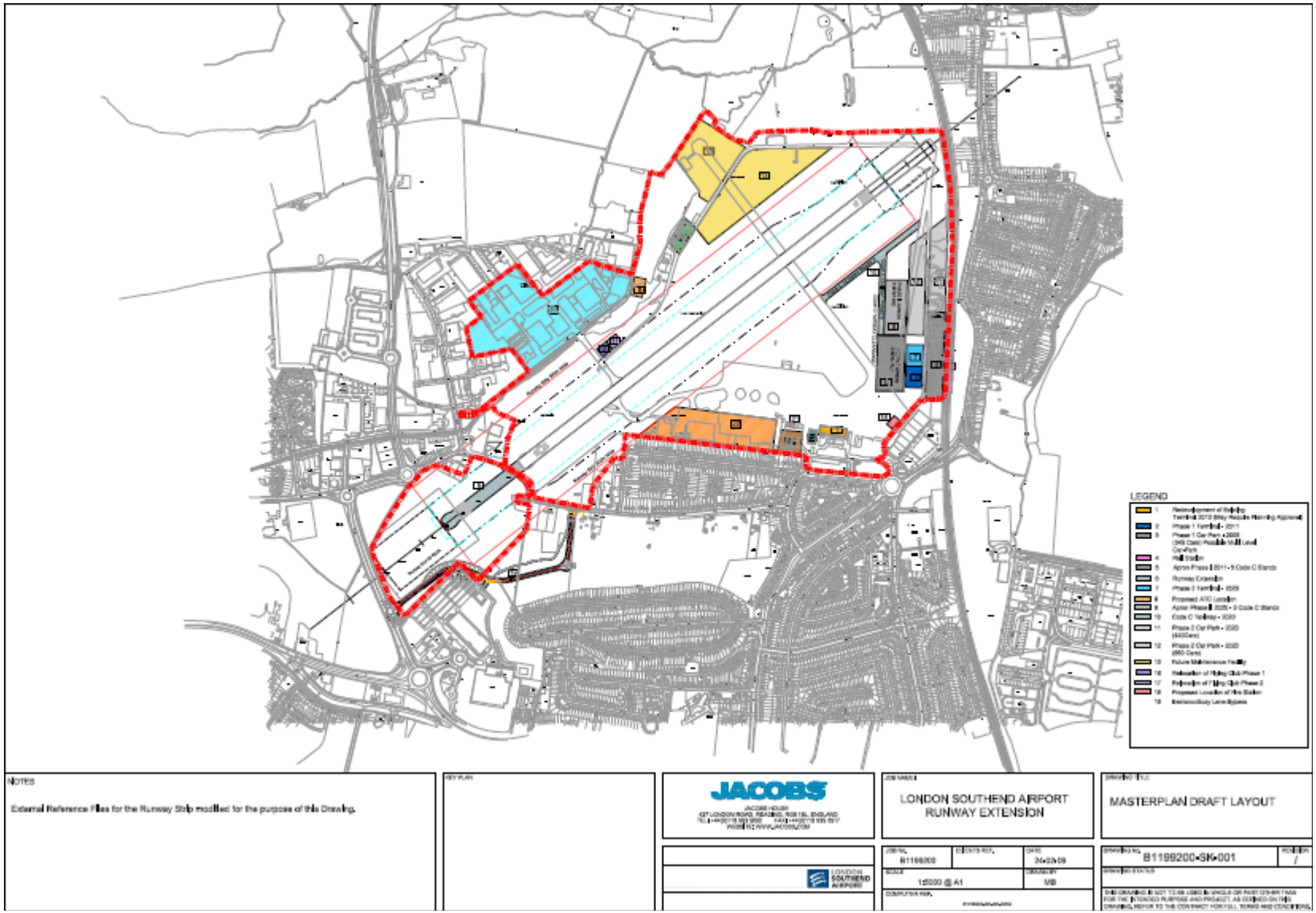


Figure 2.2 Airport Masterplan

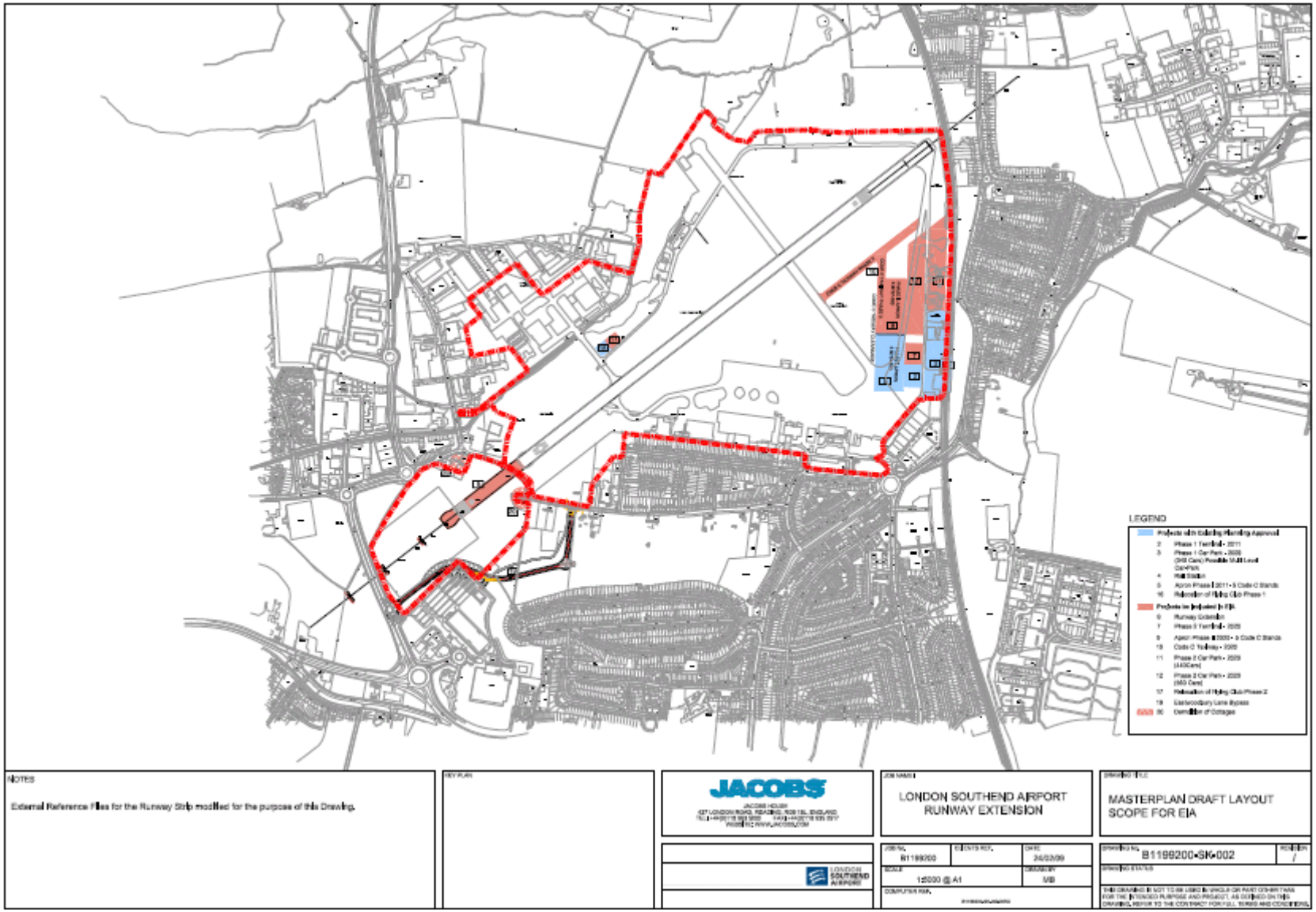


Figure 2.3 Scope of EIA

3 Planning Context

3.1 Planning Overview

The northern areas of Southend Airport lie partly within the administrative area of Rochford District Council, within the County of Essex, and partly within the area of Southend Borough Council a Unitary Council.

The Essex part of the Thames Gateway Growth Area – a regional and national priority for urban regeneration under the Sustainable Communities Plan - also extends to encompass the entirety of the airport.

The Statutory Development plan for the airport comprises:

- *East of England Plan (2008)*
- *Saved Policies of the Essex and Southend on Sea Replacement Structure Plan (2001)*
- *Rochford District Replacement Local Plan (2006)*
- *Southend on Sea Core Strategy (2007)*
- *Saved Policies of the Southend Borough Local Plan (1994)*

Emerging planning policy documents comprise:

- *Rochford District Council Core Strategy Preferred Options (October 2008)… current status*
- *The Southend Airport and Environs Joint Area Action Plan (JAAP) Preferred Options, published jointly by RDC and SBC (February 2009)*

Other relevant national policies are provided in

- *Air Transport White Paper (2003)*
- *National PPGs and PPSs*

Other relevant regional and sub regional policies are provided in

- *Sustainable Communities Plan 2003*
- *Thames South Essex Partnership 'Delivering the Future'*

3.2 National Policy

In the Future of Air Transport White Paper (2003) the government recognises the valuable role Southend Airport could play in meeting local demand and contributing to regional economic development. The government therefore supports in principle the Airport's development subject to relevant environmental considerations (11.98 – 11.99).

This National policy support builds on the assumptions in the South East Region Air Services (SERAS) consultation (2003) that Southend could grow to 2mppa (Para 12.12).

The government also recognises the role that Southend Airport could play in providing capacity for business aviation as opportunities for business aviation becomes increasingly limited at the main south east airports.

3.3 Statutory Development Plan

East of England Plan

Policy E7 notes the support that the ATWP gives to expansion of Southend Airport to meet local demand and contribute towards economic development.

The plan recognises that the airport has an important regional role to play in meeting local demand and niche markets, for example by providing business aviation and passenger routes not served by the larger airports, as well as the benefit for relieving congestion at the major south east airports.

The EoE Plan also recognises the regeneration benefits that development of Southend Airport will bring to Southend as a result of the employment opportunities that will arise and the wider economic benefits such as increased attractiveness of the area to businesses that value proximity to air services.

Policy T12 states that 'Access to the region's airports should be managed and enhanced to support development and enable them to contribute to national and regional objectives for economic growth and regeneration'. A key priority is to ensure airport surface access provision reinforces the shift to more sustainable travel sought by the regional transport strategy.

In respect of the Essex Thames Gateway, policy ETG4 states that 'SBC should improve surface access to Southend Airport and support employment uses there that would benefit from an airport location'.

The Regional Economic Strategy 'Inventing our Future' (2008) sets the long term vision for the sustainable economic development of the EoE region. It outlines eight strategic goals, one of which is 'the importance of a transport system that fully supports sustainable economic growth' and a priority of which is to increase economic benefit to the East of England from its international gateways. Thames Gateway South Essex is one of 7 'Engines of Growth' in the region. One of the sub regions strategic ambitions is to realise and harnessing the potential of London Southend Airport as a key transport gateway by improving operational capacity, surface access and supporting development off maintenance and engineering.

Essex and Southend on Sea Replacement Structure Plan (2001)

Policy BIW8 which related specifically to development of Southend Airport has not been saved but BIW9 is saved and establishes criteria for development of existing airports.

Thames Gateway South Essex

Established as a growth area in the Sustainable Communities Plan (2003) the TGSEP 'Vision for the Future' (2001) recognises the importance of regenerating LSA because of the opportunity its presents for wider regeneration.

The DCLG's Interim Strategic Framework for the Thames Gateway (2006) is in favour of development at the Airport, and identifies it as a key strategic employment site for Southend and Rochford supporting the prosperity of the region.

Rochford Replacement Local Plan (2006)

Rochford DC recognises the value and importance of Southend Airport to South East Essex. The Airport is recognised to be a major source of employment and the Local Plan states that the Council fully supports the attempts to maximise its

potential, both in terms of passengers and freight traffic, to the benefit of business and travelling public alike.

Policy TP9 sets out that support stating that planning permission will be granted for development that will support the operation of the Airport as a regional air transport and aircraft maintenance facility, including the full realisation of its potential for increases in passenger and freight traffic subject to there being no serious detrimental effects on the local environment or nature conservation, and there being adequate access including a satisfactory surface access strategy.

The Plan notes that increases in the number of aircraft movements could possibly take place without undue detriment to residential areas. The Council's desire to ensure further use of the airport is, however, tempered by the need for it to give careful attention to the avoidance of undue disturbance from aircraft noise, particularly at night. Policy TP10 therefore considers the effects of noise and sets out the Council's intention to give consideration to imposing conditions requiring adequate sound insulation to buildings and in extreme cases refusal of permission.

Southend on Sea Core Strategy (2007)

Strategic Objective SO11 is "to secure the regeneration of London Southend Airport to enable it to reach its potential to function as a local regional airport providing for significant new employment opportunities and improved surface access subject to environmental safeguards."

The Core Strategy refers to earlier work undertaken by the Council on economic growth aspirations and recognises that aviation and airport related industries are a potential economic growth area for the Borough. Policy CP1 states that 'to promote economic regeneration development will be expected to support the future potential of LSA'.

Policy T17 of the adopted Borough Local Plan (1994) remains in place. This policy recognises the economic benefits of the airport and its benefits to the town. It therefore supports the operation of Southend Airport and the development of its potential as a generator of economic growth and employment, together with the provision of appropriate airport related or supporting development provided that this pays due regard to the highway network and to the environment of residential areas in the Borough, and that development would not be likely to cause severe detriment to residential amenities.

3.4 Emerging Policy Framework

Rochford Core Strategy (2008)

The emerging core strategy preferred options recognises LSA has the potential to provide significant economic growth, including, but not limited to aviation related industries. The Council anticipates that a significant proportion of the 3000 jobs it is to provide in the Thames Gateway sub region can be accommodated as part of the growth around the Airport.

The Council's vision is that by 2017 the airport and environs provide a range of job opportunities, the airport's new terminal is open and there is an agreed surface access strategy.

Policy ED1 therefore sets out the intention to prepare with SBC the JAAP for the area encompassing LSA to see the area's economic potential realised whilst having regard to local amenity and environmental issues.

Southend Airport and Environs Joint Area Action Plan (2009)

The Joint Area Action Plan, being prepared jointly by Southend and Rochford Councils, has reached the stage of consultation on the Councils' Preferred Option.

The vision for the area is 'An area that realises its potential as a driver for the sub regional economy, providing significant employment opportunities and ensuring the quality of life for its residents and workers'. It wants Southend Airport to be a successful regional passenger airport, transporting 1 to 2 million passengers per annum.

The Action Plan pursues high scale employment growth (both airport and non airport related) and further development of the Airport. When adopted, the Action Plan will guide development at the Airport and development of the neighbouring employment areas.

In terms of the Airport, an extension to the Airport's runway is recognised as a key factor in the ability of the airport to accommodate the latest advances in medium sized aircraft. With the runway extension opportunities to grow and attract new operators are recognised such that the Airport would act as a driver for the local economy, providing direct employment as well as enhanced opportunities for wider aviation related and business employment. Employment at the Airport is expected to increase by some 1,180 jobs.

The other employment proposals include a major new 99,000sq.m. business park on existing Green Belt land to the north of the Airport, a smaller (10,000sq.m.) new business park, and proposals for the intensification of use of the existing Aviation Way Industrial Estate. Together these are expected to create 6,200 additional jobs. Combined with increased airport jobs the employment proposals will make a significant contribution to the sub regional employment aspirations.

The JAAP considers the transport and environmental issues arising from the planned development. These include plans for investment in the local highway network and enhancements to public transport, and the need to consider controls on the development of the airport to ensure quality of life of local residents is maintained.

Detailed policies are proposed for the planned new development. These support the development of the Airport facilities and the runway extension but subject to controls on airport operations (such as night flights) and provision of a Surface Access Strategy.

Renaissance Southend Regeneration Framework (2007)

Sets out that the development of Southend Airport into a fully functioning regional airport is a key priority.

3.5 Previous Runway Extension Application

An application for a runway extension was submitted in 2003. This was refused for the following principal reasons:

- *Failure to provide for displaced traffic from Eastwoodbury Lane closure and access to rail facilities to serve the increased passenger numbers;*
- *Failure to provide an adequate Clear and Ungraded Area associated with the reconfigured runway;*

- *Failure to address impacts on the Grade 1 listed St. Laurence and All Saints Church.*

It is believed that these issues have now been addressed in the current proposals; however these will be examined in detail within the EIA.

4 Land Use and Amenity

4.1 Legislative and Policy Context

Existing regional, sub-regional and local policies provide the land use context and designations for the site.

4.2 Baseline Conditions

Current Ordnance Survey maps, relevant Local and Structure Plans and the Multi-Agency Geographic Information for the Countryside (MAGIC) website, together with historic mapping have been used to characterise the current and former land use of the site.

Development plan designations covering the site itself include flood plain along the Eastwood Brook (which flows along the northern boundary of the airport) and Green Belt within Rochford district. The runway extension area across Eastwoodbury Lane comprises an area of field leased to the airport by Southend BC. The majority of this area is currently fenced off as the safeguarded area for the Instrument Landing System (ILS) – see Figure 4.1.

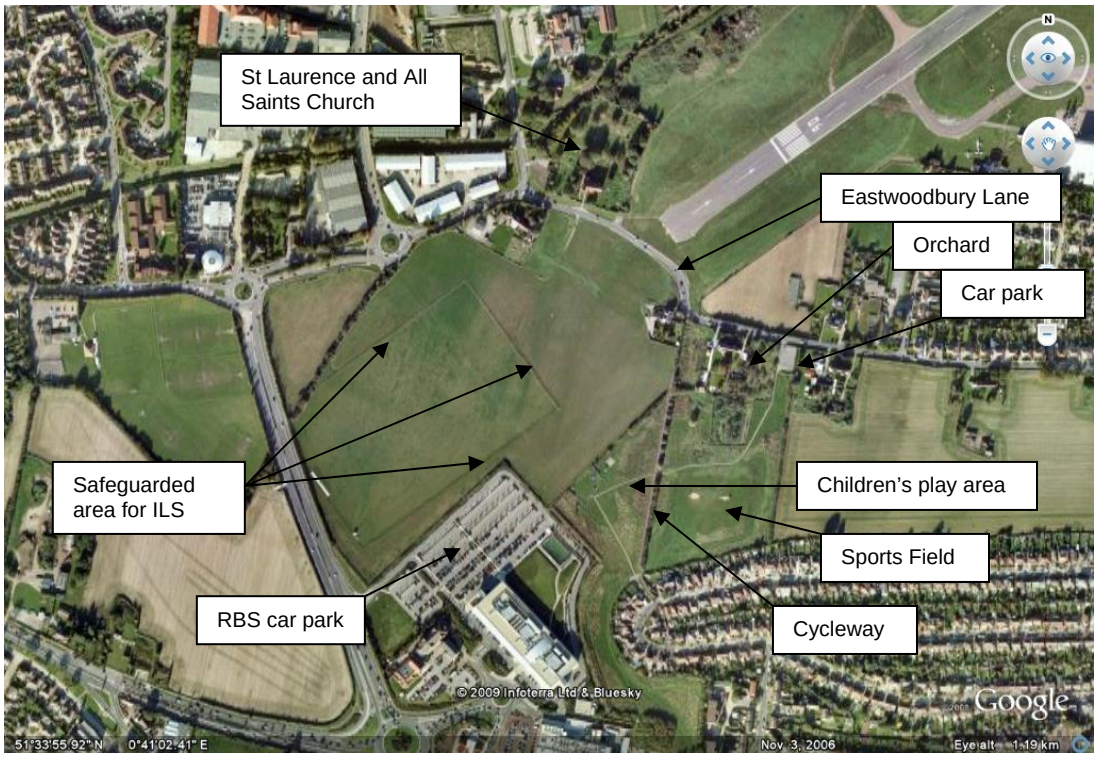


Figure 4.1 Land Use at Runway Extension/Eastwoodbury Lane Diversion Area

The proposed diversion for Eastwoodbury Lane (illustrated on Figure 2.3) passes through St Laurence Park, an amenity area comprising a sports field and a children's play area bisected by a public footpath/cycleway. The diversion is shown on Figure 2.3 as passing through a small car park off Eastwoodbury Lane, adjacent to an orchard on the west and a residential property to the east.

The majority of the greenspace forming the runway extension area, St Laurence Park and the fields further to the east, is designated as Grade I ('excellent' quality) agricultural land.

4.3 Potential Impacts, Constraints and Opportunities

The Phase 2 terminal and associated aprons and car parking are located in the area which is currently designated as Green Belt. However as noted in Section 3, the JAAP (an emerging statutory Development Plan) proposes this to be realigned to the airport boundary.

The runway extension would result in the loss of some 23.5 ha of Grade I agricultural land. However, with the presence of St Laurence Park and the effective sterilisation of the runway extension area by the ILS safeguarded area, very little of this land is currently used for agriculture. The runway extension and Eastwoodbury Lane diversion are also included within the JAAP. In accordance with PPS7 (Sustainable Development in Rural Areas), there is therefore a recognition that there is no alternative land area available to provide the runway extension, and that wider sustainability considerations over-ride the loss of this "best and most versatile agricultural land." No additional temporary land area would be required during the construction phase of the project other than that provided by the agricultural land to be redeveloped.

The proposals include for the diversion of Eastwoodbury Lane. Not only would this result in the stopping up of the road itself, but it would also result in the severing of the public footpath/cycleway through St Laurence Park. Pedestrian access for some church-goers would be impacted and an alternative route would need to be found. The diversion would also result in the loss of key assets within the park, an important amenity area. The JAAP makes provision for these losses by allocating the fields immediately to the east of the park as new public open space.

The runway extension will require the demolition of four cottages on the south side of the runway and two cottages on the north side of the runway. Compensation will need to be provided for the loss of these properties.

An assessment will need to be made of the impacts of increased aircraft movements on runway Public Safety Zones (PSZ) – see Section 16. Any change to the dimensions and location of the PSZ contours could have repercussions for planned land use development.

4.4 Assessment Methodology

The loss of agricultural land and amenity areas will be assessed within the context of the development plan and emerging JAAP. The footpath diversion and the need to identify an alternative route will be discussed with the local authorities.

Any redefining of the PSZ contours will need to be assessed in relation to other proposals for new development.

5 Surface Transport

5.1 Introduction

The proposal to extend the runway at Southend Airport and facilitate future growth in passenger operations is dependent on the diversion of Eastwoodbury Lane which passes through the area of the proposed extension. Eastwoodbury Lane currently provides an alternative to the A127 for traffic travelling west to east. The road attracts substantial traffic flows, many of which are accessing the industrial areas on Aviation Way and Cherry Orchard Way.

An application for the runway extension in 2003 was rejected over concerns about the impact of diverted traffic from the proposed closure of Eastwoodbury Lane. This issue is partly avoided with a realignment; however the realignment will lead to a redistribution of traffic onto Nestuda Way and the roundabouts on Eastwoodbury Lane and Cherry Orchard Way. The Transport Assessment will evaluate these impacts and if necessary, identify appropriate mitigation measures.

A potential realignment which takes the road south and west to link up with Nestuda Way at a new roundabout (and which meets aviation safety requirements) has been developed by Jacobs. The alignment of this road and details of the intersection with Eastwoodbury Lane have yet to be formalised. Further discussions between the Local Authority and the Airport are required and will need to take into consideration the proposed east-west relief road included in the JAAP plans and the need to re-route an existing Public Right of Way (PRoW) / cycleway that will be severed by the proposed realignment of Eastwoodbury Lane.

An updated Airport Surface Access Strategy will be produced in conjunction with these proposals. This will address measures to promote sustainable access to the airport alongside planned growth to 1.97 million passengers per annum (mppa) by 2020. Measures already identified in local plans include improved pedestrian and cycle facilities, a park and ride service and integration with the planned South Essex Rapid Transit scheme (SERT).

Surveys and data analysis work to support the provision of data for noise and air quality assessments will be undertaken as part of the transport assessment process.

5.2 Background

The JAAP (Policy LS1) states that both SBC and RDC will support the growth of the airport to a capacity of 2 mppa, as proposed in Aviation White Paper pre-consultation. This includes support for the extension of the runway to the south so as to provide an operational runway of 1,799 metres.

The JAAP extends beyond the airport boundary and includes provision for significant employment growth in the area to the north of the runway earmarked for industrial and business park development. Applications for development within the JAAP area are expected to contribute to improvements to local road infrastructure and measures to encourage modal shift of passengers, visitors and staff travelling to the airport. In particular, the diversion of Eastwoodbury Lane to connect with Nestuda Way must be delivered before construction of the runway extension can proceed (Policy TR1).

The A127, A1159 and A13 in the vicinity of the airport all suffer from peak hour congestion. The JAAP Sustainability Appraisal produced by Halcrow in 2008 identified peak hour congestion at the following junctions in the vicinity of the airport:

- *Anne Boleyn roundabout (Sutton Road/Southend Road);*
- *A127 Prince Avenue/Rochford Road/Hobleythick Lane signalised junction;*
- *A1159 Manners Way/Priory Crescent/Victoria Avenue/A217 Prince Avenue (Cuckoo Corner) roundabout.*

A series of major improvements are planned or are currently taking place along the A13 and A127. In particular there are plans to improve the junction at Cuckoo Corner. This was identified as a major scheme in the first SBC Local Transport Plan.

Developments at the airport will need to integrate with proposals for the wider transport network including the proposed improvements to the A127 and the delivery of South Essex Rapid Transit (SERT) routes. This is a new bus based transport system that will serve existing and proposed communities and link to new development sites and key public transport interchanges. The aim is to support and promote sustainable new development in the area by providing high quality public transport links and improved walking and cycling facilities.

The JAAP highlights the need for an appropriate transport strategy if the planned growth in the airport is to be achieved in a sustainable way. The current Airport Surface Access Strategy was published in August 2006. At that time with limited passenger flights, maintenance and repair operations (MRO) and private club flying as the main activities, surface access to the airport was considered satisfactory. An updated Airport Surface Access Strategy will need to be produced alongside any further application to increase airport capacity.

Committed development at the airport includes a new integrated railway station (currently under construction) and terminal building and a new airport hotel. The Transport Assessments for these developments considered the traffic impacts of Airport growth to 2 mppa and the proposed relocation of Southend United Football Club to a new stadium to the east of the town. The scope of these assessments was limited to the highway network in the immediate vicinity of the airport only and mitigation was focussed on improving the capacity of the Harp House Roundabout adjacent to the airport entrance.

5.3 Assessment Methodology

The diversion of Eastwoodbury Lane will result in a redistribution of traffic flows onto Nestuda Way and the roundabouts at Eastwoodbury Lane and Cherry Orchard Way. There is now a need to consider the wider impacts on the local highway network and discussions have taken place with SBC and Atkins, their Transport Consultant to determine both the scope and methodology to be used for this assessment.

Although the Council are currently in the process of commissioning a new multi-modal model, this will not be completed until 2010/2011 and therefore cannot be utilised to support the current planning application. It has been agreed with SBC and Atkins (traffic advisors to SBC) that for the purposes of this assessment a local highway model will be developed that will identify and evaluate the impact of the local traffic diversions associated with the realignment of Eastwoodbury Lane. These local diversions will constitute the largest impact of the scheme. Any area wide impacts due to the diversion would be smaller and more dispersed and can be considered at a time when the multi-modal model is operational.

To support this assessment traffic surveys at the following locations will be required:

- *A127 / B1013 Roundabout;*
- *B1013 / Eastwoodbury Lane Roundabout;*
- *Rochford Road / A127 Traffic Signals;*
- *Rochford Road / Eastwoodbury Crescent. T junction;*
- *Rochford Road / Eastwoodbury Crescent. Roundabout;*
- *Eastwoodbury Crescent./ Eastwoodbury Lane T junction;*
- *Cherry Orchard Way / Eastwoodbury Lane T Junction;*
- *Airport Way / Eastwoodbury Lane Roundabout.*

In addition, a road side interview survey of traffic movements along Eastwoodbury Lane will be carried out to determine driver origins and destinations. This will enable a manual re-assignment of the traffic to be made on the basis of the actual journey patterns observed. These surveys will need to be undertaken during typical school term time.

The data from the above traffic counts will be used to undertake an analysis of rerouted traffic flows and, along with junction assessments, will be used to identify potential highway issues. Baseline traffic figures and future year growth factors will be agreed through discussion with SBC.

An assessment will also be made of potential benefits to the wider road network due to local traffic being able to use Southend airport in the future as opposed to travelling to other points of departure such as Stansted and Gatwick.

5.4 Future Traffic Growth

Estimates of future airport traffic growth will be based on the passenger traffic forecasts for the airport produced by Aviasolutions in April 2009. Two scenarios are considered. A base case, taking into account the already committed development i.e. a new terminal and rail station, estimates growth to 740,000 ppa in 2020. Growth to 1.97 mppa is forecast under the development case which assumes the runway extension and terminal facilities increased to 9000m^2. The forecasts assume that the majority of the airport's passenger traffic will originate in its local core catchment area and that the dedicated airport rail station will help to attract passengers from central London.

It is expected that 63% of passenger traffic will be generated in the summer months, principally by leisure travellers, with an estimated 8200 passengers using the airport on a busy day in July/August. Spread over a 10 hour day this equates to just over 400 arrivals and departures per hour. Analysis of the daily passenger profile produced by Aviasolutions however shows that the majority of passenger traffic is concentrated in early morning and evening peaks.

	2008	2010	2015	2020
Low cost regional	2,800	7,500	72,900	313,900
Low cost outbound	0	0	516,900	832,100
Low cost inbound	0	0	244,900	396,500
Regional	0	38,000	278,000	385,800
Ford	37,400	45,000	45,000	45,000
Other	400	1000	1000	1000
Total	**40,600**	**91,500**	**1,158,700**	**1,974,200**

Table 5.1 Passenger Forecasts to 2020 (Development Case)

Growth in airport employment will accompany the planned rise in passenger numbers. The socio-economic assessment produced by York Aviation in 2006 suggests that employee numbers could rise to over 2000 by 2020 (from a base of 140 in 2005). Employee trips are linked to the pattern of aircraft movements which tend to be in clusters with a particular peak in the early morning. The majority are likely to fall outside of normal highway peaks. The Airport Surface Access Strategy provides details of employee travel behaviour from surveys undertaken in January 2006. These will need to be reviewed to reflect the increased level of activity at the airport.

5.5 Summary

A Transport Assessment is required to evaluate the traffic impacts of the proposed diversion of Eastwoodbury Lane on the surrounding road network including the roundabouts at Nestuda Way, Eastwoodbury Lane and Cherry Orchard Way. It has been agreed with SBC that a local reassignment of traffic flows will be undertaken using updated traffic data obtained from surveys. This will be integrated with junction modelling to identify any potential capacity highway issues.

Further discussions are required to determine the most appropriate alignment of the diverted road and its relationship to the proposed east-west relief road identified in the JAAP. In addition consideration will need to be given to the redirection/closure of the existing public right of way/cycleway that will be severed by the realignment.

The assessment will consider the impacts of future traffic growth associated with the planned airport expansion to 1.97 mppa by 2020. This growth must be achieved in a sustainable manner and should be integrated with planned improvements to the local highway network and public transport. An updated Airport Surface Access Strategy will address measures to increase the use of public transport by airport passengers and staff and will need to be produced alongside any planning application.

6 Air Quality

6.1 Introduction

Air quality is an important consideration in relation to the expansion of an airport such as Southend. Adverse air quality impacts can arise from the aircraft themselves (i.e. take-off, landing), from equipment and vehicles servicing the aircraft, and from traffic and transport accessing the airport. Whilst there are other pollutants emitted, potentially significant adverse impacts are associated with the combustion-related air pollutants NO_2 nitrogen dioxide and PM_{10} particulate matter.

Monitoring and control of air quality within the vicinity of the airport comes within the auspices of the Local Authorities within which it is situated, through the system of Local Air Quality Management (LAQM). As such, any assessment of the air quality impacts of the development should be undertaken in accordance with the procedures and guidance for LAQM.

6.2 Legislative Context

6.2.1 Air Quality Objectives

The UK Air Quality Strategy was updated in 2007. It sets out how the EU Air Quality Framework Directive (96/62/EC) on ambient air quality assessment and management will be undertaken in the UK. It also sets out the treatment of the standards laid down in the Air Quality Daughter Directives (1999/30/EC and 2000/69/EC). The European legislation is enacted in the UK by the Environment Act 1995. The European legislation has recently been updated by the publication of Directive 2008/50/EC, which dropped the provisional lower objectives for PM_{10}.

In the UK there are effectively two types of pollution limit values for the protection of human health: air quality standards and air quality objectives. Standards are concentrations in the atmosphere, set purely with regards to scientific and medical evidence on the effects of the particular pollutant on health. They 'can broadly be taken to achieve a certain level of environmental quality[1]'. Objectives are policy targets derived from standards and take into account economic efficiency, practicability, technical feasibility and timescale. It is stated in the Air Quality Strategy that the annual mean objective for nitrogen dioxide is still not expected to be met at some roadside locations in 2020, despite the year for European compliance being 2010. A proposed lower annual mean objective for PM_{10} for 2010 was dropped in England and Wales (probably on the grounds of feasibility and economics) in 2007, but maintained in Scotland.

Based on the extensive monitoring of air quality that has occurred to date in the UK, it can be assumed that if the annual mean nitrogen dioxide standard is being met, then the objectives for PM_{10}, carbon monoxide, benzene and 1-3-butadiene will also be met (except where there is a major industrial source of PM_{10}).

[1] Air Quality Strategy, 2007. DEFRA.

Pollutant	Objectives		Date to be achieved by
	Concentration	Measured as	
Nitrogen Dioxide	200 µg/m^3 not to be exceeded more than 18 times a year	1 hour mean	31 December 2005
	40 µg/m^3	Annual mean	31 December 2005
Particulates PM_{10} England & Wales	50 µg/m^3 not to be exceeded more than 35 times a year	24 hour mean	31 December 2004
	40 µg/m^3	Annual mean	31 December 2004

Table 6.1 Pertinent Air Quality Standards

With regard to the hourly Objective for nitrogen dioxide and the analysis of the impact of traffic emissions, the annual nitrogen dioxide Objective is more stringent and if this Objective is met, then the hourly Objective is likely to be met[2]. The hourly objective would not be likely to be breached until the annual mean exceeded 60 µg/m^3.

6.2.2 Local Air Quality Management

As indicated in the introduction, under the UK Air Quality Strategy, local authorities have delegated responsibilities from national government for air quality in their areas, known collectively as LAQM. Local authorities are required to assess air quality against national standards, and where certain standards are not being met they are required to declare Air Quality Management Areas (AQMAs) and draw up Air Quality Action Plans which set out how the standards will be met. Whether an AQMA has been declared or not, local authority officers with responsibility for air quality will be expected to provide professional advice on the air quality impact of planning determinations.

The local authorities of Rochford and Southend on Sea cover the airport site. There are no AQMAs declared in these two districts.

Rochford has set out its intention to request an air quality assessment for the expansion of the airport, where it describes the sources of air pollution in the authority on its website (reproduced below).

Sources of Air Pollution in Rochford

The main sources of air pollution are roads, such as the A127 and A130. The proposed new rail station and associated developments at Southend Airport, whilst not in themselves significant contributors to the pollutants under review, may have an effect on adjacent road traffic flows and resultant air quality. It has been recommended that should planning permissions be implemented for these developments that air quality assessments are carried out by the airport operators. The results of these assessments will be included within future Review and Assessments.

[2] Review and Assessment of Nitrogen Dioxide. Chapter 6, Local Air Quality Management Technical Guidance. LAQM. TG (03)

(a) Local Air Quality Management: Technical Guidance (09)

The recently revised technical guidance for Local Air Quality Management[3] includes updating and a screening checklist for assessing airports as a source of nitrogen dioxide pollution. This is reproduced below.

Overview
Aircraft are potentially significant sources of nitrogen oxides (NO_X) emissions, especially during takeoff. New information since the last round of Review and Assessment has resulted in the criteria to trigger a Detailed Assessment being relaxed, while the requirement to assess PM_{10} has been removed. This section thus only applies to NO_2.

The criterion in this section that requires a Detailed Assessment for NO_2 at airports, only applies to aircraft as a source. The airport may give rise to a requirement for a Detailed Assessment on the basis of road traffic. It is important that this is covered separately, using the guidance in section A above, but taking account of the influence of the airport on the background air quality at the road.

Approach
1. Establish whether there is relevant exposure within 1000 m of the airport boundary. Concentrations fall-off rapidly on moving away from the source, and are unlikely to make a significant contribution beyond this distance. If there is no relevant exposure, then there is no need to proceed further with this part.

2. Obtain information on annual throughput of passengers and tonnes of freight in the most recent year possible. Calculate the total equivalent passenger numbers in million passengers per annum (mppa). Convert the tonnes of freight to an equivalent number of passengers using 100,000 tonnes = 1 mppa. This only applies to freight taken in "freight-only" planes, not that taken in passenger planes (ie belly hold freight).

Question
Is the total equivalent passenger throughput more than 10 mppa?
Is the existing background NO_X concentration above 25 µg/m3?

Action
If the answer is YES to either question, it will be necessary to proceed to a Detailed Assessment for NO_2. If there are monitoring data for worst-case relevant exposure locations near the airport boundary, then use these results in preference to the passenger throughput criteria to reach a decision. This assumes the data have been suitably quality assured (see Chapter 3 and Annex 2) and relate to worst-case locations, including those identified by any modelling that may have been carried out. The Detailed Assessment may need to be no more than reliance on the findings of any air quality assessments carried out by the airport operators. For this to be the case the assessment will have to meet the standards of a Detailed Assessment.

There will be relevant exposure to annual mean nitrogen dioxide within 1000m of the runway. The nearest dwelling is 160m from the centre of runway 06.

The total equivalent passenger throughput will be less than 10 mppa (c.1 mppa in 2015 and 1.97 mppa in 2020). The existing background concentration is below 25 µg/m^3 NO_x (in 2011 it will be c. 20 µg/m^3).

On the basis of the checklist, there is no requirement to do a detailed assessment of the impact of the aircraft emissions.

6.3 Planning Policy

The national government's Planning Policy Statement 23 (PPS23) states that 'any air quality consideration that relates to land use and its development is capable of

[3] Local Air Quality Management Technical Guidance LAQM.TG(09) - Defra

being a material planning consideration'. Whilst the discussion of air quality considerations in PPS23 is not restricted only to the AQS Objectives, the AQS is the main focus of the planning guidance.

6.3.1 Local Planning Policy

(a) Southend-on-Sea Local Development Framework 2001 – 2021

Core Strategy Development Plan Document – December 2007, Policy KP2: Development Principles, states:

'All new development, including transport infrastructure, should contribute to economic, social, physical and environmental regeneration in a sustainable way throughout the Thames Gateway Area, and to the regeneration of Southend's primary role within Thames Gateway as a cultural and intellectual hub and a higher education centre of excellence. This must be achieved in ways which:

11. include appropriate measures in design, layout, operation and materials to achieve:

c. avoidance or appropriate mitigation of actual and potential pollution impacts of development'

(b) London Southend Airport & Environs Joint Area Action Plan Preferred Options, February 2009

The Southend and Rochford JAAP recognises the potential air quality impact of the proposed development. The text below is taken from the plan.

Issue 3 – Balancing development with environmental enhancement

More activity from the airport and the allocation of a new business park will inevitably result in environmental impacts that must be managed, and the preferred option puts forward a mix of physical and policy approaches that combined will help manage the sustainable future for the area. It is accepted that the environmental impacts (noise and air quality) will need to be carefully considered and assessed as a result of the increased aircraft movements and traffic in the area. The preferred options have carefully considered the location for new development and related this to opportunities for new public open space, as well as considering controls on airport operation to ensure quality of life is maintained for residents, and sustainable transport strategies are implemented to minimise traffic impacts.

6.4 Baseline Conditions

6.4.1 Baseline Air Quality and Local Air Quality Management

In order to predict the contribution of traffic emissions arising from a development to the air pollution levels in a location using local scale modelling, it is necessary to know the background levels of pollutant concentrations. These background concentrations are normally obtained from two sources: local monitoring and/or national pollution modelling. The air quality 'background' concentrations are those away from close proximity to direct emissions of pollution such as roads and industrial processes.

6.4.2 Updated National Background Pollution Concentration Maps

In February 2009 new national mapping of background air pollution was produced by NETCEN on behalf of Defra, for the pollutants nitrogen dioxide and $PM_{10.}$ The data from the single 1 km x 1 km grid square which covers the site location and its surrounds is shown in Table 6.2.

Pollutant	2011	2019
Nitrogen Dioxide	16.12	13.56
Nitrogen Oxides (NO_x)	20.26	16.49
PM_{10}	18.37	17.99

Table 6.2 Newly published (2009) Background Concentrations for squares centre 586500, 189500 and 587500,189500

The future background concentrations are well within their respective standards.

6.5 Potential Impacts, Constraints and Opportunities

The development of the airport will give rise to an increase in the number of sources of emissions from road and airport vehicles, and aircraft. These combustion sources are likely to have an adverse impact on the local levels of nitrogen dioxide and PM_{10} particulate matter.

Given the screening advice taken from the latest local air quality management Technical Guidance set out above, the risk of the proposed airport development giving rise to exceedances of the Air Quality Standards is considered small.

Given that the background concentrations of these pollutants are well below their respective standards in the locality, it is likely that the air quality impact will be acceptable in terms of national and local planning policy. Based on the evidence considered here, it is reasonable to conclude that the air quality impact will not be a constraint to the proposed development.

6.6 Assessment Methodology

Notwithstanding the conclusions of the previous section, the development is likely to have a slight adverse impact at the places worst affected by the traffic and airport related emissions. It is proposed that the increase in road and air traffic will be assessed for its impact on air quality by screening modelling using the DMRB (Design Manual for Roads and Bridges) screening tool, incorporating a contribution from aircraft emissions. The detailed methodology will be discussed and agreed with SBC and RDC. A qualitative assessment will be undertaken for nitrogen deposition from aircraft at designated nature conservation sites around the airport.

7 Surface and Air Noise

7.1 Introduction

Specialist noise consultants Bickerdike Allen Partners (BAP) were commissioned to undertake a scoping study of the surface and air noise impact assessment for the proposed project. The BAP report is included at Appendix B and summarised below.

7.2 Legislative and Policy Context

The Air Transport White Paper (ATWP) (2003) provides Government advice in relation to aircraft noise measurement and mapping. This includes the use of 57 dB(A) L_{eq} as the level of daytime noise marking the appropriate onset of significant community annoyance. With respect to noise mitigation and compensation the ATWP recommends the following as airport actions for immediate effect:

- *Offer households subject to high levels of noise (69 dB(A) L_{eq} or more) assistance with the costs of relocating, and*
- *Offer acoustic insulation (applied to residential properties) to other noise-sensitive buildings, such as schools and hospitals, exposed to medium to high levels of noise (63 dB(A) L_{eq} or more).*

Airport actions to address the impacts of future airport growth are as follows:

- *Offer to purchase those properties suffering from both a high level of noise (69 dB(A) L_{eq} or more) and a large increase in noise (3 dB(A) L_{eq} or more;*
- *Offer acoustic insulation to any residential property which suffers from both a medium to high level of noise (63 dB(A) L_{eq} or more) and a large increase in noise (3 dB(A) L_{eq} or more).*

The Environmental Noise (England) Regulations 2006 give effect to EU Directive 2002/49/E relating to the assessment and management of environmental noise. Although the Airport itself is relatively small, as it is set partly within the agglomeration of Southend it falls within the requirements of these regulations. The Airport has produced strategic noise maps for the Airport and is now required to draw up in consultation with the Airport's consultative committee an action plan to manage noise issues and effects including noise reduction if necessary. The action plans were originally to be completed by 18th July 2008, but the necessary Defra guidance has been severely delayed, and is only just available.

As noted in Section 3, the Development Plan is supportive of the Airport's development provided appropriate controls are implemented. These are outlined in policies within the JAAP Preferred Options Report, which state that airport expansion will only be permitted if aircraft noise impact is no higher than an agreed baseline level (Policy LS2). The airport operator will also be required to publish an annual Noise Evaluation Statement (Policy LS3), and there will be restrictions on night flights, certain types of aircraft and routing of aircraft.

7.3 Baseline Conditions

The airport reports that there are currently around 3-5 noise complaints a month, many of which are associated with helicopters. Several studies have been undertaken in relation to the airport's noise, including a Strategic Noise Mapping

exercise in 2007. BAP have undertaken an initial appraisal of the potential noise impacts due to the proposed development. Noise contours have been produced for 1967 (when the airport was at its busiest), 2007 and 2020 with and without the runway extension. The general picture is that noise levels were considerably higher in 1967 than currently, and that they are expected to increase in the future although not to reach the levels experienced in the past. Currently more than 900 flights per month are permitted to take place at night, and it is anticipated that controls would be put in place to reduce this number if the expansion plans proceed.

7.4 Potential Impacts, Constraints and Opportunities

The extended runway would provide a significant advantage in that it could accommodate modern efficient aircraft such as the A319. With the current runway, the airport would still grow but would be constrained by relying on older, noisier and less fuel efficient aircraft running short haul flights. Newer aircraft, which would require an extended runway to operate, are not only quieter but take off and land at a steeper angle ensuring that commercial aircraft would generally be higher over Southend and Leigh than today.

Key results from BAP's initial air noise studies are as follows:

- *With or without a runway extension there are unlikely to be any houses exposed to noise levels in excess of 69 dB, normally the level for property purchase scheme.*
- *With the runway extension, there are likely to be around 40 households within the 63 dB contour, which is normally the basis of a sound insulation grant schem.*
- *With a runway extension and 1.97 million passengers in 2020, the 57 dB contour (classified as 'the onset of community annoyance') would cover 3.2 km^2. This compares with the actual 2007 contour which covers 2.0 km^2.*
- *With the existing runway and 0.7 million passengers in 2020, the 57 dB contour would cover 1.3 km^2.*
- *In 1967, the 57 dB contour would have covered over 20 km^2.*
- *In terms of specific locations, there would be almost no change in noise levels at the north eastern end of the runway compared with 2007. Close to the south western end of the extended runway noise levels could increase by around 3dB, which the Government defines as discernable but of marginal significance. Elsewhere the change would be less than 2dB which would not be discernable to most people.*
- *The noise footprints of individual aircraft depend on the length of the runway. With the runway extension, the Airbus A319 can operate with a full payload and has a noise footprint of 2.6 km^2. Without the runway extension, the RJ85 would be the largest aircraft that could operate with a full payload and would have a noise footprint of 3.2 km^2.*

In summary, average noise levels would increase compared with 2007, but the noise footprint of individual aircraft would be less than current types. In terms of both averages and individual aircraft the noise levels would be very much less than was the case in the 1960s.

In addition to aircraft noise, potential impacts may arise from road traffic noise, both due to increased traffic on existing routes, and new traffic noise due to the Eastwoodbury Lane diversion. The latter may be of particular concern to residents along North Crescent. Office workers in the Royal Bank of Scotland building may also experience some noise impacts.

The proposed airport expansion project provides a number of opportunities in relation to noise impacts:

- *In recent years the airport has not been able to fully address noise issues using the latest techniques of measurement and noise mitigation; an opportunity will now arise to implement an up-to-date noise management scheme.*
- *With the introduction of scheduled traffic using the latest modern aircraft, the opportunity will arise to work with the based aircraft operators to devise the quietest mode of operation, and in particular address the optimum departure climb arrangements.*
- *The development also allows the provision of suitable noise amelioration measures, which could not be warranted on the basis of the past level of activity. This can be used to improve the quality of life for those most affected by future noise.*
- *The developments at the airport create the potential for beneficial screening of the noisier on-site operations to be improved.*

7.5 Assessment Methodology

The noise assessment will consider the following aspects:

- *Airborne aircraft noise;*
- *Ground noise from aviation related activities at the airport;*
- *Access traffic noise (road and rail);*
- *Construction noise;*
- *Vibration impacts on sensitive receptors including St Laurence and All Saints Church;*
- *The impact from the combined effects of the four noise main contributions.*

Detailed methodologies are provided at Appendix B for undertaking each of these aspects of the noise impact assessment. Predicted noise levels will be compared with agreed baseline levels set by the Local Authority and impacts will be assessed on users of local amenities. Some background noise monitoring is likely to be required for the ground and road traffic noise work, for example for the Eastwoodbury Lane diversion.

8 Ecology

8.1 Legislative and Policy Context

The legal protection of habitats, plants and animals in the UK is secured under European and national wildlife legislation which seek to conserve, enhance and restore biodiversity. In addition to the legislative framework, there are a number of further systems for identifying sites, habitats and species that do not qualify for legal (statutory) protection, but may be important at the regional, county or local level. These systems include UK, county and local 'Biodiversity Action Plans (BAP)' and measures of habitat and species conservation status. These are detailed in the Ecological Scoping Report at Appendix C.

The legal and non-statutory protection of habitats and species is encompassed within the planning system and local authorities must give appropriate protection to such features with respect to development. Appendix C includes a summary of the key ecological planning policies relevant to the proposed development at Southend Airport.

8.2 Baseline Conditions

Appendix C provides an Ecological Scoping Report for the proposed runway extension project. This was compiled from an examination of historical ecology records for the airport environs, previous ecology surveys undertaken on the airport site itself, and a Phase I Habitat Survey of the proposed development areas undertaken during March 2009.

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 five Sites of Special Scientific Interest (SSSI), two Ramsar sites, two Special Protection Areas (SPA) and one Special Area of Conservation (SAC). The latter three designations are of international significance.

The nearest site is the Crouch and Roach Estuaries SPA/Ramsar/SSSI located 1.7km to the east (see Figure 2.1). This site is comprised of inter-tidal habitats, salt marsh, and grazing marsh. It supports rare and endangered species of plants and invertebrates and is of major importance for feeding and roosting waders and wildfowl. This site supports an important population of migratory dark-bellied Brent geese and is regularly used by over 20,000 waterfowl. The site is largely coincident with the Essex Estuaries SAC. The next closest site is Hockley Woods SSSI, 3.8 km to the west. 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. Sites located within 2km of the airport are illustrated on Figure 2.1, while the locations of sites further afield are provided in Appendix C.

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. It is unlikely that the survey area supports rare species of flora or those in decline. Protected species that are considered likely to be present within the survey area include common reptile species, breeding birds (notably skylarks), badger and bats (notably in any buildings required for

demolition). Habitats with potential to provide suitable conditions for foraging or hibernating great crested newts are largely restricted to the boundaries of the site. Although there are no historical records of great crested newts within 500m of the site, there is a pond located on the golf course to the north. However this is approximately 120m from the northern boundary of the airport and over 400m from the nearest project development area.

8.3 Potential Impacts, Constraints and Opportunities

The proposed works could potentially impact on the protected species noted above during the construction phase. Further surveys will be required for these species (see Section 8.4). During the subsequent operational phase, there may be impacts associated with lighting and ancillary activities, while the increased number of flights could conceivably increase the risk of bird strikes.

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 provided the typical altitude of overflights remains unchanged from that currently employed, and taking into account the ability of most birds to become habituated to regularly occurring noise disturbance, then an increased frequency of flights would not be likely to result in any significant impact upon the interest features for the which these sites are designated (see Natural England response to JAAP consultation, appended to the Ecological Scoping Report at Appendix C). In this instance, an Appropriate Assessment under the Habitats Directive Regulations is not considered to 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.

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

8.4 Assessment Methodology

For all identified ecological receptors, an assessment of 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 set 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 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.*

Further surveys will be undertaken for the following protected species:

- *Reptiles;*
- *Badgers;*
- *Bats;*
- *Breeding birds.*

Further details on the nature of these surveys are included in Appendix C. For the bat surveys we are proposing that bat activity surveys be undertaken pre-application, but that building surveys for bats be conditioned with planning approval due to potential difficulties with gaining access to some properties to undertake these surveys.

A screening as to the need for an Appropriate Assessment under the Habitats Regulations will be undertaken in relation to potential impacts on the integrity of the internationally designated estuarine sites to the east of the airport.

The potential impact on air quality and ecological receptors in designated nature conservation areas (principally terrestrial SSSIs) will be assessed based on the conclusions from the qualitative nitrogen deposition impact assessment studies (Chapter 6).

9 Landscape and Visual

9.1 Legislative and Policy Context

The following documents will be used to inform the landscape and visual impact assessment section of the Environmental Statement:

- *The East of England Plan (Regional Spatial Strategy) approved by the Secretary of State and published 12 May 2008;*
- *Essex and Southend on Sea Structure Plan (Adopted 2001) – saved policies;*
- *Local Development Frameworks are currently being developed by Southend on Sea Borough Council and Rochford District Council. Relevant Documents include: the London Southend Airport & Environs Joint Area Action Plan (JAAP) Preferred Options February 2009 which has been jointly produced by the two local planning authorities;*
- *Countryside Character Volume 6: East of England (Countryside Agency, 1999);*
- *Essex Landscape Character Assessment (Essex County Council, 2003).*

9.2 Baseline Conditions

9.2.1 Landscape Designations

No landscape designations cover London Southend Airport or the immediate surrounding landscape.

The site does, however, currently fall partially within the Green Belt, a strategic planning tool used to prevent urban sprawl and keep land open. Green Belt is therefore a designation based on land use and not landscape quality or sensitivity. However, it should be noted that the JAAP which is being produced by Rochford DC and Southend BC includes proposals for the revision of the Green Belt boundary such that it no longer includes land within the airport boundary.

9.2.2 Landscape Character

At a national scale, London Southend Airport falls largely within the Greater Thames Estuary landscape character area (lca), as defined within Countryside Character Volume 6: East of England (Countryside Agency, 1999). The southern extent of the airfield boundary, and the proposed runway extension, fall within the Northern Thames Basin lca.

At the regional/county scale, London Southend Airport falls within the South Essex Coastal Towns Landscape Character Area, (Essex Landscape Character Assessment Final Report, CBA, 2003).

At a site based level, the airport is situated on flat, open and largely un-vegetated land. The existing large scale airport buildings and car parking areas are mostly located to the south of the airfield, although smaller, low rise, buildings, which accommodate various flying clubs, are located along the eastern extent of the airport. Views across the airfield are open across mown grassland, bisected by surfaced runways and minor vehicular access routes. Parked aircraft around the periphery of the airfield provide prominent features within the open views. The extent of the airfield is marked by a mesh fence, supported in places by tree planting.

Large retail, commercial and industrial buildings lie to the south east and south west of the airfield, and residential properties adjoin the airfield on the peripheries of the densely populated settlements of Prittlewell to the south and Rochford to the east. The churches at Rochford, adjacent to Rochford Hall, and St Laurence and All Saints Church along Eastwoodbury Lane to the south, are prominent landmark features within the flat landscape. A railway line runs to the east of the airfield, and pockets of land used for horse grazing are located between the railway line and Southend Road to the east. Rochford Hall and Rochford Hundred Golf Club are located to the north of the airfield, with the extents of the golf course adjoining the northern airfield boundary fence. Whilst much of the surrounding open landscape is intensively farmed, remnant orchards are scattered to the south of Eastwoodbury Lane. An area of public open space divides properties to the north and south of Eastwoodbury Lane. A network of ditches, streams and public rights of way bisects the landscape to the north and east.

9.2.3 Visual Receptors

The term 'visual receptor' is used to describe people who experience a view. This includes residents within properties, employees within places of work, and pedestrians and vehicle travellers along roads and other public rights of way (PRoW). Visual receptors for the proposed development at Southend Airport comprise residents of surrounding houses to the east at Rochford and to the south at Prittlewel;, users of PRoW to the north and west and of Rochford Hundred Golf Course; and workers within the retail, commercial and industrial buildings to the south east and south west. Visual receptors also include vehicle travellers along surrounding roads and train passengers travelling along the railway line to the east.

9.3 Potential Impacts, Constraints and Opportunities

Potential Impacts: Landscape

The proposals could cause some minor changes to landscape character. Lighting along the extended runway would potentially change the urban night time character of the area. The proposed attenuation pond would remove the existing arable land use giving rise to a change in landscape character. The Phase 2 Terminal building would increase the number of large scale structures within the airport boundary, providing a cumulative impact with the buildings which form part of the current airport facilities and those included within the existing planning approval, potentially increasing the partially industrial character within the airport and the surrounding area.

The proposed link road between Eastwoodbury Lane and the B1013 Nestuda Way would cut through an existing public open space to the south of Eastwoodbury Lane, severing the green space between housing to the north and south.

The settings of listed buildings and scheduled monuments in the area could potentially be affected, such as Rochford Hall and the adjacent church to the north of the airport and St Laurence and All Saints Church immediately to the west.

Potential Impacts: Visual

It should be noted that the proposed Phase 2 Terminal building would be set within the context of the Phase 1 Terminal and associated infrastructure which has already gained planning approval and will be constructed in 2010. Key viewpoints which would experience views of the different parts of the proposals are as follows:

Phase 2 Terminal Building

- *Housing at Prittlewood on Southend Road directly facing the Phase 2 Terminal building. However, the extent and height of development means it is likely that more distant housing areas (and other receptors) in all directions may be affected to some extent;*
- *Rochford Hundred Golf Course to the north and the public footpaths around the eastern side of the airfield;*
- *St Laurence and All Saints Church.*

Relocated Flying Club

- *Adjoining business premises;*
- *Public footpath which runs along the airport boundary to the north west.*

New Eastwoodbury Lane Bypass

- *The adjoining RBS building;*
- *Housing to the south at North Crescent;*
- *St Laurence and All Saints Church;*
- *The existing public open space through which the road passes.*

Runway Extension (especially lighting structures)

- *St Laurence and All Saints Church;*
- *The industrial estate to the west of St Laurence and All Saints Church;*
- *The Royal Bank of Scotland building;*
- *Housing to the south at North Crescent and peripheral housing at Eastwood to the south west.*

The effects of a greater number of larger sized aircraft and parked motor vehicles using the airport will be assessed. Whilst these effects would be indirect, they could be significant. The visual impact of upgraded security fencing and lighting will also be considered.

The key viewpoints for the assessment have been discussed with the relevant local planning authorities, Southend Borough Council and Rochford District Council. The local authorities have also indicated that photomontages will be important from the following key viewpoints:

- *Housing at Prittlewood on Southend Road directly facing the proposed Phase 2 Terminal building;*
- *Housing to the south at North Crescent overlooking the proposed new Eastwoodbury Lane Bypass.*

Photomontages will need to incorporate the Phase 1 Terminal building and associated infrastructure (to be built in 2010) as “existing conditions.”

Constraints

- *The main constraint comprises the restriction provided by the airport in terms of new planting. Whilst new planting, in terms of both amounts and species, would help to reduce visual impacts and integrate the proposals into the surroundings, opportunities may be constrained in order to restrict bird populations. Additional planting close to the airport could potentially attract roosting opportunities for birds, which could impose increased birdstrike risk.*

Opportunities

- *There would be opportunities to reduce the visual prominence of the proposed building through sympathetic architectural design, colour and*

material specification and the integration of the Phase 2 Terminal building with the Phase 1 Terminal building;

- *There would be opportunities to help integrate the attenuation ponds into the landscape with sympathetic contouring;*
- *Where the eastern potential attenuation pond (location 1) extends to the east of the railway line, there would be opportunities to improve the layout and the condition of the existing landscape which comprises horse grazing paddocks in this area. These are currently over grazed and accommodate a variety of sheds, fencing and equipment;*
- *Where planting restrictions allow, existing vegetation screening between Southend Road and the airport could potentially be reinstated.*

9.4 Assessment Methodology

The methodology for the Landscape and Visual assessment within the ES will be based upon the following documents:

- Design Manual for Roads and Bridges, Volume 11, Section 3, Part 5, 1994.
- Guidelines for Landscape and Visual Impact Assessment (Landscape Institute and the Institute of Environmental Management and Assessment, 2002).
- Landscape Character Assessment Guidance for England and Scotland, Scottish Natural Heritage and The Countryside Agency, 2002.

The landscape and visual impact assessment methodologies are both based on a consideration of the magnitude of change combined with the sensitivity of existing landscape features and views.

Photomontages will be developed for the two key viewpoints identified above.

10 Cultural Heritage

10.1 Legislative and Policy Context

There are a number of legislative items, planning guidance and policies that apply from national to local level. These comprise:

National

- *Ancient Monuments and Archaeological Areas Act 1979 (amended by the National Heritage Act 1983 and 2002);*
- *Planning (Listed Buildings and Conservation Areas) Act 1990;*
- *Town and Country Planning Act 1990;*
- *The Town and Country Planning (General Permitted Development) Order 1995;*
- *Hedgerows Regulations 1997, amended 2003;*
- *Department of Environment Planning Policy Guidance Note 15 Planning and the Historic Environment 1994;*
- *Department of Environment Planning Policy Guidance Note 16 Archaeology and Planning 1990.*

Regional and local

- *Essex & Southend-on-Sea Structure Plan (Adopted 2001);*
- *Southend-on-Sea Borough Local Plan 1986-2001, (Adopted 1st March 1994).*

10.2 Baseline Conditions

The information to inform the baseline condition has been collected from the National Monuments Record, Essex Historic Environment Record and Southend-on-Sea Sites and Monuments Record. The locations of all heritage assets referred to in the text are identified on Figure 10.1; numbers in parenthesis refer to heritage assets.

There is one Listed Building (81) within the proposed development area, and a further three located to the north-east (43, 49, 50). There are no Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields or Conservation Areas within the proposed scheme footprint.

The heritage assets within the study area date to the Mesolithic (10,000-4,000 BC), Neolithic (4000-2200 BC), Bronze Age (2500-700 BC), Romano-British (AD 43-410), medieval (410-1540) and post-medieval (1540+) periods.

Mesolithic and Neolithic

The evidence for Mesolithic/Neolithic activity is limited to a single find-spot of Mesolithic/Neolithic jet beads (44) to the north-west of the proposed scheme area. This was found close to the crossing point of the runway. Other evidence for Neolithic activity comprises two separate findspots of polished stone axes (53, 82), found to the north and south of the existing airport.

Bronze Age

Archaeological evaluation by trial trenching of the Transport Interchange at Southend Airport (28) identified probable late Bronze Age pits around the area of the

proposed site of the Phase 2 Terminal (ECCFAU 2005)[4]. These pits were thought to be an extension of Bronze Age activity (23), in the form of a ditch, excavated in advance of commercial development near Warners Bridge (HER note). Further archaeological investigations to the west of the existing airport identified a dense pattern of remains dating from the Bronze Age (72).

Iron Age

Evidence for Iron Age within the present airport includes a crouched female inhumation (17) found beneath an Iron Age occupation layer. The Historic Environment Record reference for this asset indicates the remains were excavated in 1960 and initially were believed to be of Neolithic date, but have been re-dated to the Iron Age (Holgate 1996, 19)[5]. Excavation to the south of the airport (83) in 1953 identified Iron Age pottery sherds in the area, but no evidence for archaeological features.

Roman

The majority of the known activity in the area dates to the Romano-British period. Only one asset has been identified within the present airport, which is the line of a possible Roman road (19), running from Rivenhall to Southend. Other remains close to the airport are a stone building, corn drying kiln, and hearth (25). This is located directly west of the Transport Interchange area. Other Romano-British activity outside the present airport is represented by findspots (26, 27, 29, 33, 34). These indicate activity in the area that cannot be tied down to a specific area of settlement.

Medieval

The Church of St Laurence and All Saints, Eastwood (81), dates from the early 12th century. Documentary evidence demonstrates that the church existed by 1100 when Robert Fitz Suen gave the chapel of Eastwood to the Prior of Prittlewell. The church is a Grade I listed building located within a large graveyard that extends to the north. The perimeter wall of the graveyard is likely to be regarded as curtilage listed.

Archaeological evaluation by trial trenching at the site of the Transport Interchange identified the presence of ditches dating to the 15th-16th century (28) (ECCFAU 2005). Known medieval archaeological assets close to the present airport include human burials (61), thought to be similar to those found at Prittlewall Priory which are known to be of Anglo-Saxon date (AD 410-1065). Clearance of rough growth around a spring, to the south of the burials, identified a brick wall attached to a two-chambered structure (62).

Post-medieval

The Essex clays have been an important raw material since the late medieval period for brick making. Industrial developments in the area relating to this from the 16th century onwards include a tile kiln (79) in Eastwood to the north-west of the airfield, a brick kiln to the north (56) and West Brickworks (52) to the north-east. These assets are located beyond the proposed development areas at the airport.

In July 1883 the Great Eastern Railway was granted powers to build a 21.5 mile long railway between Shenfield and Southend (85). It opened for goods in 1888 and

[4] ECCFAU (Essex County Council Field Archaeology Unit) 2005 Transport Interchange Southend Airport, Rochford, Essex – Archaeological Evaluation by Trial Trenching

[5] Holgate, R 'Essex c. 4000-1500 BC' in Bedwin O (ed) 1996 *The Archaeology of Essex,* pp. 15-25

to passengers in 1889. The railway is on a north-south alignment and runs along the eastern boundary of the airport.

20th Century

Rochford Sewage Works (51) to the north-east of the airfield was constructed in the early 20th century. This asset is located beyond the proposed development areas at the airport.

Southend Airport was developed in 1914 as an operational base for the Royal Flying Corps. In June 1916 the airfield became RFC Rochford and was designated as a night fighter station. During World War II the airfield was known as RAF Rochford and was a fighter base for squadrons of Spitfires and Hurricanes.

During the summer of 1940 home airfields were exposed to attack. In response to the threat of an airborne assault from bombers and paratroops a number of defence structures were built around the perimeter of the airfield. These included light anti-aircraft gun emplacements and associated ammunition shelters, pillboxes, including Pickett-Hamilton forts[6] and a battle headquarters, unique to airfield defence. Pillboxes in particular were accompanied by a system of trenches and the remains of these are likely to survive below ground.

Many of these World War II defence structures, particularly the anti-aircraft structures, have been destroyed but a significant number of pillboxes survive on the perimeter of the airfield and are recorded on the Defence of Britain Database (10, 31, 39 and 63). Three World War II buildings (20) may survive along the eastern boundary of the airfield.

10.3 Potential Impacts, Constraints and Opportunities

Information from the National Monuments Record, Essex Historic Environment Record, and Southend-on-Sea Sites and Monuments Record indicates that there are known buried archaeological remains across the present airport. There is the potential for adverse physical impacts on buried archaeological remains in the area around the Phase 2 terminal building, Code C Taxiway and car parks.

Although there are no recorded heritage assets within the areas of the proposed runway extension, there is the potential for unknown buried archaeological remains to survive. This is based on the medium density of known heritage assets across the study area. Development of this area may have a potential adverse impact.

The Church of St Laurence and All Saints is a Grade I listed building with a graveyard wall that is likely to be considered curtilage listed by the Local Planning Authority, but may be subject to ecclesiastical exemption. Previous proposals have been explored to demolish the church as part of the runway extension. However, Listed Building Consent for demolition was refused by Southend-on-Sea Borough Council on the grounds that insufficient justification was submitted to prove that the proposal would bring substantial benefits for the community and was contrary to national, regional and local policy.

The current proposals are to retain the church in its existing location, however any proposals that affect the setting of the Listed Building are a material consideration in

[6] Pickett-Hamilton Forts are sunken circular reinforced concrete pillboxes built flush with the airport surface (Lowry, 2002, 124: *20th Century Defences in Britain* Council for British Archaeology)

the determination of a planning application and any alterations to the boundary of the graveyard would need to be assessed in relation to the possible need for Listed Building Consent. Impacts on the church therefore remain a significant issue for consideration.

World War II airfield defence structures as well as airfield buildings survive along the perimeter of Southend Airport. On the eastern boundary, three World War II airfield buildings (20) and a pillbox (21) are located within the Phase 1 car park area, programmed for construction during 2010 (and therefore not within the scope of this EIA). The Code C Taxiway (included in the EIA) may have a direct physical impact on a Pickett-Hamilton fort (18).

10.4 Assessment Methodology

Further assessment will be undertaken as part of the Environmental Impact Assessment. This will require a Desk Based Assessment and possibly geophysical surveys and intrusive investigation works such as trial trenching. These make an assessment of the value of all receptors identified, along with the magnitude and significance of potential impacts. Geophysical surveys are considered unlikely to provide useful results due to the extent of existing underground structures and metalwork; trial trenching would be considered a more useful approach. The assessment would also consider the need for mitigation measures and any residual impacts. It is proposed that, should trial trenching be needed, it will only be undertaken for the Essential Infrastructure i.e. those elements to be included in the 2009 planning application. It is recommended that trial trenching for the Required Supporting Infrastructure would be undertaken at some future date when the proposals are brought forward for formal approval.

As part of the EIA process consultation will take place with English Heritage, Essex County Council's Archaeologist and Southend-on-Sea Borough Council's Conservation Officer and Archaeologist to agree acceptable designs and mitigation for proposals affecting the Church of St Laurence and All Saints and an appropriate mitigation strategy for other heritage features. These would be dependant on the overall design of the proposed scheme.

Mitigation for other heritage features may require some or all of the following:

- *Archaeological excavation;*
- *Strip, map and sample;*
- *A watching brief during construction works, and*
- *Assessment, analysis, reporting, publication and archiving.*

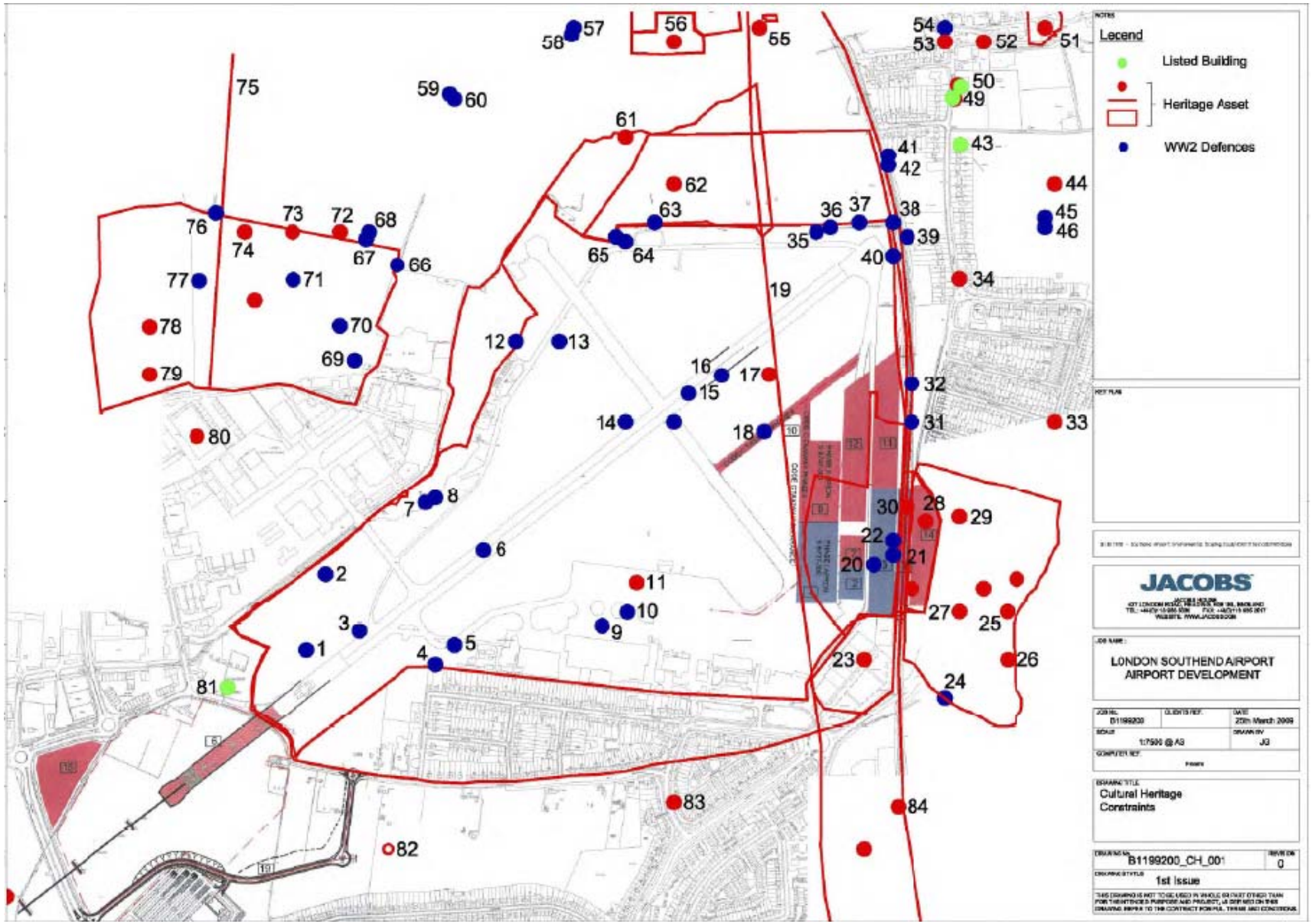


Figure 10.1 Cultural Heritage Constraints

11 Ground Conditions

11.1 Legislative and Policy Context

Planning Policy Statement 23: Planning and Pollution Control (PPS23) sets the policy context for addressing issues associated with contaminated land, while the Environment Agency's Model Procedures for the Assessment of Land Contamination (CLR11) provides the appropriate guidance for impact assessment.

11.2 Baseline Conditions

A Contaminated Land Phase I Desk Study was carried out in March 2009 for the proposed development areas illustrated in Figure 2.3. This report is included at Appendix D with principal observations summarised below. This study built upon two key earlier studies:

- *Phase I and Phase II intrusive ground investigation study undertaken in 2002 by JacobsGibb for the runway extension area;*
- *Environmental Desk Study for the entire airport undertaken in 2007 by Wardell Armstrong – this study included the acquisition of an Envirocheck Report.*

The proposed site is surrounded by surface waters – Eastwood Brook located along the northern boundary of the airport, and Prittle Brook located approximately 370m east of the site. Alluvium is expected to be present to the north and east of the site associated with these brooks, underlain by River Terrace Deposits, which are classified as Minor Aquifers. The entire site is underlain by London Clay which acts as an impermeable barrier. Groundwater was encountered at the runway extension area during the 2002 site investigation.

The proposed area for the new terminal and car parking is currently occupied by small disused buildings with the possible presence of asbestos roofing, interceptor tank(s), and a mobile fuel tank for refilling of aircraft parked on the Apron.

The proposed area for the relocated flying clubs is located in an area of stockpiled soils mixed with demolition materials and is in close proximity to Eastwood Brook. The quality of the soils at this site is not known.

The previous ground investigation (2002) of the runway extension area suggests that potentially contaminative uses have had only localised and limited impact on the soils, which could be managed by adopting good working practices during construction.

Records indicate that the airport was used previously as an aircraft base during both World Wars. It was understood from previous researches that the airfield was bombed heavily between 1940 and 1941. An explosive ordnance survey of the site carried out by the military in the 1980s found unexploded ordnance including pipe bombs. Information sources did not however, provide the exact locations where these bombs were found. Although the previous site investigation (2002) did not identify unexploded ordnance, their potential presence within the site should not be discounted.

11.3 Potential Impacts, Constraints and Opportunities

In the area proposed for the terminal extension and car parking, the following have been identified as potential sources of impacts:

- *Potential for asbestos roofing in the disused buildings;*
- *The integrity of the interceptor is not known but there could be potential for pollutant leakage into the surrounding soils;*
- *Hydrocarbon spillage in the refuelling area.*

It is not considered likely that significantly high concentrations of contaminants are present in the stockpiled soils at the proposed site for the relocated flying clubs. However, if they were present, they would pose a medium to high risk to controlled waters, construction workers and future site users.

No significant impacts are forecast due to presence of contaminated soils within the runway extension area.

11.4 Assessment Methodology

In the absence of major potential contaminant sources, recommended further investigations are limited to a pre-construction investigation at the new terminal/car parking area, with a watching brief for unexpected ground conditions during construction. The following works are recommended to address the current uncertainties:

- *Obtain further information on the condition, age and maintenance records of the interceptor observed at the eastern side of the airport. If maintenance records are inadequate or unavailable then intrusive investigation of soil and groundwater in the area of the interceptor is recommended;*
- *Limited intrusive investigation to assess ground conditions within the area proposed for the terminal extension to assess the impact of historical activities, the presence and composition of any Made Ground in the area, and the potential for localised hydrocarbon spillage to ground during mobile aircraft refuelling;*
- *Asbestos survey prior to the demolition of the disused buildings;*
- *Limited intrusive investigation to assess ground conditions within the area proposed for the relocated flying clubs to assess the quality of the Made Ground observed to have been placed in the area;*
- *No further intrusive investigation is considered necessary for the runway extension area.*

In view of the above, and that the planning application relates to the runway extension area only, it is not considered necessary to undertake any further assessment work to support the planning application. For this reason further contaminated land studies have been scoped out of the assessment.

12 Water Resources and Quality

12.1 Introduction

The key elements to be considered in this section of the report include surface water drainage, flood risk, water quality and water resource use in the vicinity of the airport which could be impacted by the proposed development. The water environment is an important consideration in relation to the expansion of the airport. Additional hard standing areas would result in increased surface water runoff to receiving watercourses. Adverse water quality impacts could also arise from airport operations through general surface water contamination (e.g. by aviation fuels, metals, particulates, de-icing agents) and surface water contamination associated with any catastrophic incidents (e.g. fuel tank failure, fire-fighting activities). Flood risk impacts could also arise from the increased surface water runoff and from any floodplain storage lost to the proposed development. In addition, there is the flood risk posed to the proposed development itself.

The section is based on information obtained from the work previously undertaken by Jacobs (JacobsGibb at the time) and consultations with key Airport staff as well as the Environment Agency.

12.2 Legislative Context

Legislation and guidance relating to water resources, water quality and drainage is established by the following framework:

- *Surface Water (Dangerous Substances) (Classification) Regulations 1989 (1992, 1997 and 1998);*
- *The Water Supply (Water Quality) Regulations 1989, 2000 and 2001;*
- *Environmental Protection Act 1990;*
- *Water Resources Act 1991;*
- *Land Drainage Act 1991 and 1994;*
- *Surface Water (River Ecosystem) Classification Regulations 1994;*
- *Environment Act 1995;*
- *Groundwater Regulations 1998;*
- *Water Environment (Water Framework Directive) (England and Wales) Regulations 2003;*
- *Environment Agency Pollution Prevention Guidelines; and*
- *Planning Policy Guidance Statement 25: Development and Flood Risk.*

12.3 Baseline Conditions

12.3.1 Methodology

The following sources of information have been used to identify the baseline conditions for the water environment within the study area:

- *A site visit in March 2009;*
- *A review of the work previously undertaken by Jacobs in December 2002 (JacobsGibb at the time) for the Environmental Statement – Chapter D "Ground Conditions and Water Resources";*
- *A review of the work previously undertaken by Jacobs in January 2003 (JacobsGibb at the time) in the report titled "Proposed Runway Reconfiguration – Phase I and II Environmental Site Assessments";*

- *Consultation with Airport Operations staff to obtain information on its drainage infrastructure and related operational practices;*
- *Consultation with the Environment Agency to obtain information on various aspects of the water environment;*
- *Use of the Environment Agency website for water related data;*
- *Ordnance Survey mapping;*
- *Envirocheck Report (2007); and*
- *A review of the work previously undertaken by Wardell Armstrong in December 2007 in the report titled "Phase 1, Preliminary Environmental Liability Assessment" and the work previously undertaken by Halcrow in January 2008 in the report titled "London Southend Airport & Environs Study – Sustainability Appraisal Scoping Report".*

12.3.2 Water Supplies

The Environment Agency advised in May 2009 that there are four current licensed abstractions and two deregulated abstractions within 2km of the centre of the airport. Deregulated licences are small volume (less than $20m^3/d$) which no longer need to be licensed, so were revoked on 31 March 2005. The closest abstraction is around 220m southeast of the site and is currently revoked. The only other abstraction within 1km of the site is operated by Tabor Farms for general agricultural purposes and is located 550m northeast of the site, abstracting from the Eastwood Brook.

12.3.3 Groundwater

The ground conditions comprise silt clay and sandy clay River Terrace Deposits (designated Crouch First to Third Terraces) (4-10m in thickness), underlain by a thin sand and gravel layer (up to 5m in thickness). These deposits overlie London Clay that is up to 120m in thickness at this location, which is underlain by Lower London Tertiaries (up to 55m in thickness) and Upper Chalk (around 85m).

The London Clay is significantly thick and therefore classified as Non-Aquifer by the Environment Agency. The London Clay should prevent any contaminants from entering the underlying major aquifer. Any waters in the major aquifer in this region are, therefore, considered to be protected.

Superficially, the overlying River Terrace Deposits are classified in geological texts as a Minor Aquifer (perched aquifer in this instance) as they are variably permeable and capable of supporting local groundwater abstractions and base flows to rivers. Due to extreme variations in their lithology, saturated thickness and catchment area, they give rise to highly variable yields in the region. Previous site investigations showed water to be present in this layer (2.1m – 7.5m) below ground level. Previous groundwater encountered in the strata of these site investigations contained no significant contaminants, only marginal exceedances of the Dutch Target Levels for two metal contaminants (Mercury and Chromium) and one exceedance in Total Petroleum Hydrocarbons.

There are several surface water discharge consents relating to the airport and the industrial site on the south western boundary of the airport, which discharge into either the Eastwood Brook or the Prittle Brook.

The lack of recent data on ground water levels and quality makes it impossible to establish current baseline conditions for groundwater.

12.3.4 Watercourses

The main watercourses within the vicinity are the Eastwood Brook and the Rayleigh Brook, which converge to form the Hawkwell Brook. The Eastwood Brook passes within a few metres of the edge of the site flowing north-east along the airport boundary. The Prittle Brook (also known as the Prittlewell Brook) runs parallel to the eastern boundary of the airport just over 1km away. Both the Hawkwell Brook and the Prittle Brook eventually flow into the River Roach which is located approximately 0.5km to the north-east of the airport boundary.

Using the Environment Agency General Quality Assessment (GQA) programme results presented in previous studies, it appears that the water quality in all four brooks ranged from Fair to Poor. It is understood from these studies that the poor performance in the water quality targets of the four brooks is related to biochemical oxygen demand (BOD) and ammonia levels. It is also understood that levels of nitrates and phosphates in the four brooks are classed as being high or very excessively high. It is believed that these excessive nitrate levels could be a result of former agricultural practices. However, the River Roach had a GQA of chemical river quality classification of C (fairly good) in 2007. The Roach estuary has statutory conservation status as a Site of Special Scientific Interest, Special Protection Area and Ramsar site. Therefore it would be considered sensitive to significant water quality changes.

There is reportedly a water quality monitoring site on the Eastwood Brook adjacent to the airport, which is routinely sampled by the Environment Agency. Data are not available on the Environment Agency website for this monitoring point, but from the Envirocheck Report (2007) the Environment Agency GQA classification varies from river quality classification C for the upstream section to river quality classification B for the downstream section.

The latest Environment Agency water quality classification system is based around Water Framework Directive (WFD) objectives. Data on the Agency's website indicates that Eastwood Brook, Rayleigh Brook, Hawkwell Brook and Prittle Brook have all been classified with a hydromorphological status of "candidate heavily modified" with "moderate" ecological potential. The current chemical quality has not yet been assessed for Prittle Brook, while the others have been assessed as passing at present. Overall biological quality is bad for Prittle Brook and poor for fish. The others are poor with respect to overall biological quality, while no classification is provided with respect to fish. All are classed as "at risk" of failing to meet WFD objectives.

12.3.5 Surface Water Drainage

The airfield surface water drainage system from the on-site hard standing areas has two known discharges to the Eastwood Brook to the west and a further two to the Prittle Brook to the east. The two discharges to the Prittle Brook are via older chamber type interceptors. Only one of the discharges to the Eastwood Brook, that is the surface water discharge for the fire-training ground, is via an interceptor (full retention type). It is understood that the other surface water discharge to the Eastwood Brook, that is surface water runoff from half of the runway and cross-wind runway (Taxiway Foxtrot), is discharged directly to the Eastwood Brook without any pollution control device. There are other surface water discharges from the site, namely, from the fuel farm to the Eastwood Brook and from the existing terminal buildings to Anglian Waters' stormwater system. The latter two surface water discharges are unlikely to be affected by the proposed development. There are also

other surface water discharges to the Eastwood Brook from the industrial site on the south western boundary of the airport. These are also unlikely to be affected by the proposed development.

At this stage it is unknown whether the existing airfield drainage system has any spare hydraulic capacity to accommodate additional surface water runoff from the proposed development. Similarly, the condition and integrity of the existing airfield surface water drainage system is unknown. No flow attenuation features such as balancing reservoirs currently exist for any of the airfield's surface water discharges.

The airport currently does not use de-icers but plans to introduce their use with the proposed development. The airfield's existing surface water drainage system is therefore potentially not able to deal with any de-icing activities.

The exact details of the surface water drainage system for the existing Eastwoodbury Lane are unknown at this stage. A review of the Anglian Water stormwater plans suggests that the surface water drainage from this road discharges directly into their system.

12.3.6 Flood Risk

This section assesses the vulnerability of the site to flooding from various sources.

(a) Groundwater flooding

A study undertaken by Jacobs in 2004 for Defra entitled "Groundwater Flooding Scoping Study" provided information on the scale, distribution and nature of groundwater flooding. This study indicates that there are no groundwater contours available for this area. Furthermore, it reports that the BFIHOST classification (Baseflow Index derived from the Hydrology of Soil Type (HOST) classification of UK soils) for the area suggests no propensity to flood from groundwater.

(b) Fluvial flooding

The Environment Agency Indicative Flood Maps show that the extreme north-western margin of the airport, in particular the western end of the cross-wind runway (Taxiway Foxtrot) is susceptible to fluvial flooding during a flood that is of a magnitude greater than a 1% Annual Exceedance Probability AEP (100 year) fluvial, and up to (and including) the 0.1% Annual Exceedance Probability (AEP) (1000 year) event. The Flood Maps do not indicate any fluvial flooding of the airport from the Prittle Brook, nor any fluvial/tidal flooding from the River Roach.

A review of the Strategic Flood Risk Assessment (SFRA) undertaken for the Thames Gateway South Essex Partnership indicates a similar flood impact to the airport even for the flood extents including climate change and a breach analysis of the tidal defences.

(c) Flooding from services

Discussions with airport staff have indicated that there have been blockages in the surface water system in the wash down facility at one of the maintenance hangers in the main apron area. In addition, it was indicated that one of the sewer connections from the industrial estate into the Anglian Water bulk foul sewer main recently backed up. Airport staff believe that this may have occurred due to blockages in the Anglian Water bulk sewer main which runs through on the eastern boundary of the

airport. It is understood that no significant flooding occurred as a result of these blockages and that they are mainly down to maintenance issues.

At this stage the above information excludes any consultation with any other authorities. It is proposed that any additional information be gathered as part of a Flood Risk Assessment (see Section 12.5).

(d) Flooding from surface runoff

Discussions with airport staff have indicated that there has been ponding from surface runoff on the main runway at the intersection with the cross-wind runway (Taxiway Foxtrot) and just off the end of the cross-wind runway (opposite side to the fire-training ground). It is possible that the ponding in these areas has resulted from a lack of maintenance of the airfield's drainage system in these areas. Both of these ponding incidents are some distance from the proposed development areas.

12.4 Potential Impacts, Constraints and Opportunities

The development of the airport will result in an increase in the surface water runoff from the proposed hard standing areas. It is proposed that all surface water runoff from additional hard standing areas be attenuated to existing "greenfield" run-off rates to contain the worst 1 in 100 year storm. There will also be a requirement to consider the effects of climate change on future rainfall patterns and intensities. This increase in surface water runoff would require the provision of storage attenuation either on-line as part of the proposed drainage infrastructure or through balancing reservoirs or a combination of both. The use of balancing reservoirs would require careful consideration to avoid attracting bird life and compromising aircraft safety. The increased surface water discharge may also require upgrading of existing outfall infrastructure both within the airport boundary and, in the case of the surface water discharges to the Prittle Brook, external to the airport as well. This would require further consultations with Anglian Water. For the surface water discharge from Eastwoodbury Lane Bypass it is proposed that Anglian Water be consulted to understand whether this discharge could be directed to their stormwater system and whether their system has any spare capacity.

Adverse water quality impacts could also arise from airport operations through general surface water contamination (e.g. by aviation fuels, metals, particulates, de-icing agents) and surface water contamination associated with any catastrophic incidents (e.g. fuel tank failure, fire-fighting activities). This would require the provision of appropriate pollution control facilities/devices at critical locations in the associated surface water drainage systems to mitigate against the potential risk of contaminating the receiving watercourses. The increased surface water discharge may also require the upgrading of existing pollution control devices depending on whether the existing drainage infrastructure is used for the proposed development. The lack of maintenance of parts of the existing drainage infrastructure could result in potential ponding/flooding which could have an impact on the airport operations.

Opportunities could exist to use part of the existing drainage infrastructure. However, this would be subject to checking the existing system capacity and integrity. For certain elements of the proposed development, such as the runway extension and possibly the diversion of Eastwoodbury Lane (subject to discussions with Anglian Water), it may be more appropriate to provide an entirely separate drainage system (including pollution control facilities) with its own outfall to the Eastwood Brook. Opportunities also exist to replace some of the older existing pollution control facilities.

Flood risk impacts could also arise from the increased surface water runoff and from any floodplain storage lost to the proposed development. The flood risk impact resulting from the increased surface water runoff would be mitigated by the provision of above-mentioned storage attenuation. Regarding the impact on floodplain storage, it would appear from the Environment Agency Flood Maps and the SFRA study (see Figure 12.1) that the proposed development is within Low Probability Zone1 (based on PPS 25 Flood Zones). This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (0.1%). Based on PPS25 all uses of land are appropriate in this zone. To meet the requirements of PPS 25 a Flood Risk Assessment will be produced for the proposed works to accompany the planning application. This will include consultations with other authorities to fully understand the potential risk from other sources of flooding.

Based on the evidence considered here, it is reasonable to conclude that the water environment will not be a constraint to the proposed development, provided that certain aspects are further assessed in consultation with other authorities such as the Environment Agency and Anglian Water to ensure that appropriate mitigation measures can be incorporated, and the use of de-icers agreed with these parties.

12.5 Assessment Methodology

Based on the conclusions of the previous section, the development is likely to have a slight adverse impact on the water environment. The impact of the increased surface water discharge from the proposed development on the existing drainage system will be investigated as follows:

- *Review the existing drainage system, including development of a high level Digital Elevation Model (DEM) to identify sub-catchments across the airport;*
- *Assess the suitability of the existing surface water drainage system with regard to proposed development;*
- *Develop an Outline Strategy for surface water discharge from the proposed development including an assessment of the requirements for flow attenuation and the discharge of de-icing agents.*

A water quality impact assessment will be required and this will be based on the water quality impact assessment process defined in GOMMMS[7]. This utilises the following methodology:

- *Identification of all waters that could potentially be impacted by the proposals;*
- *Identification of the attributes (or uses) and the associated indicators of quality for such uses;*
- *Appraisal of the potential impacts in relation to the identified attributes and indicators;*
- *An assessment of the significance of such impacts based on importance of the attribute combined with scale of change caused by an impact;*
- *Identification of appropriate mitigation measures for any significant adverse impacts identified.*

Consultation will be required with the Environment Agency in order to determine appropriate discharge consent conditions for discharges to the receiving

[7] Department for Environment, Transport and the Regions (2000). Guidance on the Methodology for Multi-Modal Studies. Volume 2. DETR.

watercourses. It is proposed that water quality monitoring for the receiving watercourses is not required.

In order to meet the requirements of PPS25, a Flood Risk Assessment will be undertaken for those aspects of the proposed development to be included within the Planning Application to be submitted in 2009. It is recommended that a FRA for future development areas (terminal extension, additional aprons and car parking) be undertaken at a later date when the requirements are more fully understood and the designs developed further.

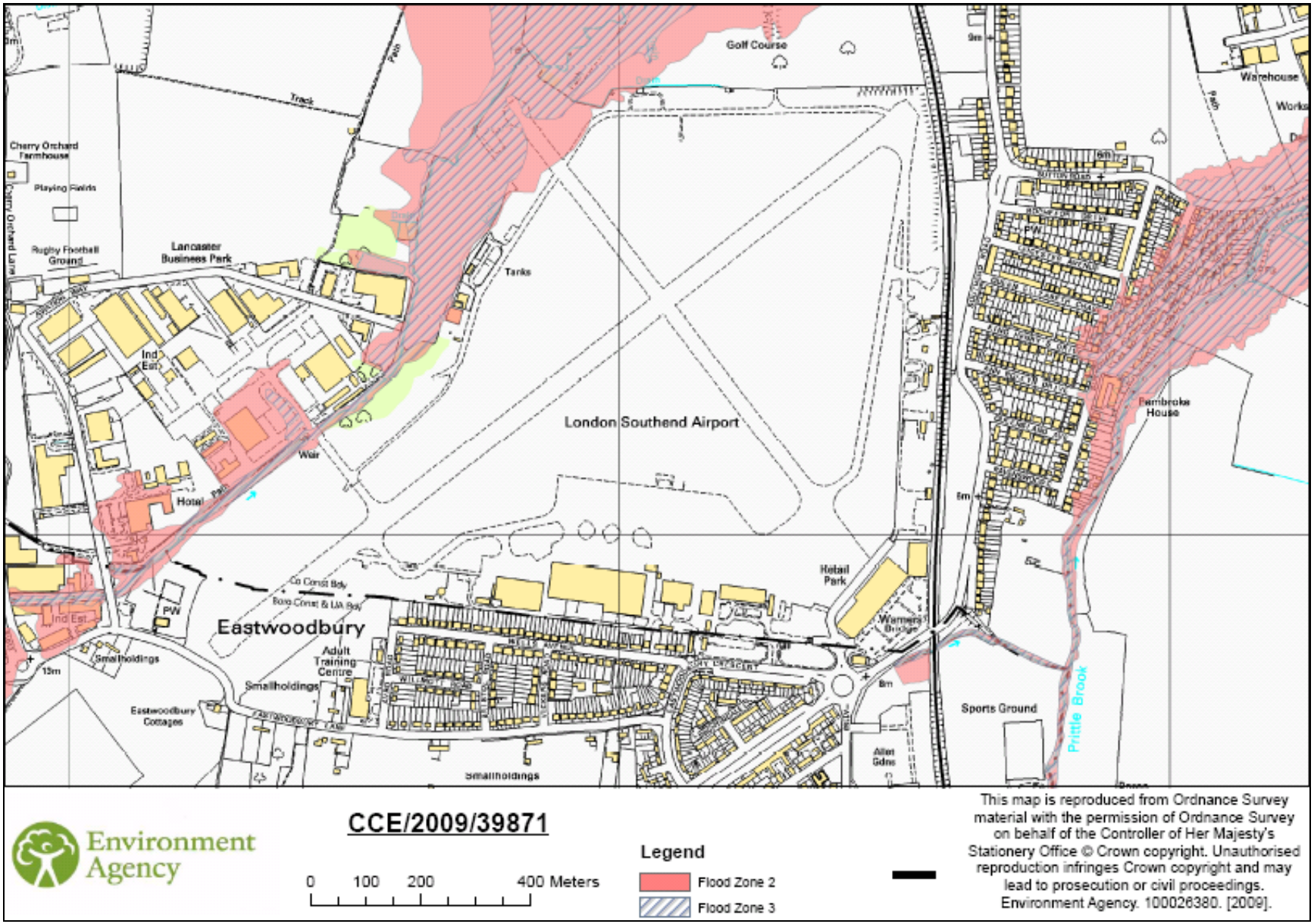


Figure 12.1 Outline Flood Zones for Southend Airport

13 Socio-economics

A number of studies have been undertaken in relation to both the airport expansion and the wider JAAP. These include:

- *Renaissance Southend Limited, Regeneration Framework 2007 – 2021 (Renaissance Southend)*
- *London Southend Airport & Environs Joint Area Action Plan, Issues and Options Report, June 2008 (Halcrows)*
- *Southend Airport Economic Impact Assessment: Final Report, May 2008, (Arup).*
- *A Renaissance for Southend, Regeneration Framework Final Report, February 2007 (Roger Tym & Partners)*
- *Southend Airport Economic Impacts: Scoping Report, 2006 (Arup);*
- *Socio-economic Impact of the Expansion of Activities at Southend Airport, January 2006 (York Aviation for EEDA);*
- *Socio-Economic Impacts Analysis of Expansion of Activities at Southend Airport, August 2005 (York Aviation)*
- *London Southend Airport: Economic Impact – A Note, 2003 (Regeneris);*

The airport expansion is expected to result in significant socio-economic benefits to the South Essex area. The York Aviation study estimated that in 2006 the airport sustained 1050 full time jobs generating £25 million for the local economy, and that this could increase to 2,400 jobs generating £94 million in benefits with expansion to 2 mppa. The Arup 2008 report concluded that a runway extension airport expansion would allow an additional 1700 jobs to be created by 2020, generating £60 million of income.

A socio-economic impact assessment is currently being commissioned for the JAAP Preferred Option. This will cover not just the airport expansion, but also the wider industrial/commercial development around the airport. This study will be used as the basis for the socio-economic assessment chapter for the runway extension ES, and will include additional information on the temporary socio-economic benefits during the construction phase.

An assessment will be made of the economic effects against policy. This will consider:

- *Impacts of additional employment (direct, indirect and induced employment) arising from the operation and construction of the development;*
- *The benefits of airport development to air transport users;*
- *Wider economic benefits – including the effect of development on the area's ability to attract and retain businesses, trade, investment and tourism.*

14 Sustainability

14.1 Outline Sustainability Appraisal

The key sustainability considerations for the proposed airport expansion are articulated well in a report prepared by Forum for the Future (2004) "Visions & Tests - vision of a sustainable aviation industry and key tests for sustainable aviation policy in the UK". Airport Sustainability is an increasing concern overall, and specific areas e.g. biodiversity, noise, air quality, water resources and waste will need to be addressed.

Climate change and other global environmental issues feature strongly in the Aviation White Paper, and a number of responses to the JAAP consultation relate to carbon emissions. An assessment of the carbon footprint of Southend Airport has been made by The Carbon Trust. Total CO_2 emissions in 2006 were 4,894 tonnes, but less than 10% of this was under direct control of the Airport Company, the rest being emitted by tenants.

An Outline Sustainability Appraisal (SA) of the proposed runway extension project will be undertaken. This will comprise a review of how the development proposals perform against key sustainability criteria. The SA will be objective led, appraising the development against current sustainability policy considerations at the local and national level. The aim of the SA is therefore to appraise the extent to which sustainability objectives have been integrated into the environmental, social and economic considerations of the proposed runway extension.

There is no specific statutory guidance on the methodology for an SA. We propose using criteria derived from the South East England Development Agency (SEEDA) Sustainability Checklist (or an equivalent from EEDA) to address key impacts, but these criteria will be discussed with the local planning authority to reflect local circumstances most appropriately. It may, for example be beneficial to structure the SA to align with the Local Development Framework SA objectives identified by Rochford District Council and Southend-on-Sea Borough Council, as relevant to the JAAP.

The SEEDA Checklist

The methodology will ask key questions of the development based on an adapted version of the SEEDA Sustainability Checklist, whose sustainability criteria and the environmental aspects which they cover are highlighted below.

1. Climate change and energy

- *Sustainable energy;*
- *Emissions;*
- *Site infrastructure;*
- *Flooding;*
- *Heat island effects;*
- *Water efficiency.*

2. Community

- *Involvement in decision making;*
- *Supporting public services, social economy and community structure;*
- *Community management of the development.*

3. Place Making

- *Efficient use of land;*
- *Design process;*
- *Form of development;*
- *Lighting / pollution;*
- *Security lighting.*

4. Transport and Movement

- *General policy;*
- *Public transport;*
- *Parking;*
- *Pedestrians and cyclists;*
- *Traffic management.*

5. Ecology Conservation

- *Enhancement of ecology;*
- *Planting.*

6. Resources

- *Appropriate use of land resources;*
- *Environmental impact;*
- *Materials;*
- *Water resource planning;*
- *Noise pollution;*
- *Construction waste .*

7. Business

- *Business opportunities;*
- *Employment;*
- *Training.*

8. Buildings/Construction

- *Specified BREEAM;*
- *CEEQUAL.*

It should be noted that not all the above would be appropriate for an application for the 'Essential Infrastructure' alone, which does not include any new buildings (the new terminal would comprise 'Required Supporting Infrastructure' which will not form part of the application). Nevertheless it is possible to have some consideration for energy projections for the airport as a whole. This checklist and information from the Environmental and Economic Assessment reports will be used to assess the extent to which the proposed runway extension meets the sustainability objectives under each of the headings above.

The SA will present a clear and robust assessment of the proposals against sustainability indicators and will identify mitigation opportunities required to address negative impacts of the development. The SA will also include an implementation plan to embed sustainability within the planning and development process.

14.2 Climate Change Considerations

In relation to potential impacts on climate change, it is not considered appropriate to assess measurable impacts from any increased emissions that might arise from the runway extension project. LSACL is well aware of the international significance and threat posed to the world by climate change, and that aviation has a responsibility to address its climate change impacts. However such impacts cannot be appropriately addressed through the consideration of individual development proposals. The Air Transport White Paper explains that the Government believes that the best way of ensuring that aviation contributes towards the goal of climate stabilisation would be through a well designed emissions trading scheme (ETS) to include aviation. This approach has since been confirmed in the Air Transport White Paper Progress Report (ATPR) which was prepared in light of the Stern Review which itself stressed the importance of tackling climate change in the most economically efficient manner.

The Government has taken a lead in pursuing its stated intention of including aviation within the EU ETS. Its consultation document of March 2007 entitled "Consultation on the Commission's Proposal to Include Aviation in the European Union Emissions Trading Scheme" stated:

"10 Emissions trading guarantees a specific environmental outcome in a way other pricing instruments do not. By imposing an overall limit on emissions whilst allowing the trading of the right to release emissions, emissions reductions are achieved at least cost to the economy. The emissions reductions required to achieve a particular environmental outcome will take place in as cost-effective manner as possible. In addition, aviation is an industry with limited immediate abatement opportunities and emissions trading will therefore enable reductions in other sectors to be funded by the aviation sector. Emissions from aviation above their allocation will therefore lead directly to reductions in emissions in other sectors."

The Council of the EU formally approved the details of the EU ETS in October 2008. The scheme imposes emissions reduction targets/caps on airlines, above which carbon permits will need to be purchased. Therefore any growth in aviation emissions will need to be fully offset by a reduction in emissions elsewhere.

The proposed development would result in some increase in greenhouse gas emissions, but the increases themselves could not give rise to any measurable effect on local, national or global temperatures. The increases aviation emissions of aircraft in flight would also be offset by reductions elsewhere through emissions trading. It is therefore proposed that climate change impacts be scoped out of the EIA.

15 Third Party Risk

15.1 Legislative and Policy Context

The level of risk at most locations of an aircraft crashing is extremely low, but it does increase with proximity to an airport, because aircraft activity necessarily concentrates there and because a crash is more likely to take place during the landing and take-off phases of flight than at other stages. Whilst the risk is small, the Department for Transport (DfT) has determined that the level of risk close to a runway could be sufficient to warrant some form of control over the number of people exposed, and has established a public safety zones (PSZ) policy as a means of exercising that control through the local development planning process.

The DfT's Circular 1/2002 ("Control of Development in Airport Public Safety Zones") states that "there should be a general presumption against new or replacement development, or changes of use of existing buildings, within Public Safety Zones". The Circular describes potential developments which it excludes from this presumption, but the basic policy is that there should be no significant increase in the number of people living, working or congregating in PSZs and that, as circumstances allow, the number should reduce. It further states that the PSZ boundaries should "correspond essentially to the 1-in-100,000 individual risk contour for each airport".

However, since the individual risk can potentially be higher than this figure close to a large airport, the circular also establishes a maximum tolerable level of individual risk of 1-in-10,000 per year, ten times higher than the value to be used to establish the PSZ. If any residential properties or other premises occupied as normal all-day workplaces are exposed to an individual risk of more than 1-in-10,000 per year, the airport operator is expected to make an offer to purchase that property.

The other risk guidelines against which an industrial or commercial activity can be assessed are the "tolerability limits" of the Health and Safety Executive (HSE). The HSE has indicated the boundaries between the tolerability zones for hazards involving the risk of single or multiple fatalities. These are considered to be guidelines, not rigid criteria to be complied with in all cases, and may be adapted to take account of societal concerns. The HSE's individual risk guidelines for members of the public are provided in its publication "Reducing Risks, Protecting People – HSE's Decision Making Process".

15.2 Baseline Conditions

The Base Case for 2020 without the runway extension is for 52,500 ATMs (see Section 2.6). The current PSZs produced by DfT are based on a 2022 forecast of 52,000 movements. Thus the current PSZs provide a good estimate of the risk levels for this Base Case. These 2020 Base Case risk levels will inevitably be greater than current risk levels experienced with 37,000 ATMs.

The current PSZs are shown in the JAAP and the relevant figure is reproduced in Appendix A of this document. The larger triangular zones (blue) bound the 1-in-100,000 individual risk contours. The smaller shapes (black) represent the 1-in-10,000 individual risk contours.

There are no occupied properties within the 1-in-10,000 individual risk contours shown on the current PSZ map, so it can safely be assumed that there would be no occupied properties within the 1-in-10,000 area in the 2020 base case.

The PSZ triangle to the south-west bounding the 1-in-100,000 individual risk contour crosses the B1013 and the A127 and encompasses a large number of residential properties beyond the A127. The PSZ triangle to the north-east bounding the 1-in-100,000 individual risk contour crosses the Rochford to Southend rail line and encompasses residential properties on Southend Road, but covers mostly rural land.

In addition to aircraft crash risks, EIAs for airports sometimes also consider wake vortex risks. Wake vortices are spiralling movements of air flowing from aircraft wingtips in flight. Pairs of wake vortices trail behind the aircraft and tend to descend and spread outwards as they rotate, eventually dissipating into the general air turbulence. If the aircraft is close to the ground, a vortex may reach the surface or buildings while the rotating volume is still compact and air speeds within it are still high. These fast-moving air streams can cause damage to structures, referred to as 'vortex strikes', their most common effect being the displacement of roof tiles. There have been no known vortex damage events in recent years at Southend Airport.

15.3 Potential Impacts, Constraints and Opportunities

The development (with runway extension) will have the following impacts relevant to third party risk:

1. Increase the number of ATMs
2. Change the types of aircraft using the airport
3. Move the runway threshold at the south-west runway end

With respect to point 1, Section 2.6 indicates that the predicted increase in ATMs will be relatively small to 53,300 ATMs. More significant will be point 2 as:

- *Accident frequency can vary to a very large extent depending on the type of aircraft. The chance of an accident per movement for a modern Western built jet for example is historically many times less than that with other aircraft types.*
- *Third party risk is also related to the average weight of aircraft which in turn depends on aircraft types. The heavier an aircraft, the greater the average consequences on the ground if there is an accident.*

Point 3 above will shift the relevant risk contours and PSZ also to the southwest.

Without detailed modelling it is difficult to predict what the overall impact on third party risk will be of all these factors. There is an opportunity with the introduction of a higher proportion of modern Western built jets (e.g. A319) on passenger flights potentially to reduce the overall predicted accident frequency. However, this needs to be assessed in detail and combined with any increase in average accident consequences and the relocated runway threshold to predict overall risk impacts.

With respect to wake vortex risks, the likelihood of damage to roofs is dependent on the number of ATMs, the size of aircraft using an airport, the relative proximity of flight paths to buildings and prevailing atmospheric conditions. An increased proportion of larger aircraft and the relocation of the south-west threshold towards residential properties could increase the risk of a vortex strike. However, it should be noted that the maximum and average weights of aircraft using Southend Airport

in the Development Case will still be well below those of many other UK airports. In addition, the proximity of flight paths to roofs following the threshold re-location will not be uniquely or unusually small. Thus, the risk of tile damage would still be expected to be small.

15.4 Assessment Methodology

A quantitative risk assessment will be carried out. The key stages in assessing the risks around an airport from aircraft accidents are:

- *Analysing airport layout and traffic;*
- *Determining crash frequencies appropriate to the traffic mix;*
- *Determining the geographical distributions of crash locations around the airport;*
- *Assessing the consequences of aircraft crashes;*
- *Combining frequency and consequence information to generate individual risk results;*
- *Assessing the risks against the DfT and HSE criteria.*

The method developed by the UK National Air Traffic Services (NATS) will be used. This method is used by the DfT for determining Public Safety Zones. The Base Case for 2020 will be modelled as will the Development Case for 2020.

Concerning wake vortex risk, previous studies by the Building Research Establishment (BRE) around airports will be used to assess the degree of damage risk and whether further mitigation is required.

16 Cumulative Impact Assessment

It is important to include consideration of potential cumulative effects as part of the EIA process. It is recognised that whilst individual types of impact may not be significant in isolation, they may result in significant 'cumulative effects' when considered together, or when combined with other past, present and reasonably foreseeable future actions.

Each environmental topic will be considered individually and then looked at in combination to assess whether the total effects are acceptable. Sensitive receptors will be identified, in order to establish whether any receptors are impacted in a number of different ways; individually these impacts may be tolerable, but in combination they may become unacceptable.

Assessment of wider scheme effects will comprise a review of available information on existing developments under construction, extant planning consents and proposed developments which do not yet have planning consent. This would include consideration of the proposed new football ground to the south-east of the airport, particularly in relation to surface traffic impacts. It is proposed that the additional industrial and business developments proposed within the wider JAAP are not considered as part of this ES because they are only at Masterplan stage.

Consultation with Southend and Rochford Councils will identify those developments which should be considered in relation to cumulative impact assessment.

17 Summary and Conclusions

Table 18.1 provides a summary of the key issues based on the scoping undertaken in the preparation of this document.

Environmental Topic	Potential Constraints/Impacts	Potential Benefits/Opportunities	Proposed Scope of Assessment
Planning	• JAAP policies in relation to new noise baseline, need for annual Noise Evaluation Statement, requirement for Surface Access Strategy, operational conditions for runway and terminal including restrictions on scheduled passenger night flights	• Extensive support for the airport expansion in national and regional policies, combined with support in core development plans for both Rochford and Southend • JAAP proposes realignment of Green Belt to airport boundary • Airport application may be used to inform JAAP EiP	• The application will need to be accompanied by a Planning Supporting Statement and a Design Access Statement
Land Use and Amenity	• PSZ contours may change • Requirement to demolish six cottages along Eastwoodbury Lane • Land take of approx 24ha of Grade I agricultural land for runway extension and Eastwoodbury Lane diversion • Loss of children's play area and sports field in St Laurence Park • Road diversion would sever footpath/cycleway through St Laurence Park • Need to relocate two flying clubs	• JAAP acknowledges need for road diversion and identifies an area immediately adjacent to St Laurence Park for compensatory amenity area	• Implications on proposed third party development proposals due to PSZ variations • Assessment of significance of loss of agricultural and amenity land within regional context
Surface Transport	• Peak hour congestion on A127, A1159 and A13 in vicinity of airport • Peak hour congestion at Hart House Roundabout and Anne Boleyn Roundabout • Need to agree Eastwoodbury Lane diversion prior to application • Requirement for diversion of footpath/cycleway at Eastwoodbury Lane • Attracting local bus services to use the new terminal	• Road improvements currently planned as part of the SBC LTP • The rail station should provide significant modal split and will significantly reduce impacts of additional passengers over and above the base case • Benefits to the wider road network due to Southend becoming available to the high number of South Essex travellers heading abroad who would usually use other airports such as Stansted and	• Development of revised Surface Access Strategy, compatible with other transport initiatives in JAAP and SERT • Consultation with SBC, RBC, ECC • Traffic surveys at eight junctions, plus roadside interview survey for the assessment of Eastwoodbury Lane diversion • Local reassignment of traffic flows along Eastwoodbury Lane using updated survey data; junction modelling

Environmental Topic	Potential Constraints/Impacts	Potential Benefits/Opportunities	Proposed Scope of Assessment
		Gatwick • Airport Green Travel Plan within revised Surface Access Strategy • Provision of Eastwoodbury Lane diversion provides alternative airport access route to relieve A127 congestion	• Scope will not include cumulative assessment due to other non-airport related development within the JAAP, but will need to include other committed development notably the new Southend football ground
Air Quality	• Public perception of air quality impacts from airports and contribution to global warming • Some adverse air quality impacts may result at the places worst affected by combined air and surface traffic related emissions • Potential impacts on sensitive terrestrial ecology sites	• No AQMAs declared within SBC or RDC areas, and NETCEN predicted background concentrations for the site are well within standards • According to criteria in Defra's 2009 Local Air Quality Management Technical Guidance, there is no requirement for a Detailed Assessment for Southend Airport	• Screening modelling using DMRB screening tool • Qualitative assessment of Nitrogen deposition at designated nature conservation areas
Surface and Air Noise & Vibration	• Proximity to urban areas of Southend and Rochford; currently 3-5 noise complaints per month • JAAP conditions (see 'Planning' above) • Increased surface access noise; Eastwoodbury Lane diversion passes close to North Crescent, currently a quiet residential road • Proximity to internationally designated nature conservation areas with important bird populations • Potential vibration impacts on St Laurence and All Saints Church	• Runway extension will allow quieter planes (e.g. A319) to use airport • The airport expansion will provide the opportunity to implement an up-to-date noise management scheme • Introduction of scheduled traffic with modern aircraft will allow the airport to work with based aircraft operators to devise the quietest mode of operation and to address the optimum departure climb arrangements • The development will allow the introduction of appropriate noise amelioration which would not otherwise be justified	• Noise impact modelling and mapping studies will be used to investigate airborne aircraft noise (INM modelling), ground noise, surface access traffic noise (CTRN), construction noise (BS5228), vibration impacts, and combined impacts from these sources • Background noise monitoring may be required at certain locations e.g. North Crescent for road noise impact assessment
Ecology	• 5 internationally designated and 5 nationally designated nature conservation sites within 5km of the airport • Nearest site is Crouch and Roach Estuary SPA/Ramsar/SSSI, 1.7km to east, with important bird populations; potential requirement for Appropriate Assessment under the Habitats Regulations	• No statutory or non-statutory designated nature conservation sites within or immediately adjacent to airport • No significant habitats within the areas proposed for development • Relatively isolated site with no significant links to wildlife corridors • Initial discussions with Natural	• Protected species surveys for reptiles, badgers, bats and nesting birds • Impact assessment according to IEEM 2006 guidelines • Appropriate Assessment screening for potential impacts on the integrity of international sites • Interpretation of qualitative

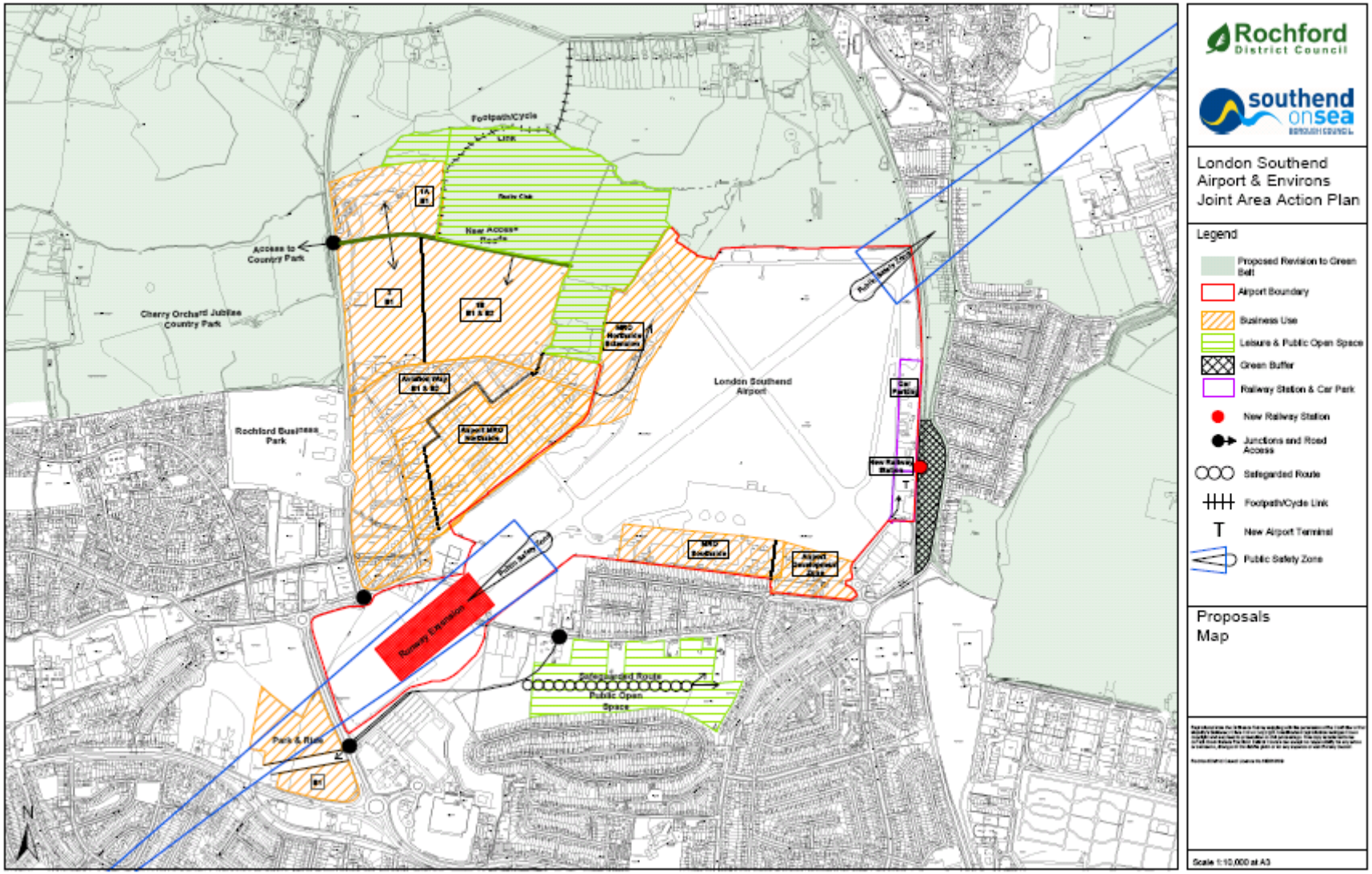
Environmental Topic	Potential Constraints/Impacts	Potential Benefits/Opportunities	Proposed Scope of Assessment
	• Terrestrial SSSIs, e.g. Hockley Woods 3.8km to the west, potentially sensitive to air quality impacts on flora • Potential presence of protected species: reptiles, breeding birds (notably skylarks), badgers, and bats • Protected species surveys must be implemented as soon as possible to allow a 2009 application • Access constraints to cottages for bat surveys	England suggest an Appropriate Assessment may not be required, even with increased ATMs, provided flight paths and altitudes remain as present	assessment of Nitrogen deposition
Landscape and Visual	• Impacts from lighting along extended runway and at Phase 2 terminal and associated car parking • Impacts of additional airborne craft • Phase 2 terminal extension provides new above ground feature with significant views from Southend Road to the east • Eastwoodbury Lane diversion provides new feature across existing amenity green space with significant views from North Crescent • Potential impact on setting of Grade I listed St Laurence and All Saints Church • Restrictions on landscape planting due to increased risk of birdstrike	• No landscape designations across the airport or within the immediate vicinity • Phase 2 terminal will comprise an extension of the Phase I terminal and can therefore be more easily assimilated into the landscape • Potential to integrate drainage attenuation basin east of railway line to create wetland area	• Assessment according to Landscape Institute and IEMA guidelines 2002 • Photomontages of Phase 2 terminal from east and Eastwoodbury Lane diversion from south
Cultural Heritage	• Potential impacts on Grade I listed St Laurence and All Saints Church • Known buried archaeological remains are present across the airport • The proposed new taxiway could have a direct impact on World War II airfield defence structures • Potential need for trial trenching investigations in support of the application	• No Scheduled Monuments, Registered Parks and Gardens, Registered Battlefields or Conservation Areas within close proximity to the scheme footprint • CAA has agreed to retention of church with runway extension, although details of potential modifications to the curtilage wall have not yet been agreed	• Consultation with English Heritage, Essex County Archaeologist, and Southend BC's Conservation Officer and Archaeologist regarding impacts to church and scope for archaeological investigations for the proposed development areas • Possible need for trial trenching but it is proposed that this would be for planning application areas only • Proposed that geophysical surveys would have little value and should not be undertaken

Environmental Topic	Potential Constraints/Impacts	Potential Benefits/Opportunities	Proposed Scope of Assessment
Ground Conditions	• Potential sources of contamination in Phase 2 terminal and car parking area comprise disused buildings, interceptor tanks, and mobile fuel tank • Proposed site for relocated flying clubs contains stockpiled soils with demolition materials • Potential for unexploded ordnance	• Previous Phase I and Phase II investigations of runway extension area indicate no significant contamination of soils or groundwater	• Further limited ground investigations and inspection of buildings for asbestos are recommended; however it is suggested that these be undertaken as conditional surveys post submission of the planning application • No further investigations required for runway extension area, and this topic is scoped out of the EIA
Water Resources and Quality	• Use of de-icing chemicals to be introduced at airport when runway has been extended • Other sources of pollutants include aviation fuel, fire fighting chemicals and particulates • Condition of existing airport drainage system believed to be in poor state of repair but little information available on integrity or hydraulic capacity • Attenuation to greenfield run-off will be required for all new hardstanding areas • Attenuation basins must not attract birds • Interceptors and treatment will be required to meet Environment Agency discharge standards	• No significant abstractions within close proximity to airport • Site underlain by thick layer of impermeable London Clay which protects the major aquifer beneath; however perched groundwater can support local groundwater abstractions and is classed as a minor aquifer	• Consultation with Environment Agency regarding discharge consents, flow attenuation and water pollution control • Drainage study • Water quality impact assessment according to GOMMMS • Flood Risk Assessment according to PPS25 for those components to be included in the 2009 planning application
Socio-economics	• Public opinion in relation to air travel expansion in general • Noise/air quality/traffic impacts may impact on wellbeing for a limited number of households	• Significant job creation • Significant economic benefit • Positive local perception as a facility of direct value and use for holiday/business travel • Significant local support for the provision of more accessible foreign travel	• Build on socio-economic assessment currently being undertaken for the JAAP preferred option • Assessment of temporary employment creation during construction phase
Sustainability	• Significant public concern regarding the global impacts of increased air travel	• Although ATMs will increase, they will serve the local population which currently uses other regional airports such as Stansted and Gatwick; the passenger increases are therefore not all new flyers and	• Outline Sustainability Appraisal • Climate change impacts scoped out

Environmental Topic	Potential Constraints/Impacts	Potential Benefits/Opportunities	Proposed Scope of Assessment
		carbon emissions from road traffic may reduce • Airport Green Travel Plan will be prepared within revised Surface Access Strategy • Opportunity to implement improved practices for the airport as a whole in relation to energy, water and waste	
Third Party Risk	• Airport located adjacent to urban areas • Changes to PSZ contours could be significant	• Expansion is relatively small and not thought to be significant in relation to increased risk of air crash or increased risk to buildings from aircraft wake vortices	• Assessment of revisions to PSZs

Table 17-A Summary of Issues and Proposed Scope of EIA

Appendix A - JAAP Preferred Option Proposals Map February 2009


Rochford District Council
southend on sea
London Southend Airport & Environs Joint Area Action Plan
Legend
Proposed Revision to Green Belt
Airport Boundary
Business Use
Leisure & Public Open Space
Green Buffer
Railway Station & Car Park
New Railway Station
Junctions and Road Access
Safeguarded Route
Footpath/Cycle Link
New Airport Terminal
Public Safety Zone
Proposals Map
Scale 1:10,000 at A3
Footpath/Cycle Link
New Access Route
Access to Country Park
Cherry Orchard Jubilee Country Park
Rochford Business Park
London Southend Airport
Runway Extension
Safeguarded Route
Public Open Space
Park & Ride
N

Appendix B - Surface and Air Noise Scoping Report

Appendix C - Ecological Scoping Report

Appendix D - Contaminated Land Phase I Desk Study