Rochford District Council
Southend-on-Sea Borough Council

London Southend Airport & Environs Study
JAAP Evidence Report

June 2008

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Halcrow

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Contents Amendment Record

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Issue	Revision	Description	Date	Approved by
1	1	Draft Report	04 2008	Steve Scott
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1 Introduction

1.1 Study Brief

Halcrow Group Ltd was commissioned by Rochford District Council and Southend-on-Sea Borough Council to undertake the London Southend Airport and Environs Study in September 2007. The overall purpose of the assignment is to realise a shared Vision for the future development of Southend Airport and growth of associated and adjoining employment cluster/hub. This will be encapsulated with a Joint Area Action Plan (JAAP) for the airport and its surrounding area.

The core objective is to develop a planning framework to guide future development within the study area to explicitly cover:

- Creation of sustainable and high value employment and other land uses where appropriate within the study area
- Maximising the economic benefits of a thriving airport and related activity
- Ensuring appropriate improvements in sustainable transport accessibility and facilities
- Ensuring a high quality environment for residents whether expressed through noise pollution management or protection of green space; and
- Maximum return on public investment through attracting inward investment.

The output from the study will be the production of an 'Issues and Options Report' in the form of a draft Regulation 25 consultation document.

1.2 The Study Area

The study area straddles the administrative boundaries between Rochford District Council and Southend-on-Sea Borough Council and lies within the Thames Gateway area. It essentially comprises of:

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

The area is bounded by the A127/Prince Avenue to the south, Cherry Orchard Way to the west, Hall Road to the north and Southend Road to the east (see Figure 1-1).

Figure 1-1: JAAP Study Area

1.2.1 Planning History

The following summarises the planning history for the study area. Four important planning applications have been identified as follows.

1. In 1993, both Southend and Rochford Councils granted permission for a departure from the local plan to allow a non-food retail park southwest of the airport. The aim in granting permission was to retain economic viability of the airport and environs. Currently the retail park appears to be thriving and includes outlets such as Argos, Harvey, Allied Carpets, Staples PC World and Sports World.

2. Replacement of the Southend Air Terminal with an Integrated Rail Station, Visitor Centre, access road and associated car parking was first approved in June, 1999. The proposed development included an extension of 1,473 sq.m. to the existing terminal to provide modern check in areas, security facilities and arrivals waiting area to facilitate 500,000 passenger movements per year. The proposal involved the reconfiguration of existing internal access roads and car park areas including additional areas to provide 500 car parking spaces and drop-off/collection/taxi/coach/bus facilities. A revised application to separate the railway station from the new terminal was due to be submitted in late 2007/early 2008.

3. An application for outline permission was submitted for an erection of a four storey building comprising 131 bedroom hotel with restaurant and bar to the floor and ancillary offices and meeting rooms to the first floor and layout for car parking spaces. The proposed development is located on the existing Car Park 2 Southend Airport site on Eastwoodbury Crescent. Vehicular access into the site would be from the service road within the airport complex. The proposed development will have good connectivity into the pedestrian network and the existing local public transport network.

4. A Motor Park comprising 7 Car Dealerships, Petrol Filling Station and Valeting Centre, with associated access, parking, and vehicle display and landscaping is proposed for Rochford Business Park. In total the proposed buildings will amount to 17,400sq.m. with 1,270 car parking spaces. An Outline Planning Permission was granted for Mixed Commercial (Classes B1 & B8) in 2003 and approval on Reserved Matters was granted on Sept 2003. The site which is currently greenfield forms half of the total site area of Rochford Business Park. The remainder of the Business Park is reserved for future employment use. It is located west of B1013 between Rochford and Southend-on-Sea.

Other planning applications received and granted permission include the following:

- Proposal to develop a 3 storey office building with associated car parking on 18-19 Aviation Way;
- Proposal to develop 3 industrial units for B1/B2/B8 use, an Electricity Sub-station and a modified access into Aviation Way; and
- Proposal to develop a 3-storey office building with basement parking on land adjacent to Saxon Hall, Aviation Way.

1.2.2 Land Ownership

Limited information on land ownership is available.

- The airport land is owned by Southend Borough Council and leased by the London Southend Airport Company Limited (LSACL) on a 154 year lease commencing from 1994. London Southend Airport Company Limited (LSACL) is wholly owned by Regional Airports Limited whose main other interests include a long lease on Biggin Hill Airport and a civil handling business at RAF Northolt. The Lease is full repairing, based on a minimum rent and a proportion of profits with various operating criteria and requirements to maintain and improve certain facilities.
- Southend Borough Council also owns the land south of Eastwoodbury Lane and east of Nestuda Way. This land is currently designated Land of High Grade Quality Agricultural Quality (Grade 1). The land occupied by the 4 Eastwoodbury Cottages along Eastwoodbury Lane is also owned by Southend Borough Council and leased to the cottages.
- The Athenaeum Club owns the following sites that are currently vacant:
    (a) Plot B, land east of B1013, Aviation Way Industrial Estate, a greenfield site which is approximately 1.47ha and is zoned for B1, B2 and B8 use.
    (b) Plot C, land west of the Leisure Centre, Aviation Way Industrial Estate. The site is approximately 1.09ha and zoned for B1, B2 and B8 uses. This site has been cleared, fenced and is currently being marketed by Hair and Son.

1.2.3 Existing Land Use

The northern part of the study area falls within Rochford District Council. The airport runways are predominantly zoned Metropolitan Green Belt (Rochford Replacement Local Plan). Current and emerging policy on the Metropolitan Green Belt is a presumption against development unless it is agricultural or exceptional circumstances can be proven. Rochford District Council undertook a comprehensive review of the Metropolitan Green Belt and made minor boundary modifications resulting in a Metropolitan Green Belt boundary that is believed to both logical and defensible. The emerging RSS reinforces this policy by indicating that there will be no requirement for a further review of the Green Belt until well after 2021.

The Southend-London mainline railway line runs along the western boundary of the study area. The proposed Southend Airport Railway Station will be served by this line thereby reinforcing its importance. Southend Road which is one of the major road links between Rochford and Southend runs parallel to the railway line. An established residential area fronts onto Southend Road.

The eastern boundary of the study is Cherry Orchard Way. Most of the north-eastern part of the study area is within the Metropolitan Green Belt. Stroud Green, a relatively small settlement is located at the north-eastern corner of the study boundary off Cherry Orchard Way/Hall Road junction. The Brickworks' site falls within the study boundary and has been put forward in the emerging Rochford Core Strategy as a potential residential site. To the east of Cherry Orchard Way is the Cherry Orchard Jubilee Country Park. A golf course together with a row of large detached houses is adjacent to the airport boundary.

Based on existing land use, particularly the Metropolitan Green Belt designation, existing transport network and established residential areas there appears to be

very limited opportunities for expansion within the northern portion of the study area.

The southern portion of the study area lies within Southend Borough Council. Unlike Rochford, the southern portion of the study area is well built up. The south eastern part of the study area comprises an established residential area, allotment gardens and a school. To the south of East Woodbury Lane, within the southern portion of the study area is land which is currently used as small holdings and is designated in the current Southend-on-Sea Borough Local Plan as Land of High Grade Agricultural Quality (G2). Development, other than agricultural is restricted on this land.

In the south eastern corner of the study area at the junction of Nestuda Way and Prince Avenue is a supermarket and hotel. These uses are a result of a successful legal challenge that led to the review of the then Local Plan and adoption of the current plan.

In the eastern part of the study area is Britannia Business Park which is bisected by Nestuda Way. Industrial activity within this Business Park ranges from car dealerships to large warehouse/distribution enterprises. Nestuda Way and Cherry Orchard Way which serve Britannia Business Park are major transport routes serving not only the immediate areas but also connecting the Southend with Rochford. The Southend-on-Sea Borough Local Plan shows the following junctions as requiring upgrading: J/O Nestuda Way/Thanet Grange, J/O Nestuda Way/Eastwoodbury Lane and J/O Eastwoodbury Lane/Cherry Orchard Way.

1.3 Structure of Report

The rest of this report provides a comprehensive Evidence Base to support the JAAP Issue and Options Report. It compiles all baseline and technical analysis undertaken in developing the potential strategies to take forward development in the JAAP area. The report is structured in three parts:

Part 1 presents an overview of the study area and its context. This includes analysis of the study area and its wider environs, document reviews, site appraisals and review of the transport and environmental context of the area.

Part 2 focuses in on the economic development and employment aspects of the JAAP, analysing the existing situation before looking ahead to how the area fits within future aspirations within the wider area.

Part 3 presents the development scenarios and the appraisal of each in respect of its economic and environmental impact.

PART 1: STUDY AREA AND CONTEXT

2 Policy Context

2.1 Introduction

The UK has a comprehensive hierarchy of economic, planning and transport policies, beginning with national guidance which provides a broad framework for regional plans and strategies through to local development plans and policies.

The Government is currently implementing the reforms to the planning system outlined in the Planning and Compulsory Purchase Act 2004 with Planning Policy Statements (PPS) replacing Planning Policy Guidance (PPG), Regional Spatial Strategies (RSS) replacing Regional Planning Guidance (RPG) and Local Development Frameworks (LDF) replacing Structure, Local and Unitary Development Plans (UDP).

As a result a range of planning, transport and economic policies are relevant to this study and in order to set the policy context the key planning, transport and economic development policies at national, regional and local levels are outlined below.

2.2 National Context

National planning policy is set out in a series of planning policy statements and guidance. The following paragraphs refer to policy and guidance that has direct relevance to London Southend Airport and the wider study areas.

PPS1: Delivering Sustainable Development, 2005

PSS1 advises that suitable land should be made available for development in line with economic, social and environmental objectives in order to improve the quality of life. The role of the local plan is to set a “positive planning framework” to achieve sustainable economic growth by making the best use of resources through focusing development on vacant and under-used previously developed land. The Government’s Sustainable Communities Plan aims to tackle housing problems in London as well as in regions within the South East of England. The Thames Gateway (which includes London Southend Airport) has been identified as a Growth Area which has implications for investment and economic growth. Balancing economic and demographic growth is fundamental to meeting the requirements of the Sustainable Communities Plan and other policy guidance.

PPS3: Housing, 2005

PPS3 provides the national framework for planning for housing at both regional and local levels. The national framework enables local authority delivery of the right quantity of housing required to address need and demand as well as the right quality and mix of housing. PPS3 together with other Government housing policy provides the context for plan preparation with regards to housing. PPS3 requires Local Authorities to assess the extent to which they can maintain a five year supply of deliverable land for housing.

PPS 4: Planning for Sustainable Economic Development

PPS 4 outlines the Government's aim to encourage continued economic development in a manner that is compatible with its stated environmental objectives. National planning policy requires an approach to spatial developments which can deliver economic, environmental and social benefits. This is to be achieved by ensuring suitable locations for employment uses are

available for the economy to prosper. It also means the provision of sufficient and good quality homes at appropriate sites, and infrastructure and services provision to support economic development and housing growth. Policy also promotes recycling and reusing land and buildings where feasible. In particular, local authorities are advised to audit the stock of employment land for quantity, quality, type and location against local need for jobs and business or market demand. Recognising that it is not possible to anticipate all changes in the economic climate, local planning authorities are advised to plan for and facilitate a supply of land which will be able to cater for differing needs of businesses and the expected employment needs of the community as a whole while also remaining flexible enough to be responsive to a changing economy or new business requirements.

PPS 12: Local Development Framework

PPS12 sets out government policy on the preparation of local plans under the new Planning and Compulsory Purchase Act 2004. The new planning system requires all plans to be "spatial" meaning that there has to be integration in the allocation of land and policy for the development of social, economic and environmental sustainability objectives. Area Action Plans are to be prepared for areas where significant change is proposed or anticipated and where regeneration is sought. Area Action Plans need to be delivery oriented.

National planning policy requires an approach to spatial developments which can deliver economic, environmental and social benefits. This could be achieved by ensuring that suitable locations for employment uses are available. Provision of sufficient and good quality homes at appropriate sites together with infrastructure and services provision are required to support economic development and housing growth. Reducing the need for travel and emissions is a priority and can also be achieved by an integrated approach to employment, housing and other development, which envisages the promotion of sustainable modes of transport such as walking, cycling and public transport. National level policy also promotes recycling and reusing land and buildings where feasible. In particular, local authorities are advised to assess the stock of employment land in terms of quantity, quality, type and location against local need for jobs and business or market demand. Any surplus or unsuitable need has been demonstrated.

PPG: 13 Transport

This guidance note sets out the circumstances where it is appropriate to change the emphasis and priorities in provision between transport modes in pursuit of wider Government objectives. It defines the role of small airports and airfields in serving business, recreational, training and emergency service needs. As demand for commercial air transport grows, General Aviation (GA) may find access to larger airports increasingly restricted. GA operators will therefore have to look to smaller airfields to provide facilities. In formulating their plan policies and proposals, and in determining planning applications, local authorities should take account of the economic, environmental and social impacts of GA on local and regional economies

The Future of Air Transport, Department of Transport, December 2003

The White Paper sets out a strategic framework for the development of airport capacity in the United Kingdom over the next 30 years against the background of wider developments in air transport.

The Government recognises the benefits that the expansion in air travel has brought to people's lives and to the economy of the country. Its increased affordability has opened up the possibilities of foreign travel for many people and provides the rapid access that is vital to many modern businesses. Air travel has

increased five-fold over the past 30 years and demand is projected to be between two and three times current levels by 2030. Some of the UK's major airports are already close to capacity, so failure to allow for increased capacity could have serious consequences, both at national and regional levels. This must be balanced by the need to have regard to the environmental consequences of air travel and simply building more and more capacity to meet demand is not a sustainable way forward.

It recognises that in the South East there is particular environmental concern regarding the expansion of the main London airports but balanced against this is the importance of these airports to the South East and to the UK's prosperity. Pressures on existing capacity in the South East mean that smaller airports have an important role to play in the future provision of airport capacity in the Region.

The report classifies Southend Airport as a second tier airport with a possible future capacity of up to 2 million passengers per annum and recognises its potential to play a valuable role in meeting local demand and contributing to regional economic development.

2.3 Regional/Sub-regional Context

The East of England Plan (Proposed Changes Dec 2006)

The East of England Plan sets out a Draft Spatial Strategy to guide development in the East of England over the next 20 years. Policy T5 (Airports) proposes that *"access to the region's airports, particularly by rail and bus/coach, will be managed and enhanced to support development as it is approved and enable the airports to contribute to national and regional objectives in relation to economic growth, regeneration and sustainable transport."*

RSS Policy for Southend recognises the fundamental need to upgrade strategic and local public transport accessibility and the importance of London Southend Airport. Policy ETG4 states that the borough's local development documents should:

- Facilitate physical, economic and social regeneration of the urban area including maximising the re-use of previously developed land
- Upgrade strategic and local passenger transport accessibility, including the development of strategic transport interchanges around existing transport nodes; and
- Improve surface access to London Southend Airport and support employment uses that would benefit from an airport location

The RSS allocated a jobs target for the South Essex Thames Gateway sub-region of 55,000 jobs over the period 2001-2021 which includes (under government's modifications) 3,000 jobs to be created in Rochford (which is outside the sub-region) explicitly related to London Southend Airport.

The RSS states that for airports the national policy framework is set by the Air Transport White Paper (ATWP) and the RSS does not have a role in determining the rate of air traffic growth or runway provision at the region's airports. Paragraph 4.33 states that London Southend Airport will play an important regional role in meeting local and niche markets, for example by providing business aviation and passenger routes not served by larger airports. The services they provide may also help in relieving congestion at the major South East airports.

Paragraph 4.35 states that studies have highlighted the important role that airports perform in their local areas and in the regional economy. Airport growth

will provide a useful catalyst for the economic regeneration of nearby towns, notably Harlow, Luton, Norwich and Southend. Local planning authorities will need to make appropriate provision to meet the direct and indirect employment generation arising from airports operating in or close to their areas.

The Inspector's recommendations subsequent to the Examination in Public were as follows:

- A review of Green Belt was unnecessary because the Thames Gateway could easily accommodate the 6,000 dwellings increased to 6,500 on previously developed land, urban capacity sites and other already identified land.
- Reduction of the number of jobs from 55,000 to 52,000 in Thames Gateway South East but the 13,000 jobs for Southend to remain unchanged.

Regional Economic Strategy for the East of England, November 2004

The Regional Economic Strategy sets out the long-term vision for the sustainable economic development of the East of England. It sets out a spatial distribution of job growth required to achieve the RES and other spatial policy objectives across the region for the period 2001-2021. Its vision for the region is "*a leading economy, founded on our world-class knowledge base and the creativity and enterprise of our people, in order to improve the quality of life of all who live and work here*." The vision will continue to build on a variety of factors including *"international gateway roles and transport corridors"*.

Goal 6 of the strategy sets out the intention to take advantage of the opportunities arising from sustainable expansion of airports in the region. It states that the region's airports are important assets which act as drivers for economic growth and expansion and will play an important role in improving the region's competitive strength and attractiveness as a business location and tourism destination. The growth of Norwich and Southend airports will also be important in ensuring the region remains an attractive location to businesses.

It is essential that the region maximises the direct and indirect economic and regeneration benefits of airport growth. To achieve this, the region needs to develop policies and strategies that integrate airport growth with regeneration strategies, the supply of high quality and quantities of employment space, and the delivery of high quality road and rail infrastructure.

The actions arising from this goal are:

- To sustainably develop the potential of the region's airports to support job growth and provide business opportunities, through skills training and provision of business infrastructure;
- Support the sustainable expansion of airports including proposals progressed as a consequence of the Aviation White Paper, while seeking to minimise the negative environmental and quality of life impacts of airport expansions;
- Support the implementation of road, rail and public transport improvements to airports in tandem with airport capacity expansion, to enable the region to benefit from additional air services and minimise adverse local impacts; and
- Support and promote the establishment of airline routes that meet business needs.

Thames Gateway Interim Plan Development Prospectus, CLG, 2006

This document, prepared by Communities and Local Government states that London Thames Gateway holds the key to the future expansion of London as a world city and to the continued economic growth of the Greater South East. It notes that proposals to expand London Southend Airport could bring new employment opportunities, both in the form of short term construction work on the terminal building and long-term airport related activities. Paragraph C3.7 states that proposals to expand London Southend Airport are being considered and that the airport operator published proposals to increase passenger numbers to 1 million passengers per annum over the next 4-5 years which could create 1,000 jobs on top of the 1,200 to 1,500 jobs already on site at the terminal and in other associated activities adjacent to the airport.

The Essex and Southend Joint Structure Plan (JSP) 2001

The Essex and Southend Joint Structure Plan (JSP) 2001, vision for the county was based on the following four main principles:

- Need to develop a more competitive local economy;
- Need for urban renaissance in the county's towns;
- New development to be focussed where possible within built up larger areas; and
- Strong protection of the countryside.

These principles are still relevant and have been expanded on by the RSS and emerging Local Development Frameworks in both Southend and Rochford Core Strategies. In 2001, the JSP allocated Southend 2,250 dwelling (150 dwellings per year) over the plan period 1996-2011. The Regional Spatial Strategy has allocated Southend a target delivery rate of not less than 300 dwellings per year for the period 2001-2021.

In terms of employment policy, the Essex and Southend Joint Structure Plan advocated a sequential approach to B-class uses with particular reference on urban areas. First preference for the town centre was for major office development. Southend-on-Sea was one of 5 locations within the nation to accommodate large scale units of over 4,000 sq.m. The uptake of the major offices has been rather slow as evidenced by unoccupied and outmoded 1960's office buildings along Victoria Avenue. Industrial development was located away from town centres and the intention was to safeguard employment land unless there was limited market demand.

Essex Local Transport Plan 2006-2011

Essex County Council has a vision to "create safe, healthy, diverse and sustainable communities that are open and welcoming to all; where people want to live, work and visit; where people and communities take charge of their lives through active citizenship; where heritage is valued and innovation thrives; where people can travel easily, both locally and through making the most of excellent access to London, the rest of England and Europe".

The Plan states that the continued growth in aviation travel demand is placing an increasing burden on the County's transportation infrastructure. The potential London Southend Airport growth aspirations to reach 1 million passengers annually by around 2012 and 2 million by 2030 are of sub-regional significance. This expansion would principally benefit Thames Gateway South Essex businesses and residents but would also generate additional traffic on road and rail networks.

2.4 Local Policy

Regeneration Framework for Southend-on-Sea

The Regeneration Framework recognises the advantages of having an airport that is in public ownership and is located within a market that is sufficiently under-served to justify its expansion of air services. The airport is recognised as a potential catalyst for economic growth and wealth generation.

London Southend Airport is an important employment hub providing some 970 FTE jobs, mainly in the maintenance, repair and overhaul (MRO) activity sector. The Regeneration Framework acknowledges the Master Plan's ambitions of supporting a further 1,430 FTE jobs and contributing to the 13,000 jobs target set by the RSS for Southend but raises doubts regarding the Master Plan's deliverability. These doubts relate to the growth restrictions imposed by the length of the runway and the planning and financial difficulties relating to the development of a new railway station.

The Framework identifies securing the Airport's full potential as one of its major projects. The preferred options to achieve the aim of realising the Airport's potential are summarised as follows:

- Lengthening the runway to remove the constraints to realising the Airport's potential as a full service regional airport and economic asset;
- Rationalising the land around the Airport and adding to it to the north of Aviation Way, to create the land area needed to provide a property offer capable of servicing the needs of a full service regional airport and to meet major shares of the high quality employment land needs of Rochford and Southend; and
- Creating a prime business park offer, complementary to Southend town centre, both for uses which require proximity to the Airport for operational reasons and for uses which benefit from the Airport's emblematic value.

In terms of the demand for employment land and premises, the Framework presents an aggressive Southend office requirement of an additional 57,000 sq.m. to 2021 and about 40,000 sq.m. of other B-class floorspace. This is supported by requirements of up to 11,000 sq.m. of offices and 35,000 sq.m. of general industrial in Rochford. If the proposals for the airport were delivered, they would absorb the majority (some 30,000 sq.m.) of this space.

To address the constraints on land availability (particularly in the west of the borough) and meet Southend's needs for marketable land for industrial and warehousing uses over the period to 2021 the Framework identifies the following preferred options:

- A programme of rationalisation of the existing estates, continuing with and following the model begun at Progress Road and giving a priority to the other estates to the west of the town centre;
- The development of the Airport's potential to meet a range of employment land needs, both on new land and on land already developed (partly) within and around the Airport – through rationalisation of sites, consolidation of multi-site operations and the creation of further sites targeted at different market sectors – in collaboration with Rochford District Council as part of the preparation of the proposed Airport Area Action Plan (AAP);
- The preparation of a joint Development Plan Document (DPD) between Rochford and Southend Councils to allocate marketable, well-service employment land if the Airport AAP process does not yield an adequate

solution to the two Councils' employment land needs in the period to 2021; and

- The rationalisation and improvement of the industrial offer at Shoebury.

The "Baseline: Stage 1A – the Evidence Draft" report that accompanied the Regeneration Framework refers to the growth scenarios for TGSE prepared by KPMG LLP for the period 2001-2021 based on the trend-based employment forecasts produced by Cambridge Econometrics. KPMG produced a "plan based" scenario that modelled how TGSE's economy would look by 2021 if the Draft RSS allocation of an additional 55,000 jobs were created in the sub-region. It projected that the sectors that are expected to grow will be: transport and logistics by 21,600 jobs; real estate renting and business services by 20,400 jobs; and health and social work by 8,600 jobs. These increases will be balanced by decline in: mining, manufacturing and utilities by 11,100 jobs; and public administration / defence by 1,000 jobs.

Southend Economic Development & Outline Tourism Strategy

The Strategy states that the proposed expansion of the airport could bring significant economic benefits to Southend. At present, it provides many high-value, highly-skilled jobs Maintenance, Repair and Overhaul (MRO) activity jobs and the Strategy highlights the importance of retaining these jobs in Southend and encouraging the MRO cluster to develop.

The Airport is identified as one of the key locations in the Borough earmarked for investment and employment growth. The extension of the runway and the development of a new railway station are seen as pivotal to the growth of the Airport. The review of the Green Belt to allow some release for employment use and the consideration of land adjoining the Airport for a high quality, well-landscaped, prime business park and industrial property offer are also highlighted as priorities. A new Business Park could deliver approximately 30,000 sq.m. of B1 development – office-based activities more suited to a location outside the town centre. It could also provide some 50,000 sq.m. of good quality B2 and B8 property.

In terms of rationalisation of industrial estates, the Strategy states that Progress Road should be seen as a means to test the market potential for reconfiguring Southend's industrial estates. If successful, it should provide a model for rationalisation of other industrial estates in the area. At the same time, transport infrastructure improvements are needed to lift the capacity constraints and congestion on the A127 which discourages industrial and distribution companies from locating in Southend.

Southend Core Strategy Development Plan Document

The Core Strategy Development Plan Document for Southend-on-Sea, part of the emerging Local Development Framework (LDF), supports the development of London Southend Airport as *"a key driver for economic development*". It also sets out an objective to "*improve surface access to London Southend Airport to realise its potential as an important regional airport facility, and its full integration with other transport modes and facilities"* Southend Council sees the expansion of the Airport as significant for all the local authorities and for the wider Thames Gateway. The railway station was seen as a key element of the Airport's expansion in terms of relieving surface access issues.

The Inspectors Report states that one of the omissions is the failure to recognise the strategic and local importance of the airport. It is stated that London Southend Airport and its adjacent industrial area employ significant numbers. Apart from the end of its runway, the airport is within Rochford District as is the

associated existing industrial area. The report states that uniquely of land in Rochford District, the Airport is included within the Essex Thames Gateway boundary.

The report also highlights that the emerging RSS (Secretary of State's Proposed Changes to the Draft East of England Plan Policy E8) recognises the support given in the Air Transport White Paper for the expansion of Southend Airport to meet local market demand and to contribute to local economic development.

Policy CP1: Employment Generating Development states that in order to promote economic regeneration one of the aspects that development will be expected to support is the future potential of London Southend Airport.

Rochford Replacement Local Plan 2006

The extant Rochford District First Replacement Local Plan will be operative until June 2009. Although the first Local Plan was revised in 1995 the following planning objectives are still relevant today:

- Working towards sustainable development through most effective and efficient use of land;
- Prepare plan for the development of district until 2011;
- Improve quality of life for the residents;
- Ensure availability of land for housing commercial and industrial uses;
- Retain conserve and enhance built and natural environments;
- Make provision to effect the most environmentally sustainable and efficient and convenient movement of goods and people; support economic regeneration development in the district;
- Define and protect inner and outer boundaries of the Metropolitan Green Belt, the undeveloped coast and areas of ecological interest; and
- Encourage good design through the planning process.

In accordance with Policy C4 of the Replacement Structure Plan, Rochford Council carried out a full review of the district's inner Green Belt boundaries and subsequently a number of modifications that resulted in boundary deemed to be logical and defensible in the long term. The Council's main purpose for applying a Green Belt policy is to protect the historic fabric of the district, prevent further encroachment of development into countryside and safeguard the countryside in order to provide recreational needs and protect natural features.

The District Council has indicated that employment opportunity should not be lost due to lack of availability of suitable site hence if a suitable site that is not allocated comes forward it will be allocated with reference to Policy EB2 and a sequential test (PPS6).

The Plan recognises the importance of the airport to the local economy. It serves as the central point of a specialist engineering and maintenance cluster and has become one of Europe's largest and most integrated facilities. The Plan identifies that the airport can function as a one-stop shop for aircraft maintenance and supports the development of London Southend Airport as a regional air transport and aircraft maintenance facility as one of its key objectives. This will be carried through to the core strategy in due course

Economic Development Strategy for Rochford

The key aim of this Economic Development Strategy is to "work with partners to maximise and encourage economic growth for the benefit of the community in the area, making the district the best place in the county to live, work and visit."

The aims of the Strategy are to work with partners to:

- Raise the profile of Rochford;
- Support the needs of the business community;
- Develop the skills of the local workforce;
- Develop tourism and heritage;
- Seek to improve town centre vitality and support town centre and industrial estate enhancements; and
- Support sustainable use of resources

Historically Rochford's employment has depended on agriculture, brick-making and boat building but these have continued to decline, as did the manufacturing sector in the 1990s. Housing growth outpaced employment leading to significant levels of out-commuting (60% of workforce work outside district).

Currently the district has several specialist engineering and maintenance companies that are clustered around the airport and act as one-stop-shop for aircraft maintenance. The majority of the jobs are aviation based.

2.4.1 Southend Local Transport Plan 2006-2011

The Local Transport Plan (LTP) which was adopted in March 2006, seeks to "secure a 'step change' in transport provision and service to deliver quality integrated facilities, improved accessibility and the long term sustainability of Southend necessary to achieving the town's potential for regeneration and growth to provide for a vibrant and prosperous coastal town and a regional centre of cultural and intellectual excellence."

The council is seeking to ensure is that key destinations are more accessible including London Southend Airport. The airport will contribute to the objectives of the Local Transport Plan particularly:

- Regeneration of Southend by improving the economy; and
- Achieving an efficient transport system.

The plan also states that along with other elements the airport will provide an essential role in providing access to and from the Olympics in 2012 and thus will fulfil the legacy yardstick afterwards.

Better transport links to London Southend Airport are essential. One of the elements to this is the reconstruction of Warners Bridge. It states that the council may propose a reconstruction of this bridge in a new position and alignment would prove a better solution and facilitate better transport links to Southend Airport.

The LTP proposes to take forward and develop the existing strategy to take advantage of significant opportunities for providing for further improvements to traffic and transportation in Southend. Such improvements will be critical to:

- Achieving regeneration and growth in Thames Gateway South Essex as a national and regional priority;
- Realising major development opportunities in the town at key locations to provide for additional jobs and housing in accordance with the Sustainable Communities Plan;

- Improving accessibility within the town and along the London to Southend corridor, particularly to employment, commercial, retail, tourist and leisure sites;
- Securing and maintaining sustainable patterns of movement; and
- Ensuring the successful regeneration and renaissance of Southend.

2.4.2 Conclusion

There exists a comprehensive framework of planning and economic guidance for policy makers to follow in the case of London Southend Airport and its surrounding area. The key features of these policies, both national and regional, is the adherence to similar principles, i.e. the need for development to be sustainable.

The growth of London Southend Airport is strategically aligned to the Future of Air Transport White Paper which recognises the economical benefits of the expansion in air travel. The growing pressures on airports in the South East are highlighted and that smaller airports have an important role to play in the future provision of airport capacity in the region. However the paper does recognise that potential environmental consequences need to be considered and there is a need to find a sustainable way forward.

The East of England Plan highlights the important roles airports perform in their local areas and the regional economy and can provide significant job opportunities. The document states the significant regional role London Southend Airport will play in meeting local and niche markets.

The Regional Economic Strategy for the East of England identifies the airport as a key site and is consistent with the East of England Plan. It states that the region's airports are important assets which act as drivers for growth and expansion and will play an important role in improving the region's competitive strength and attractiveness as a business location and tourism destination.

The local context supports national and regional policies and recognises that the development of London Southend Airport would act as a key driver for economic development and that surface access issues at the airport need to be resolved. The Southend Core Strategy presents the strategic and local importance of the airport and surrounding area which employs a significant amount of local people. The Rochford Replacement Local Plan also recognises the significance of the airport site.

The transport plans which have been reviewed state the potential traffic congestion problems that will occur with the expansion of the airport. However the potential benefits of the airport are also recognised. These include the regeneration and growth of Southend and its essential role during the 2012 Olympics.

Overall, the growth and vitality of the Airport are seen as vital to the economic development and prosperity of Southend and Rochford. Local policies support the growth of the airport, prioritise the safeguarding of the important MRO sector and providing adequate employment land (in terms of quantity and quality) to accommodate the future employment needs of the area.

3 London Southend Airport Review

3.1 Introduction

This section sets out the current context of London Southend Airport's operations and how the airport anticipates growing in the future. Evidence has been drawn from existing publications, discussions with Regional Airports Limited, and from published datasets. The following two documents have also been reviewed in respect of master plan proposals and land use:

- The Southend Airport Master Plan, July 2005
- Socio-Economic Impact of the Expansion of Activities at Southend Airport, January 2006, York Aviation

3.2 Current Operations

The airport currently occupies 125ha. (310 acres), including land on short term leases. It was leased by Southend on Sea Borough Council to the London Southend Airport Company Ltd (LSACL), part of Regional Airports Ltd, in 1994. It has been without regular commercial scheduled or charter flights for several years, latterly due to restrictions on the use of its full runway length following changing requirements for Runway End Safety Areas (RESAs) and obstacle limitations. This resulted in the CAA imposing restrictions on the use of the Airport for commercial air services.

3.2.1 Traffic Movements

Table 3-1 confirms the current low base of passenger and freight activity since the year 2000. There was a noticeable recovery in 2006 passenger levels following the reinstatement of commercial services during summer 2005, with Flybe operating a weekly scheduled service to Jersey. The volume of freight fell significantly in 2003; it is believed that this is in part due to the aforementioned RESA restrictions. There are again some indications of a limited recovery.

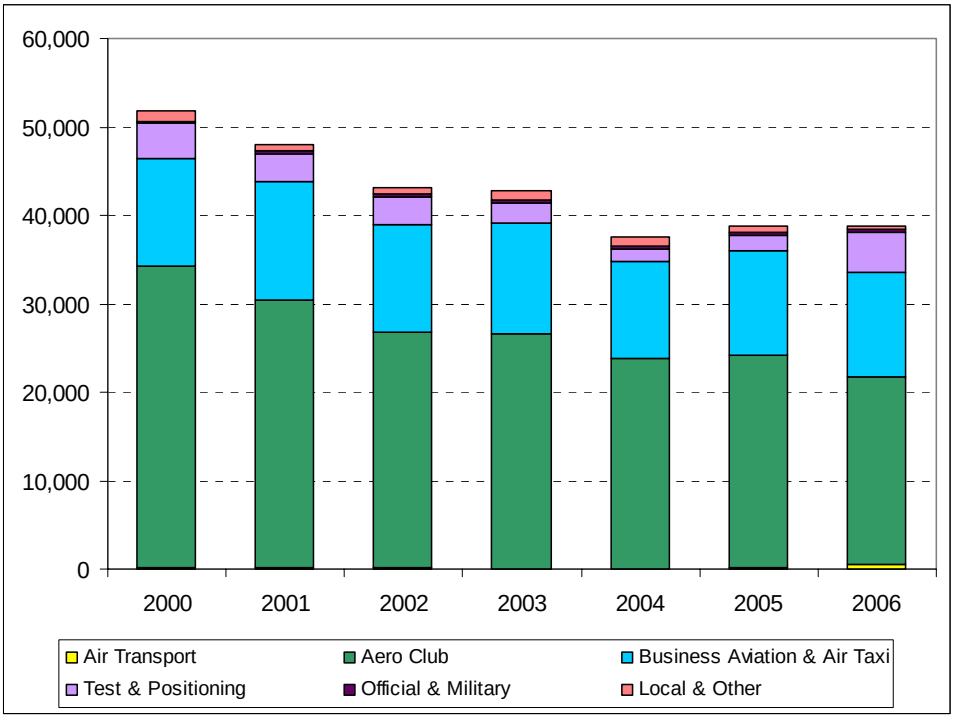
Table 3-1: Southend Airport – Passenger & Freight Traffic 2000 - 2006

Year	2000	2001	2002	2003	2004	2005	2006
Passengers (000s)	3	4	5	3	3	5	30
Freight (tonnes)	173	304	326	34	15	53	70

Source: CAA Annual Airport Statistics

Aircraft movements by type are shown in Figure 3-1. Not surprisingly they follow the same trend as traffic levels, being one of initial decline, then some recovery. It can be seen that the flying clubs and schools located at the airport accounted for around 55% of 38,858 aircraft movements in 2006. The next biggest market is business aviation (comprising business aviation, air taxi and private aircraft movements) which represented approximately 30% of movements. The market for business aviation is expected to grow and the airport enjoys an advantage in terms of its location, free of more congested and complex airspace over London. The Airport has plans to attract an international FBO, to be located on the north side of the airfield. Only 1% of movements were air transport movements for that year.

Figure 3-1: Southend Airport: Aircraft Movements by Type 2000 - 2006



Source: CAA Annual Airport Statistics

3.2.2 *Current Infrastructure*

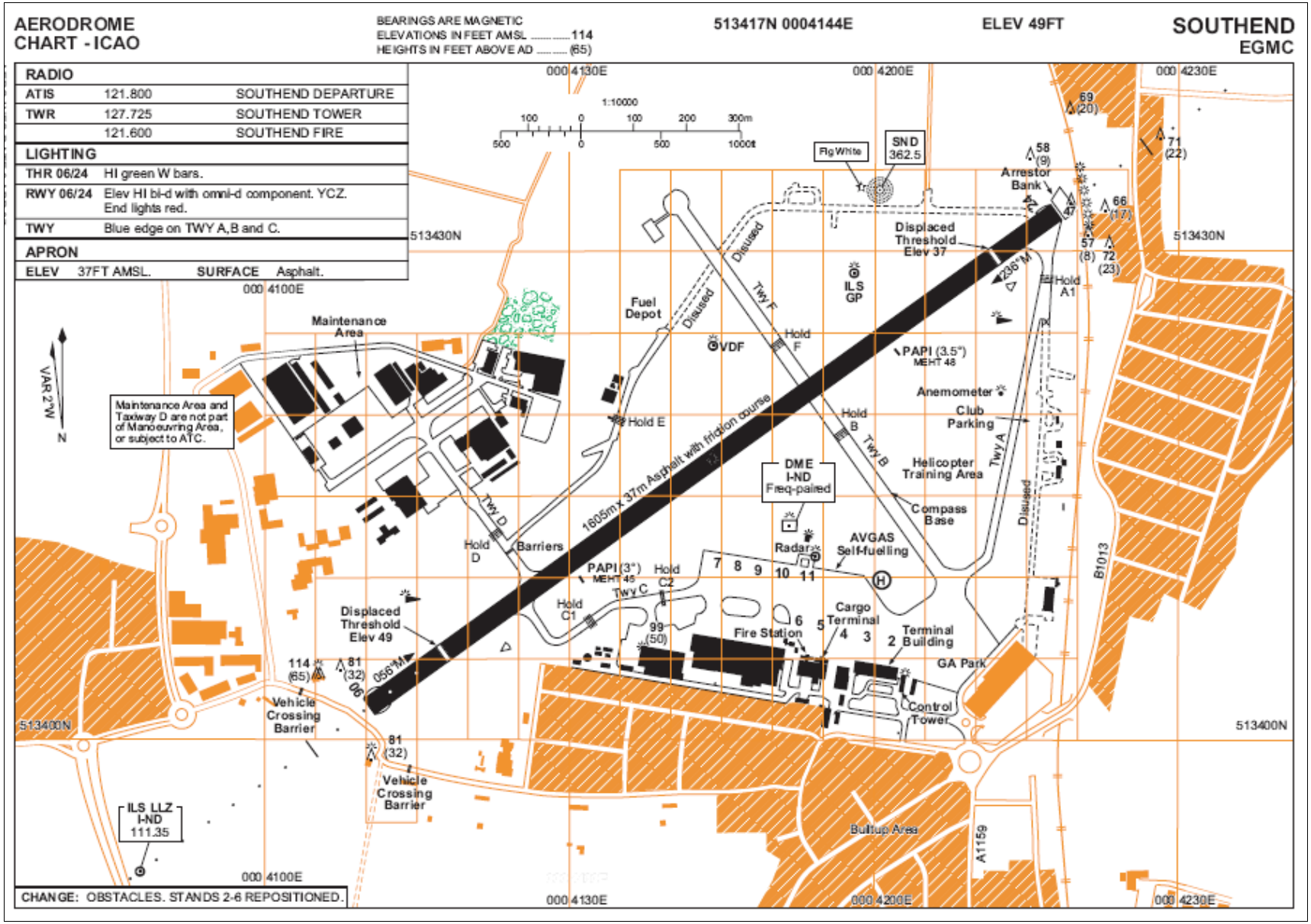
The layout of the airport's current facilities is shown in Figure 3-2, an aerodrome chart taken from the UK Aeronautical Information Publication (AIP).

Runway and Taxiway System & Navaids

The single runway is orientated NE-SW (06/24), is 1605 metres long x 37metres wide, and is asphalt covered with a friction course. The Runway 06 threshold is displaced by 174metres from the end, to allow for runway strip end provision, and the Runway 24 threshold is displaced by 146m, to allow for runway strip end and RESA provision. The York Aviation Report states that the runway is capable of handling a range of aircraft types up to an including Boeing 757s for maintenance purposes. This includes regional turboprops such as the Bombardier Dash 8 series, and regional jets such as the 146/RJ series, and aircraft such as the Airbus A318/319 and Embraer 195 with around 120 seats. However, it is not long enough for fully laden B737s, commonly used by low cost carriers, such as EasyJet and Ryanair.

Runway 24 is used for the majority of movements, as the wind is from the south west for 70% of the time, and is equipped with and Instrument Landing System ILS (aircraft generally take-off and land into the wind). Runway 06 is not equipped with an ILS. The ILS glidepath antenna is located north of Taxiway F and the runway, and the localiser is located close to Nestuda Way. Located on the south of Taxiway F is a VHF Direction Finding beacon. The other main navaids are the Approach Radar and the Distance Measuring Equipment (DME) that are located to the north of the main apron area on the southern side of the airfield.

Figure 3-2: Southend Airport – Aerodrome Chart



Source: UK Aeronautical Information Publication

RESAs are intended to minimise risks to aircraft and their occupants when an aeroplane overruns or undershoots a runway. These areas should be provided at each end of the runway strip enclosing all runways. The minimum width of a RESA is twice the runway width, therefore in Southend's case the RESA width is 74m. The length will depend on a number of variables, including the type and level of aircraft activity, and local conditions.

At the southern end the RESA is being provided by land to the south of Eastwoodbury Lane, which runs through the undershoot area of Runway 06 close to the runway end. This road is closed by ATC prior to all passenger Air Transport Movements on Runway 06/24 to provide the CAA recommended 240m long RESA to the south-west of the runway.

At the northern end 24, the provision of a RESA is restricted by the railway line, and therefore only the minimum 90m long RESA is provided by displacing the runway threshold.

The former cross runway (15/33) is closed, but is partly used as taxiways (B and F) for engine testing, aircraft dismantling and parking. Taxiway A connects the 24 end of the runway to the present apron and terminal area. Taxiway C connects the terminal area to a point approximately 400m from the 06 end of the runway. The AIP indicates that Taxiway C, between Holding Points C1 and C2, infringes the runways instrument strip.

Apron

The airport's main apron area is located on the south side of the airfield, in front of the passenger terminal. Published information does not detail the size of the apron area, but the Aerodrome Chart does appear to indicate 10 self-manoeuvring aircraft parking stands, five immediately in front of the terminal and five remote stands. Visiting business and general aviation aircraft parking, for aircraft with wingspans up to 13m, is provided on the eastern side of the main apron area by the Control Tower.

Passenger Terminal

The existing terminal once had the capacity to handle 700,000 ppa. It has since been refurbished and has been reduced in size. The floor area is 2,100 sq.m. Discussions with the airport highlight that further refurbishment is planned on the existing terminal to improve both check-in and catering facilities.

Cargo Terminal

There is Cargo Terminal Building to the west of the Passenger Terminal. Cargo facilities include a fully racked 60,000 sq.ft. warehouse, cold store, customs bonded compound, customs examination room, trailer park.

Maintenance and Support Areas

There are two existing maintenance areas, one to the south and the other to north of the runway. The Southern Maintenance Zone includes some 20,000 sq.m. of hangar space, workshops and offices, with large areas of apron for aircraft parking. It encompasses the operations of a number of major operators such as ATC Lasham, Air Livery and Flightline, as well as a cargo unit and several office buildings. The Northern Zone covers some 15,000 sq.m. of hangars and offices.

The Air Traffic Control Tower and the Fire Station are both located on the south side of the airfield, with the tower adjacent to the Passenger Terminal and the Fire Station next to the Cargo Terminal. The Air Traffic Control services are

provided 24 hours and Southend can provide a Rescue and Firefighting Service up to Category 5 on request of 60 minutes notice, but generally Category 2 is provided during the day and Category 1 at night.

On the western side, there is a Fuel Depot with above ground storage tanks, located just off the perimeter taxiway.

3.3 Future Development Plans

London Southend Airport is embarking on a major two phase redevelopment programme. Phase One started in 2007 and is aimed for completion in 2009. It comprises of the following projects:

- Refurbishment of the current terminal due for completion in April 2008.
- Development of a quality hotel by December 2008. The project has outline planning permission and is going to detail stage. The anticipation is for the hotel to be open by first quarter 2009
- A New Control Tower by March 2009. Project plans are already at an advanced planning stage.
- A new Airport Railway Station. This project has reached GRIP3 stage in Network Rail's project processes and moving quickly to GRIP4. Subject to planning processes the airport hopes for completion in 2009.

Phase Two involves the building of an entirely new, resited terminal building and a runway extension to accommodate the new generation of medium capacity, high-efficiency jets being adopted by regional airlines operating scheduled flights and shorter range holiday charters. This development phase is at the advanced planning stage with permissions and approvals sought to enable work to commence in 2009 for completion by 2011 in time for the 2012 London Olympics.

3.3.1 Traffic Forecasts

The 2005 Master Plan passenger traffic forecasts were prepared in November 2004 by AviaSolutions and are summarised in Table 3-2 below. There are three scenarios of airline route development and market penetration.

Table 3-2: Southend Airport Master Plan Passenger Forecasts

Scenario	2007	2012	2015	2030
High	854,000	1,626,000	1,548,000	2,587,000
Medium	537,000	1,058,000	1,001,000	2,170,000
Low	179,000	767,000	731,000	1,268,000

Source: York Aviation Report

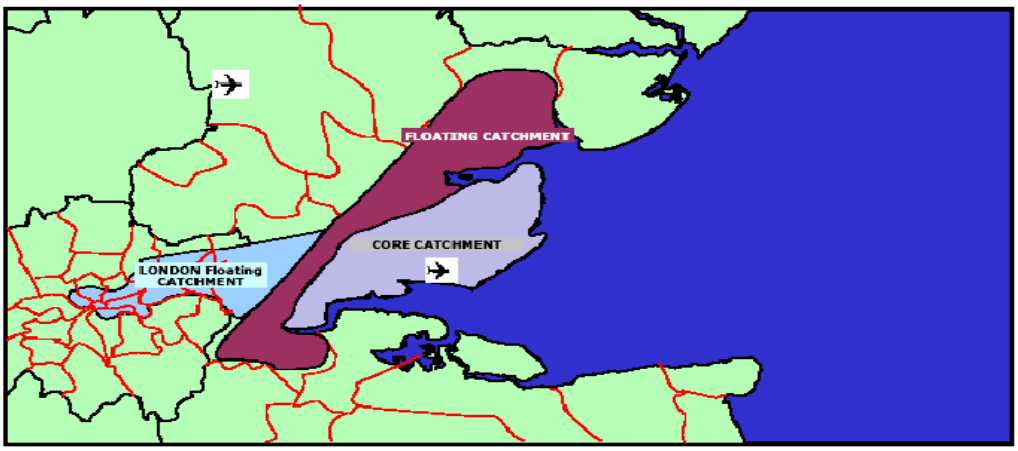
The Master Plan considers that in the medium to longer term the airport could grow to become similar in terms of passengers and aircraft movements to Southampton and London City Airport; the latter handling 1.7 million passengers and has 60,000 aircraft movements in 2004.

These forecasts take into account the effect of capacity constraints at Stansted, and to a lesser extent at London City, as set out in the Future of Air Transport White Paper. Therefore, airlines wishing to serve the London market are assumed to be more likely to use Southend to a greater extent before a second runway at Stansted is built around 2013, with a levelling off of demand as airlines take up the new capacity at Stansted. Consequently, no growth is shown between 2012 and 2015.

AviaSolutions defined 3 catchment areas for Southend based on relative journey times to other airports:

- Core – where journey times are approximately 20 minutes quicker than to competing airports;
- Floating – where journey times are approximately the same; and
- London floating – where rail journey times from London stations are approximately the same as to competing airports.

Figure 3-3: London Southend Catchment



Source: LSACL

The forecasts were reviewed by York Aviation, who concluded that Southend could attract around 1.8 million passengers by 2030, close to the 2 million estimated in the Master Plan. York considers that there is a relatively high degree of uncertainty attached to the passenger forecasts for the Airport, as there is no recent track record of commercial air services. Obviously, it depends on how successful the Airport is in attracting airlines. The York Report acknowledges that there is airline interest.

York concludes that Southend Airport has a potentially strong local market, but its ability to penetrate the wider London market is less clear in the face of competition from Stansted, London City, and to a lesser extent Luton Airports, even with a rail link. High frequencies of service will be critical. The master plan makes no reference to the development of freight activity, and York suggests that due to the runway length that this would not be a major source of growth, although there may be opportunities for niche operations.

3.3.2 Airport Infrastructure

The 2005 Master Plan assumed no further changes in the runway configuration, but it now appears that LSACL are considering the extension to the runway to the south-west, across Eastwoodbury Lane to a total of 1,799 metres to handle a wider range of aircraft. LSACL is understood to be in discussions with the CAA. In the longer term, the airport plans to add a section of parallel taxiway to Taxiway C the end of the runway to remove the need for backtracking. Taxiway A will need some reconfiguration to take account of the new aircraft parking apron area to be constructed with the new terminal.

The 2005 Master Plan indicates that the existing passenger terminal is to be used in the short term and then a new terminal and passenger interchange could be built. Located south east of the runway next to the railway line, the interchange will include a railway station, plus a parkway car park for which

approval is being sought. A hotel/restaurant and visitor facility is planned in an adjoining area. The proposals are shown in Figure 3-4.

Figure 3-4: Proposed New Southend Airport Railway Station and Terminal

Source: Regional Airports Limited

The Master Plan safeguards sufficient area in the terminal zone for around 2 million passengers. The terminal would be on the east side of this zone, with the rest used for aircraft aprons and taxiways. York considers that the existing terminal appears capable of handling up to 0.6 - 0.7 million passengers per annum (mppa) based on benchmarking at other UK airports.

The new terminal application was made on the basis of the development handling 300,000 passengers per year. York estimates that the building footprint could have the capacity for around 0.65 – 0.7 mppa, and may be capable of some initial expansion beyond that level. In order to handle the traffic forecast during the latter stages of the Master Plan, the terminal would need to be expanded, and this will be subject to further planning approval. The latest proposals from the airport are that the planning application for the railway station will be separated from the terminal, which will be subject of a new planning application.

Once the new terminal is operational, the original terminal building could be used for alternative airport uses such a business and general aviation Fixed Base Operator (FBO). Business aviation users are currently provided with briefing and handling services from the existing terminal.

The Master Plan mentions that there are sites available at the Airport for business aviation organisations which might wish to base a number of aircraft, undertaking maintenance on them as well as providing their own FBO for aircraft owners.

The flying clubs currently located adjacent to Taxiway A and which will be displaced by the development of the new passenger terminal and transport interchange, would be relocated to new facilities in the Northern Maintenance and Support Zone.

It is understood that the existing control tower has limited sightlines, so it is planned to relocate in the Northern Maintenance and Support Areas during the first phase of development. The fire station is located adjacent to the existing terminal; there are no plans for its relocation, although the number of bays may

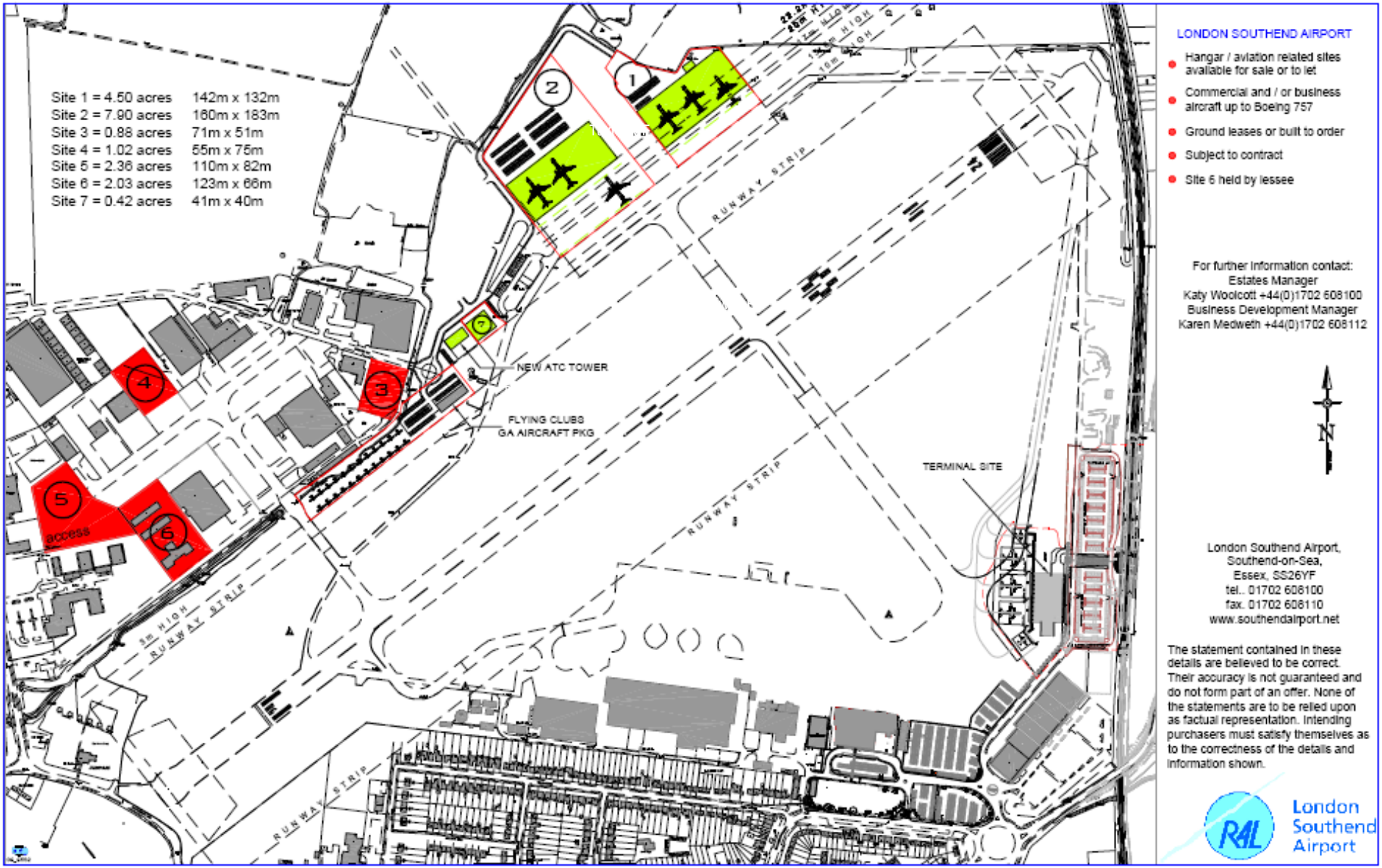
be extended. The master plan indicates that there is some scope for redevelopment and replacement of buildings within the southern zone.

The maintenance and support area north of the runway also offers scope for additional maintenance facilities. The western part is already developed, but again there is some scope for redevelopment within the existing footprint. The Master Plan zones this northern area for further development of hangarage capacity, as well as other support activities, including the relocation of flying clubs and the air traffic control from the south of the runway.

3.3.3 Land Use

The airport website shows a detailed Master Plan (Figure 3-5) with potential sites available in Northern Maintenance Zone. The two possible sites within the greenbelt land are shown in green, and those within the existing foot print of the Maintenance Zone are shown in red. No major additional areas of land are required, but some small areas around the boundary are to be brought within the airport, either to meet CAA safety requirements, or to enable the layouts of the developments to be better planned.

Figure 3-5: Proposed Master Plan Layout



Source: Regional Airports Limited

4 Site Appraisal - Transport

4.1 Introduction

This section seeks to present a comprehensive analysis of the existing site and current travel conditions within the surrounding area, including an appraisal of existing access opportunities by the full range of travel modes and through parking facilities.

Current local policies and available documents about transportation issues in the vicinity of the JAAP area have been analysed in order to assess the existing access to the airport area by all modes of transport. In particular the Thames Gateway Delivery Plan, the Essex Local Transport Plan 2006 -2011, the Rochford District Replacement Local Plan, the Southend on Sea Local Transport Plan 2006-2011 (LTP2), the Southend on Sea Borough Local Plan and the Southend-on-Sea Borough Council Local Development Framework have been considered.

The study area is currently being investigated by the Southend Transport Study. Transport modelling for the Essex Thames Gateway and the development of the South Essex Rapid Transit (SERT) is also currently progressing and is considering access issues to the study area. The appointed consultants for the Southend Transport Study, WS Atkins, provided a series of traffic counts that were recently carried out in the study area. The Transport Data Report produced by WS Atkins in July 2006 for Southend on Sea Borough Council was also provided. The Airport's Surface Access Strategy published in August 2006 and the Transport Assessment for the proposed new Parkway Station undertaken by Bettridge Turner and Partners in 2005 were analysed in order to obtain further information about the surface access to the study area.

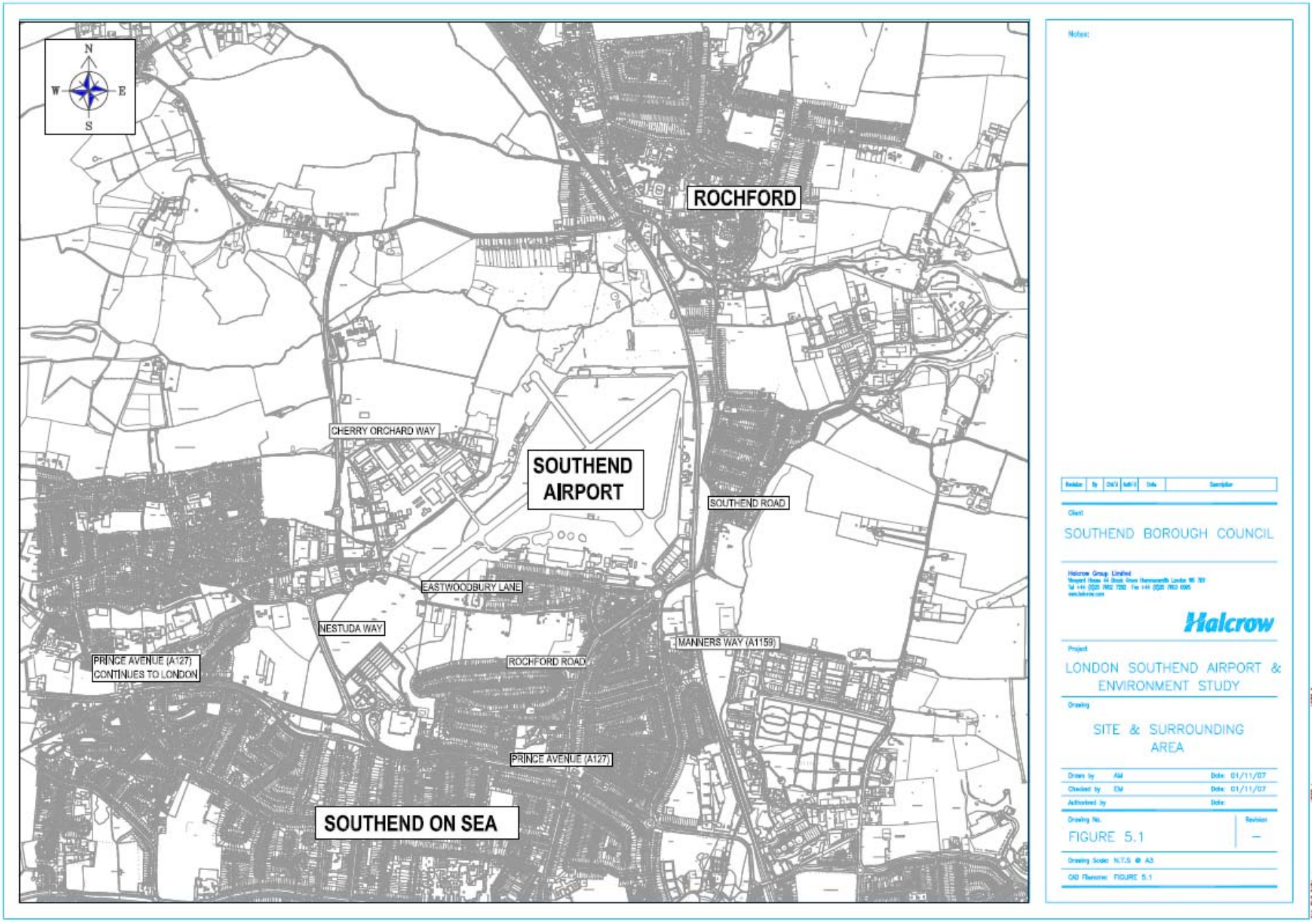
4.2 Site and Surrounding Area

4.2.1 Site Location and Context

Southend airport is located about 34 miles from Canary Wharf and about 40 miles from central London. The distance from the M25 orbital motorway is about 18 miles. Some 2 million people live within a 60 minute drive time of London Southend Airport.

The existing airport passenger terminal is served from Eastwoodbury Crescent to the south. An entrance to the western part of the airport is provided off Aviation Way and access to other parts of the airport is restricted for security reasons. From the A127 there are several routes to the airport entrances but the signposted route is via Manners Way.

Figure 4-1: London Southend Airport and surrounding area



4.3 Existing non-car transport modes

4.3.1 Existing Bus Services

There are currently three bus services operating through the study area and two bus stops through which access can be gained to the airport. As a summary, the route map for this area is attached for reference in Figure 4-2.

A bus stop is located on Eastwoodbury Crescent next to the airport entrance and it is served by route 9. Another bus stop is located at Warners Bridge on Rochford Road at less than five minutes walking from the airport entrance; this bus stop is served by routes 7 and 8. Route 408 also stops at Warners Bridge and is a school service which runs as part of services 7 and 8. Routes 7, 8 and 9 all serve Southend Victoria and Central rail stations, with route 7 and 8 also serving Rochford railway station and route 7 serving Rayleigh railway station. The following table indicates the bus services operating around the airport area, with related routes and typical daytime hourly frequencies.

Table 4-1: Summary of Bus Services through Southend Airport

Bus Number	Origin/ Destination	Operator	Frequency (One-way)		
			Mon – Fri	Sat	Sun
7	Shoeburyness – Southend – Rochford - Hockley – Rayleigh	Arriva	4-5/hr	4/hr	1/hr
8	Shoeburyness – Southend – Rochford - Hockley	Arriva	2-3/hr	2/hr	1/hr
9	Shoeburyness – Thorpe Bay – Southend – Eastwood - Rayleigh	Arriva	4/hr	4/hr	2/hr
		TOTAL	10-12/hr	10/hr	4/hr

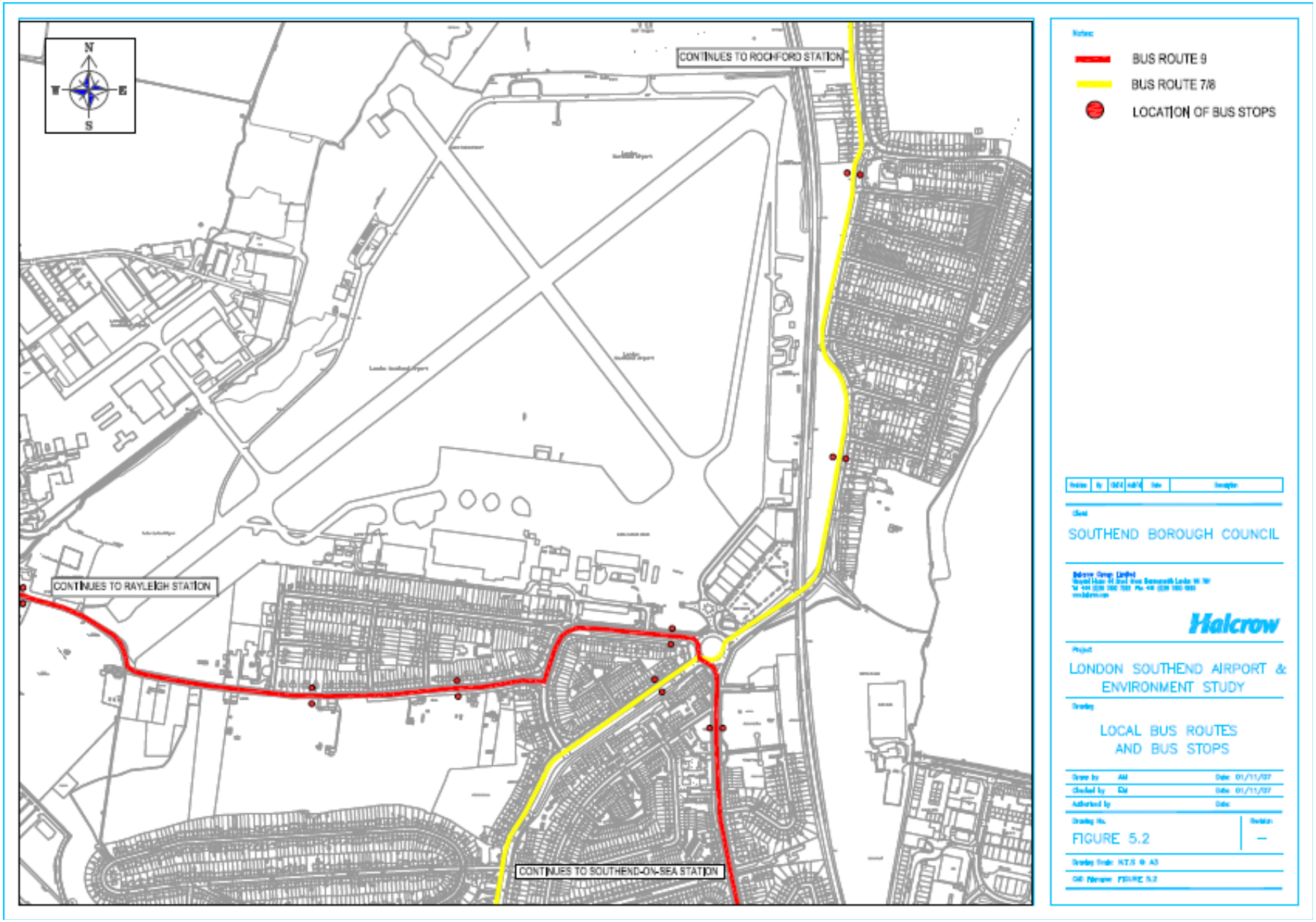
Details presented therein identify that there would be no fewer than about 10 services in each direction during a typical daytime hour from Monday to Saturday and that this cumulative frequency of service could increase towards 12 services in each direction in a particular busy weekday hour. There would be a cumulative frequency on a Sunday of 4 services in each direction.

It is noteworthy that Southend on Sea is also served by several commuter services, like X1/X10, X30, 15, 16, 35, which link the Town Centre to Victoria Station in London, Stansted Airport, Basildon, Hadleigh and Canvey. In particular the X10 service, which runs from Rochford to Victoria Station via Southend on Sea, stops on request at Anne Boleyn roundabout and at all the bus stops along Manners Way.

4.3.2 Existing Rail Services

Rochford rail station is about 2.5 kilometres from the airport (which equates to approximately 5 minutes by taxi or 8 minutes by bus) and is served by One Railway trains running from London Liverpool Street to Southend Victoria. Southend Victoria rail station is located to the northern area of Southend, approximately 4 kilometres from the airport. Prittlewell Station, which is located less than 3 kilometres from the airport, is on the route between Rochford and Southend Victoria. Trains operate between London Liverpool Street, Stratford and Southend Victoria / Rochford approximately every 10-15 minutes on Monday to Saturdays. There are 3 services per hour on Saturdays and 2 services per hour on Sundays. The journey time between London Liverpool Street and Rochford is approximately 55 minutes.

Figure 4-2: Bus Services



Southend Central is in the heart of the town centre, approximately 3.5 kilometres from the airport, and is served by trains from London Fenchurch Street. Trains run every 10- 15 minutes on Monday to Fridays and every 15 minutes on Saturdays and Sundays. The journey time from Fenchurch Street to Southend Central is between 55 and 75 minutes. Rochford, Southend Central and Southend Victoria rail stations are linked to the airport with the bus services 7, 8 and 9; the journey time is approximately 10 – 20 minutes.

4.3.3 Existing Cycle Facilities

There is a number of existing and planned cycle routes, both off and on carriageway, within Southend, though inevitably most of these are provided predominately within the urban areas of the district where there would be greater demand for such facilities. There is limited dedicated infrastructure for cyclists on the local network within the vicinity of the airport.

An extract from the Southend Cycle Map produced by Southend-on-Sea Borough Council is attached for reference at Figure 4-3. Figure 4-4 illustrates the planned network of cycle routes as included in the Southend-on-Sea Local Transport Plan 2006 to 2011.

It is widely accepted that the maximum practical distance cyclists are prepared to travel to and from work is approximately five kilometres, which typically equates to a 15-minute cycle journey. Figure 4-5 illustrates the extent of the fifteen-minute cycle isochrone for the airport site. A cycle journey of no more than five kilometres in road distance would encompass the vast majority of the residential districts of Southend-On-Sea and Rochford. Thus there would be a sizable local population that could easily travel by cycle to work in the study area.

4.3.4 Existing Pedestrian Facilities

The existing highway network surrounding the site duly affords a comprehensive, though standard, network of footways. There are substantial residential areas around the study area and the terrain is relatively flat.

In terms of potential pedestrian catchments, advice issued by The Institution of Highways & Transportation and entitled ‘Guidelines for Providing for Journeys on Foot’ identifies the preferred maximum walk commute to be of 2,000 metres which typically equates to a 25-minute walking journey. Figure 4-6 illustrates this catchment area.

4.3.5 Existing Staff Modal Split

According to the Airport Surface Access Strategy, the staff survey carried out in 2006 revealed that 79% of staff drive to work alone, 7% car share, 11% use bicycle, 4% use motorcycles, 3% use the bus and 5% walk to work. 50% of car users say it is the quickest way.

Figure 4-3: Extract from Cycle Map

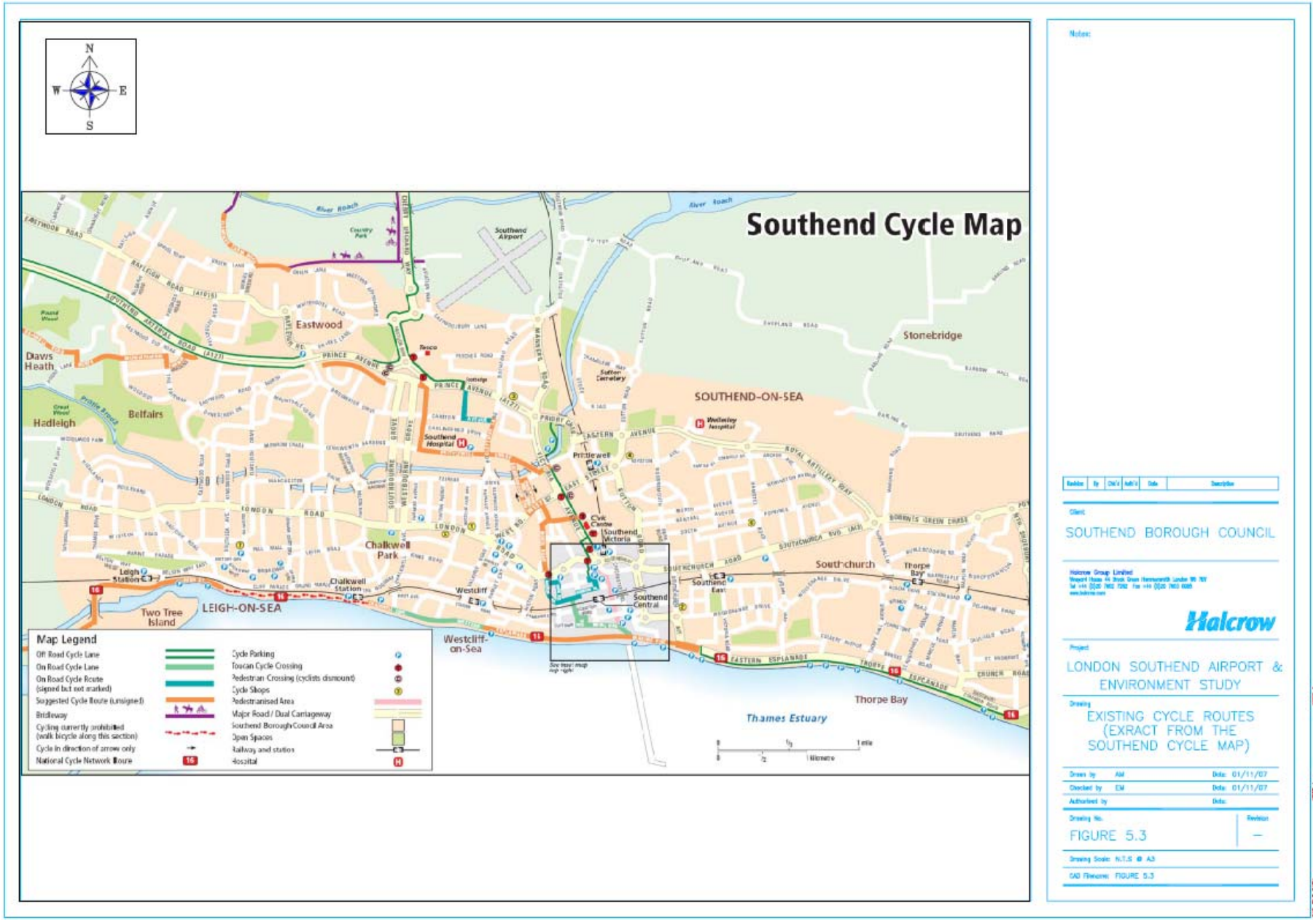


Figure 4-4: Planned Cycle Route Networks

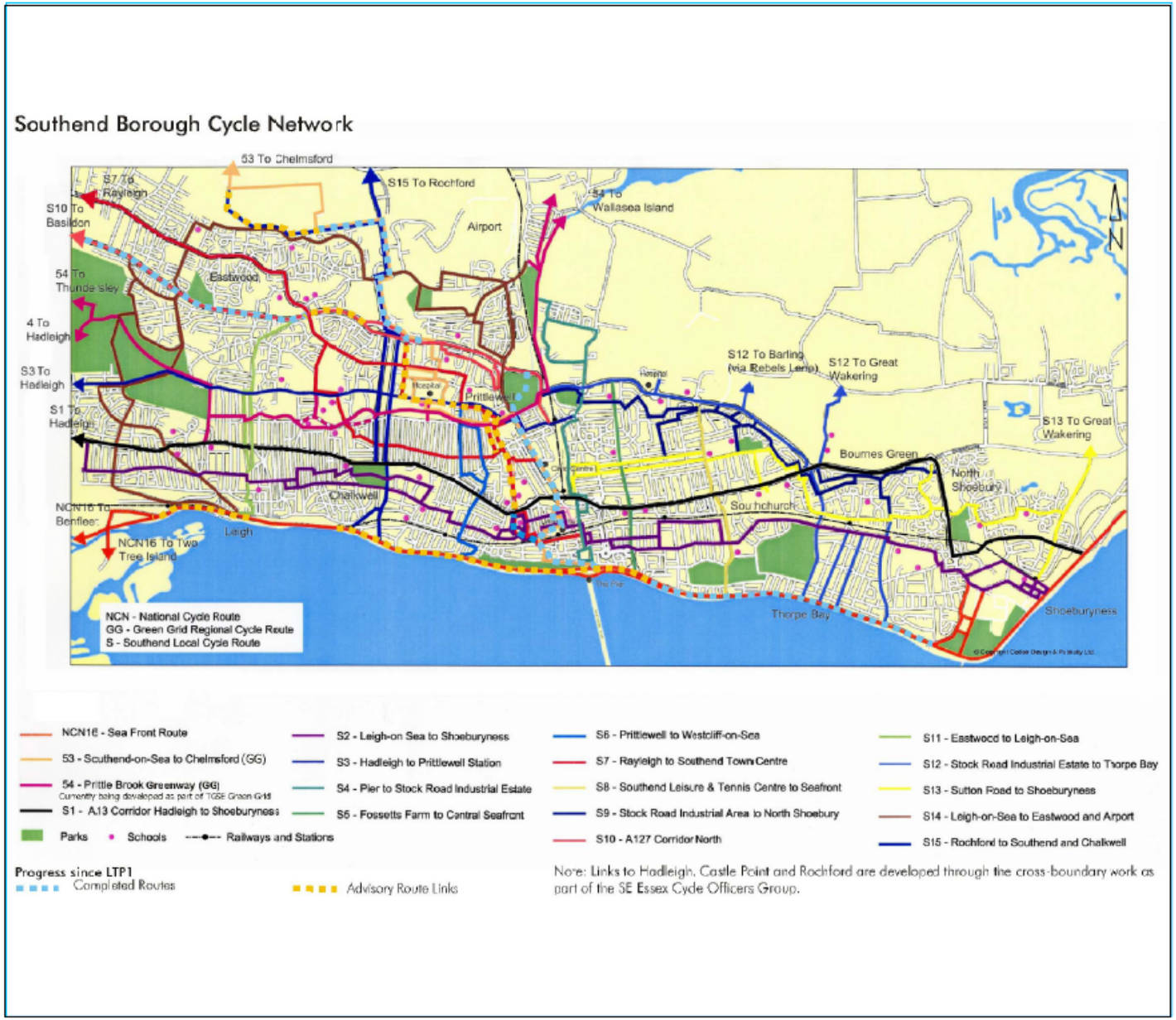
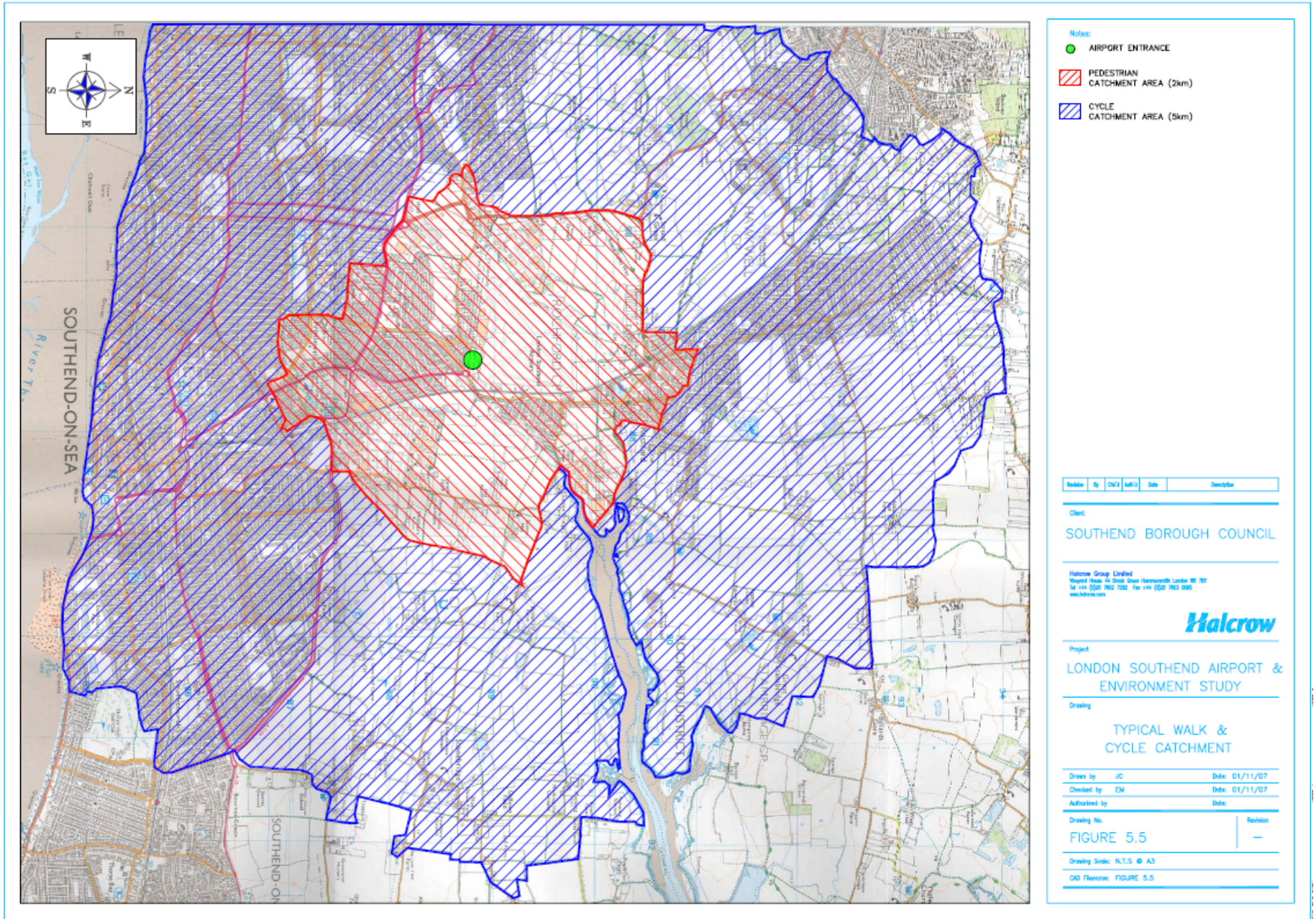


Figure 4-5: Cycle Isochrone



4.4 Existing highways conditions

4.4.1 Local Highway Network

As referenced previously, the study area is bounded to the west by the B1013, to the east by the railway line and by Southend Road, to the south by a residential development and to the north by a golf course.

Southend Road is a single carriageway road with two lanes which provides the direct link between Rochford Town Centre and Southend Airport. This section of road runs adjacent to the airport's car park and crosses over an existing railway bridge. The width of this stretch of carriageway is typically between 6m and 7m, with lighting columns running along the entire stretch on both sides. A narrow footway is present along both sides of Southend Road between Harp House roundabout and the railway bridge. After the bridge a footway is only present along the eastern side of the carriageway. There are no dedicated facilities for cyclists.

Manners Way, a single carriageway road with two lanes, is the main connection between the airport, Southend and the A127. This road runs south all the way along a relatively straight alignment to the four-arm Priory Crescent roundabout. Between Harp House and Priory Crescent roundabout junctions, there is an adequate footway for pedestrians. There are however, no facilities for cyclists on or off-road. Again there are sufficient lighting amenities along Manners Way; the carriageway is located in the middle of a highly populated residential area as well as being close to a major school.

Eastwoodbury Crescent and Eastwoodbury Lane, a single carriageway road with two lanes, run along the southern boundary of the airport linking the site with the A127 via Nestuda Way and with Rochford via Cherry Orchard Way. A footpath is present on the northern side of the road, on both sides along the first stretch of the road. Eastwoodbury Lane is suitable for cyclists and is included in the Southend Local Cycle Route of the Local Transport Plan 2006 to 2011.

4.4.2 Junction Capacity Assessment

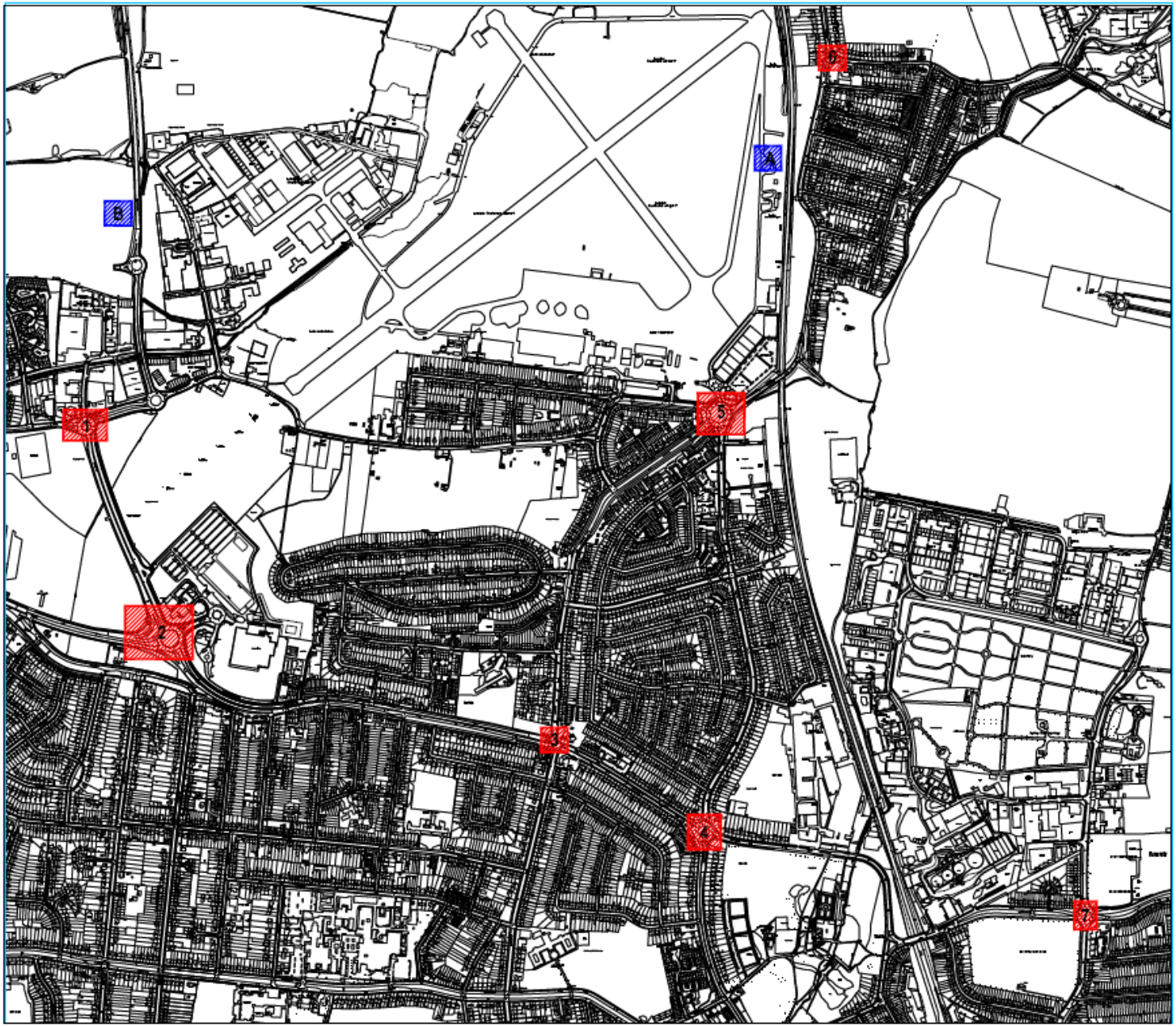
In order to assess the existing situation on the local highway network the results of manual traffic counts and automatic traffic counts at the key junctions within the study area were provided by WS Atkins. These were undertaken on a number of different weekdays between April 2006 and May 2006. The location of these traffic counts are indicated in Figure 4-6.

At each location the counts covered the time periods of 07.00-18.00 to provide a fair reflection of traffic volumes upon the network during the busiest periods.

Capacity analyses have been undertaken at the key junctions within the study area to assess the current operational characteristics of the local highway network and identify potential areas of concern should traffic levels vary significantly. Modelling software approved by the Department for Transport (DfT) has been used to determine the operating conditions, which for roundabouts is the ARCADY program and for signalised junctions is the LINSIG program.

Eastern Avenue – Sutton Road junction has been surveyed before the opening of the new relief road running from Sutton Road – Chandlers Way roundabout to the A1159 Eastern Avenue The new relief road caused a new distribution of flows, therefore the flows surveyed at Eastern Avenue – Sutton Road have not been assessed.

Figure 4-6: Location of Traffic Counts



Tables 4-2 to 4-7 summarise the results of the modelling exercise for the six junctions assessed for both the a.m. and p.m. peak of the current year modelling scenario. The operational conditions have been assessed against the background of two criteria; reference of flow to capacity (RFC) as a proportion and where a value of one represents theoretical capacity and maximum queue (queue) in terms of vehicles.

Table 4-2: Comet Way / Eastwoodbury Lane / Nestuda Way junction – Current Year Flows

Network Link	A.M. Peak		P.M. Peak	
	RFC	Queue	RFC	Queue
Comet Way	0.762	0.1	0.218	0.3
Eastwoodbury Lane E	0.797	3.8	0.881	6.8
Nestuda Way	0.302	0.4	0.334	0.5
Eastwoodbury Lane W	0.625	1.7	0.485	0.9

The results indicate that the existing Eastwoodbury Lane / Nestuda Way / Comet Way roundabout operates with an abundance of capacity with few vehicles queuing on Eastwoodbury Lane.

Table 4-3: Nestuda Way / Thanet Grange / Prince Avenue junction – Current Year Flows

Network Link	A.M. Peak		P.M. Peak	
	RFC	Queue	RFC	Queue
Nestuda Way North	0.762	3.1	0.508	1.0
UNC Thanet Grange	0.468	0.9	0.770	3.2
Prince Avenue (A127) SE	0.309	0.4	0.352	0.5
Prince Avenue (A127) W	0.784	3.5	0.800	3.9

The results indicate that the existing Nestuda Way / Thanet Grange / Prince Avenue roundabout operates with capacity and no discernible queuing under existing flows.

Table 4-4: Prince Avenue / Rochford Road / Hobleythick Lane junction – Current Year Flows

Arm	AM Peak		PM Peak	
	% Saturation	Queue (pcu)	% Saturation	Queue (pcu)
Prince Avenue W Ahead – Left	66.9%	29.6	61.7%	27.4
Prince Avenue W Right	84.4%	10.0	91.0%	12.0
Rochford Road Ahead/Left/Right	84.8%	19.6	90.3%	20.1
Prince Avenue W Ahead - Left	85.8%	38.0	93.7%	44.8
Prince Avenue W Right	22.5%	0.9	36.4%	1.5
Hobleythick Lane Ahead/Left/Right	86.5%	16.0	93.2%	26.0
	CycleTime=160s	PRC=4.0%	CycleTime=160s	PRC=-4.1%

A Vehicle Actuation system (VA) is active at the junction. Therefore, the cycle time of the junction is variable, strictly depending on the volume of traffic flows at different time of the day. The results indicate that the existing Prince Avenue / Rochford Road / Hobleythick Lane junction operates around capacity in the AM Peak and slightly above theoretical capacity in the PM Peak.

Table 4-5: Manners Way / Priory Crescent / Victoria Avenue / Prince Avenue junction (Cuckoo Corner) – Current Year Flows

Network Link	A.M. Peak		P.M. Peak	
	RFC	Queue	RFC	Queue
Manners Way (A1159)	0.718	2.5	0.922	9.2
Priory Crescent	0.733	2.7	0.767	3.2
Victoria Avenue	0.308	0.4	0.467	0.9
Prince Avenue (A127)	0.949	13.7	0.978	20.1

The results indicate that Prince Avenue operates above capacity during both the morning and evening peak. In the evening peak few vehicles queue on Manners Way. These results generally reflect site observations. It is noted that the pelican crossing to the west of the junction has not been modelled.

Table 4-6: Rochford Road /Manners Way junction – Current Year Flows

Network Link	A.M. Peak		P.M. Peak	
	RFC	Queue	RFC	Queue
Rochford Road NE	0.553	1.2	0.571	1.3
Manners Way (A1159)	0.254	0.3	0.472	0.9
Rochford Road SW	0.163	0.2	0.301	0.4
Eastwoodbury Crescent	0.433	0.8	0.513	1.0
Access road to the airport	0.041	0.0	0.257	0.3

The results indicate that the existing Rochford Road / Manners Way / Eastwoodbury Crescent roundabout operates with theoretical capacity and no discernible queuing under existing flows. These results generally reflect site observations.

Table 4-7: Sutton Road / Southend Road junction (Anne Boleyn roundabout) – Current Year Flows

Network Link	A.M. Peak		P.M. Peak	
	RFC	Queue	RFC	Queue
Sutton Road	0.978	16.1	0.709	2.4
Southend Road S	0.537	1.1	0.514	1.0
Southend Road N	1.040	39.3	0.651	1.8

The results indicate that the existing Sutton Road / Southend Road roundabout operates above theoretical capacity in the morning peak with discernible queuing on Southend Road and Sutton Road. On site observations noticed long queues in the evening peak along Sutton Road and this is confirmed by the Transport Assessment by Bettridge Turner and Partners in 2005. It is noticed that the flows

provided for the evening peak on Sutton Road are lower than the flows considered in the mentioned Transport Assessment.

4.4.3 Parking

There are currently 300 free of charge spaces at the passenger terminal. Parking for staff and visitors at the various premises in the maintenance areas are accommodated within those areas.

In the roads adjacent to the airport there are some parking restrictions, identified by the presence of double yellow lines, likely to be the legacy of security requirements associated with the airport. There are no parking restrictions along most of the residential roads surrounding the airport, this being due to residents being able to park on the carriageway.

4.5 Conclusions

The proposed development will have an impact upon the whole highway network in the area, beyond the JAAP area. The proposed transport strategy should therefore take into account of the existing congestion along the main corridors in the region.

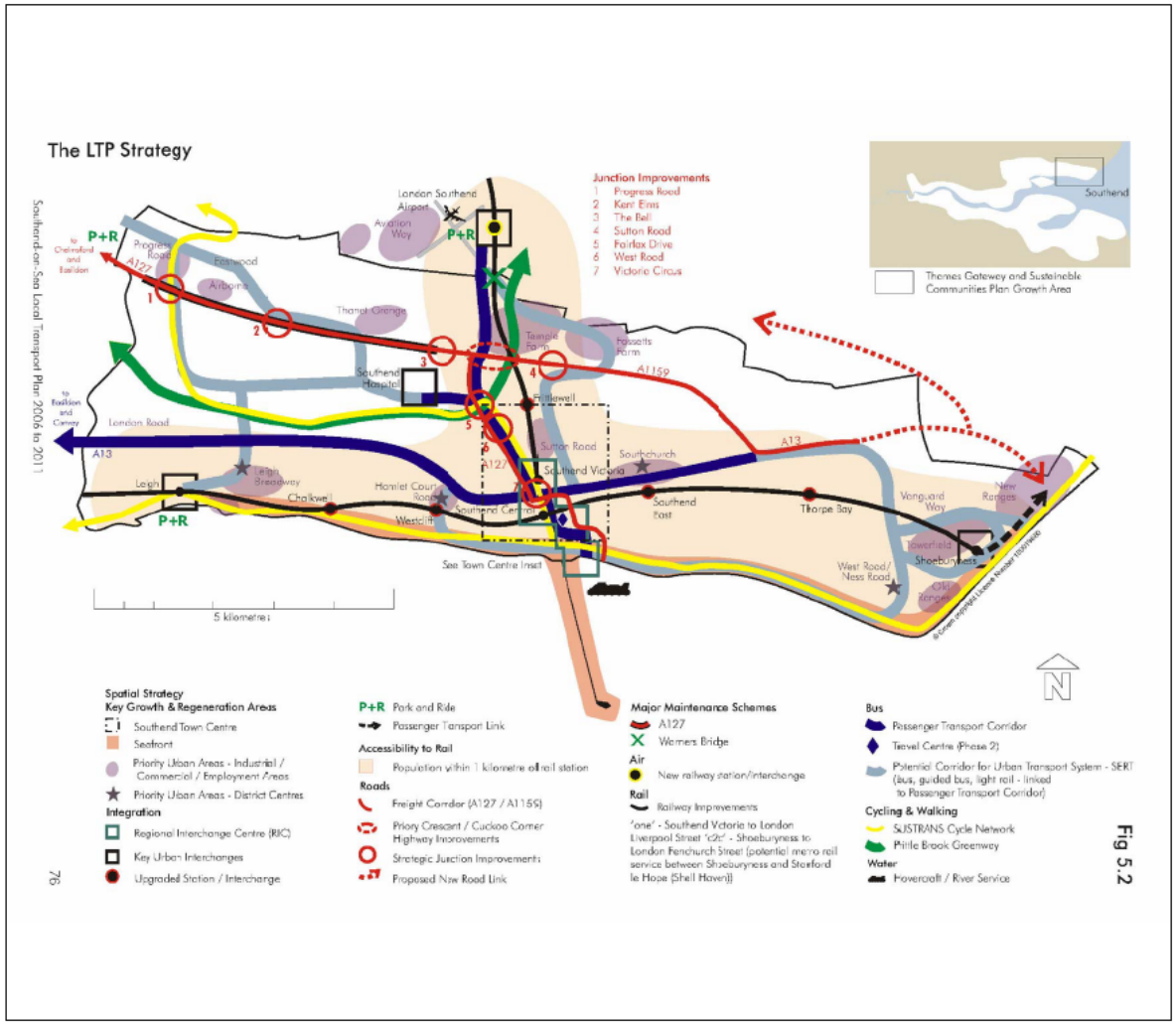
During the peak hours the A127 and the A13 suffer from significant levels of congestion and major improvements are planned or are currently taking place along those two roads. In particular, there are plans to improve Cuckoo Corner / Priory Crescent. An extract from the proposed Spatial Strategy produced for the Southend on Sea LTP 2 is attached for reference in Figure 4-7.

The proposed transport strategy should also consider that that the proposed SERT and railway station at the airport would provide an important alternative to cars to access the development area. This would be in line with the key principle for all airports that the Government expects airports to share the objective of increasing the number of passengers using public transport.

The junction capacity assessment carried out in this report has primarily focused on the agreed study area and has highlighted local capacity problems during the peak hours, in particular at the Anne Boleyn roundabout (Sutton Road – Southend Road roundabout), the Prince Avenue / Rochford Road / Hobleythick Lane signalised junction and the Manners Way / Priory Crescent / Victoria Avenue / Prince Avenue (Cuckoo corner) roundabout.

The analysis has also highlighted that the current bus services, pedestrian and cyclist facilities serving the area do not seem to be considered a valid alternative to the car, as confirmed from the airport staff who find more convenient to drive to work. The Automatic Cycle Monitoring included in the Transport Data Report produced by WS Atkins recorded a reduction of almost 20% of daily flows of cyclists along the A127 from year 2000 to year 2005.

Figure 5-7: LTP Strategy



4.5.1 Key Recommendations

The proposed development would not reduce the traffic flows on the highway network, as the new development would become a destination in its own right and potentially attract additional vehicle traffic from visitors and servicing.

However, it is anticipated that with a comprehensive and holistic transport strategy, which would look to increase the attractiveness of travel by other modes, congestion hot spots could be dampened, severance reduced and connectivity improved.

Any proposals to redevelop the study area should take into account the existing congestion in the area –especially along the A127- and suggest appropriate measures and solutions in order to alleviate the congestion. All the proposed developments and highway schemes should be taken in consideration.

The transport strategy is likely to require a broad-ranging approach, including:

- Public realm improvements, including enhanced pedestrian and cycle facilities within the study area and other routes in the town centre.
- Improved public transport connections between the site and Rochford, Rayleigh and Southend railway stations. The proposed SERT and railway station at the airport will have a very important role in improving public transport connections.
- Examine the potential for community bus services, utilising smaller vehicles that penetrate individual neighbourhoods within Southend on Sea, Rayleigh and Rochford, to circulate local movements throughout the day.
- A parking management plan, as part of the overall transport demand management measures.
- A robust Travel Plan for all proposed developments including provision of a Car Club and the implementation of car sharing.
- Detailed review of operation of junctions and pedestrian crossings in the area, to ensure that roundabouts and signals are providing the most effective levels of service for pedestrians, cyclists, buses and vehicles.
- Considerations of the wider impact of the redevelopment upon the whole highway network in the area, beyond the agreed study area of the JAAP.
- Consideration of all planned developments and highway schemes in the area.

5 Site Appraisal – Environment

5.1 Introduction

The environmental appraisal of the study area provides an assessment of the site and its surrounding areas. The assessment highlights technical issues related to development, essential to the preparation of the JAAP. The appraisal seeks to fulfil the following objectives:

- To provide a comprehensive environmental baseline of the site and surrounding areas
- To identify environmental issues associated with the development which should be taken into consideration when designing options for the proposed JAAP.
- To identify environmental constraints which have the potential to limit development options for the proposed JAAP
- To identify environmental opportunities for development options for the proposed JAAP which could enhance the site for leisure, recreational and ecological protection.

The appraisal consists of desk based studies and on site surveys undertaken specifically for this study. The appraisal also references relevant published documents and data sources, including Environmental Statements and noise monitoring reports, prepared by third parties for the site and its environs. The appraisal reviews the following environmental topics, which potentially pose constraints and opportunities on future development:

- Noise and Vibration
- Air Quality
- Flora and Fauna
- Landscape
- Recreation
- Ground Conditions
- Archaeology and Cultural Heritage
- Water

5.2 Noise and Vibration

There is the potential for noise and vibration impacts to arise as a result of any future development within the site either on a temporary basis during construction, or potentially in the longer term during the subsequent operation of the developed site. If the expansion of airport operations is considered, operational impacts could arise from increased aircraft movements or ground noise, from aviation and non-aviation-related industrial and commercial operations, and from an increase in traffic on local roads and railways.

A desk-based review of available information has been undertaken to establish the existing noise and vibration conditions within the study area and to identify relevant legislation, national and local planning policy, in order that potential constraints and opportunities to future development of the site may be identified.

5.2.1 Relevant Policy, Legislation and Guidance

National Planning Policy

PPG 24 *Planning and Noise*, published in 1994, outlines the considerations to be taken into account by local authorities in determining planning applications both for noise-sensitive developments and for those activities, which will generate noise. The Guidance acknowledges that noise can have a significant effect on the environment and on the quality of life enjoyed by individuals and communities. The Guidance notes in Paragraph 10 that:

"Much of the development which is necessary for the creation of jobs and the construction and improvement of essential infrastructure will generate noise. The planning system should not place unjustifiable obstacles in the way of such development. Nevertheless, local planning authorities must ensure that development does not cause an unacceptable degree of disturbance."

Annex 3 of PPG 24 gives detailed guidance on the assessment of noise from different sources, specifically in Paragraphs 6 to 12, which deal with noise from aircraft. Paragraph 7 states that:

"For small aerodromes local planning authorities should not rely solely on Leq (at the receptor) where this is based on less than about 30 movements a day. Local planning authorities should also be aware that in some circumstances the public perceive general aircraft noise levels as more disturbing than similar noise levels around major airports."

With respect to industrial noise within the development area (which could include some elements of ground-borne noise at airfields), where the industrial source is dominant, PPG 24 references the use of BS 4142: *Method for Rating Industrial Noise Affecting Mixed Residential and Industrial Areas* which is intended to be used to assess whether noise from factories, industrial premises or fixed installations and sources of an industrial nature in commercial premises is likely to give rise to complaints from people residing in nearby dwellings.

Consultation with Rochford District Council and Southend-on-Sea Borough Council confirmed that neither council has a supplementary planning guidance document to provide advice for planning applications with respect to noise and vibration. Both councils stated that applications are appraised on an individual basis rather than against set criteria (such as a pre-determined BS 4142 assessment levels), although Southend-on-Sea Borough Council stated that a BS 4142 assessment level of –6 was noted as a potential target value.

Local Planning Policy

The relevant sections and policies contained within identified documents with respect to potential constraints on noise and vibration impacts from future development of the study area are detailed below:

Adopted Rochford District Replacement Local Plan (June 2006)

- Policy PN5 – Noise Generating Development
- Policy PN6 – Noise Sensitive Development
- Policy TP9 – London Southend Airport – details planning condition for development of London Southend Airport
- Policy TP10 – Aviation & Noise

Adopted Southend on Sea Local Plan (March 1994)

- Policy U2 – Pollution Control
- Policy T17 – Southend Airport – details councils support for growth of the airport for economic growth.

Southend on Sea Core Strategy Development Plan Document, August 2006

Policy CP4: 'The Environment and Urban Renaissance' of the Core Strategy states that 'Development proposals will be expected to contribute to the creation of a high quality, sustainable urban environment which enhances and complements the natural and built assets of Southend.' The policy recognises in point 14 of the need to prevent, reduce or remedy all forms of pollution including **noise**, from such development.

National Noise Regulations/Acts of Parliament

The **Environmental Noise (England) Regulations 2006** set out the requirements for strategic noise mapping for major airports, first round major roads, first round major railways and first round agglomerations to be adopted by mid 2007, with subsequent revision on a 5-yearly basis. The Regulations apply to 'major airports' with annual flights in excess of 50,000 movements, excluding all training flights.

The **Aerodromes (Noise Restrictions) (Rules and Procedures) Regulations 2003** sets out the procedures for developing noise restrictions at airports in the UK. As with the Environmental Noise (England) Regulations, this Regulation applies to city airports and other airports, which deal with more than 50,000 movements per year. If the airport does not already operate to these Regulations, it may have to comply in the future as air traffic increases.

Part III, Section 79, of the **Environmental Protection Act 1990 (EPA)** imposes a duty on local authorities periodically to survey environmental noise levels and to investigate noise complaints. The Act requires local authorities to serve notice when noise nuisance exists. Under these statutory nuisance provisions, the operators of premises could be required to adopt best practicable means to abate noise nuisance at any time once operations have commenced.

5.2.2 Key Features

There are a large number of potentially noise and vibration sensitive receptors within and around the boundary of the study area. The largest centre of on-site receptors comprise the established residential developments in the south east of the study area. The nearest receptors to noise and vibration sources associated with operation of the airport are properties along Wells Avenue to the south, whilst the nearest on-site receptors to key road traffic noise and vibration sources within the study area include properties off Southend Road, Manners Way, Prince Avenue and Cherry Orchard Lane. The nearest on-site receptors to existing rail noise are the residential properties in the north eastern corner of the study site at The Ridings and Rochford Hall Close.

With respect to off-site receptors, the closest to airport and aircraft related noise and vibration sources are the residential properties to the east of Southend Road, whilst the nearest off-site receptors to existing key road traffic noise and vibration sources in the area again are those properties located off Southend Road and also along Manners Way, Prince Avenue and Cherry Orchard Lane. Road traffic noise in the vicinity of the study site is understood to be relatively high, particularly along Prince Avenue.

A review of baseline information provided in the 2002 Environmental Statement (ES) Chapter *'Noise Assessment'* for runway reconfiguration at the airport has been

undertaken. Whilst baseline information from 2002 may be of limited use given new development in the area and increases in road traffic over recent years, the results are summarised briefly below.

A baseline noise survey was carried out by JacobsGIBB between 1620 hrs on 11th December and 1630hrs on 12th December 2002. The measurements were undertaken at three locations as detailed below. A full 24-hour survey was undertaken at locations 1 and 2, whilst periodic 30 minute measurements were undertaken at location 3. The monitoring locations and measured noise levels are presented below:

Table 5-1: Summary of Ambient Noise Levels

Location	Average 30-minute dB L_{Aeq} noise levels	
	Daytime	Night-time
1. Residential property on Northfield Crescent; the nearest properties to the south and east of the development site	54	44
2. On airport to rear of properties on Avro Road; the nearest properties to north an east of the development site	66	61
3. On the airport adjacent to west of the development site	74	70

Source: 2002 Environmental Statement

The ES chapter references that noise sources operating during the survey included air traffic movements (both local to Southend and also passing air traffic), road traffic, train movements, construction activity associated with the new Royal Bank of Scotland site, pedestrians, dogs and birds. At location 1, the key noise sources were air and road traffic and construction noise, whilst at locations 2 and 3, air and road traffic comprised the key noise sources.

Baseline information regarding aircraft noise has been obtained from Bickerdike Allen Partners 2006 *Southend Airport Strategic Noise Mapping*. Modelling of Southend Airport was undertaken using Integrated Noise Model (INM) software in order to predict aircraft noise, taking into account traffic distribution by aircraft type, flights tracks, dispersion, flight profiles and traffic distribution by route. The exercise was based upon actual data obtained from Southend Airport in August 2006. The results of the modelling are presented as five different noise indices $L_{Aeq,\ 16hr}$, L_{day}, $L_{evening}$, L_{night} and L_{den} (day, evening and night combined) and are summarised primarily as the areas within each contour in kilometres[2]. Whilst noise contour plans are provided with Ordnance Survey mapping background, it is not possible to establish specific predicted noise levels at individual properties. However, it is clear that the highest aircraft noise levels are experienced in alignment with the main runway, extending to the southwest and northeast of the airport. From the L_{den} index, which shows the highest predicted noise levels, the report shows that aircraft noise in excess of 65dB L_{den} is limited largely to within the land owned by the airport.

The report states that the airport can operate 24 hours a day, although normal operation is between 0700 and 2100hrs during the summer and 0800 and 2200hrs during winter months, with the potential to extend these hours at night by arrangement with the airport. Currently, it is understood from the airport, that the number of flights between midnight and 0600 is limited to approximately 20. There are also limits on the duration of aircraft engine ground running times for maintenance purposes. The maximum hours currently comprise 0700 to 2100hrs and are dependent upon engine type. However, there are currently no limits for the airport, although it is required to be operated in line with conditions set out in the UK Aeronautical Information Package (AIP) for Southend Airport and has been doing so for four years.

Halcrow contacted[1,2] Rochford District Council and Southend-on-Sea Borough Council in order to obtain additional information regarding the baseline environment within and in the vicinity of the study area. With respect to complaints from aviation and industrial noise sources, Rochford District Council referenced the most notable complaint in recent times associated with the airport was with respect to police helicopter training. No recent complaints regarding noise or vibration associated with the airport were recalled by Southend-on-Sea Borough Council from people living near to the airport, even from those receptors located along Wells Avenue in close proximity to the southern airport maintenance area. However, it was mentioned that complaints have been received in the past from people buying properties further from the airport but not perhaps realising they were buying beneath a flight path. With respect to industrial noise complaints from within the study area, neither council could recollect recent complaints, although one complaint was referenced regarding entertainment noise from a hotel on Aviation Way.

Given that the councils do not deal with aviation-related complaints, information has also been obtained from The Southend Airport Master Plan, 2005 which states that in 2004 just 44 complaints were received from 44,000 aircraft movements. Additional information provided by the airport suggests that complaints over the last three years have totalled approximately 60 annually, with complaints arising predominantly from properties to the southwest of the airport, but also to a lesser extent from properties to the northeast and to the eastern airport boundary.

5.2.3 Opportunities and Constraints

Development within the site will be subject to planning, and with respect to noise, the numerous local and national policies will have to be taken into consideration in order to minimise impacts and protect the amenity of sensitive receptors in the vicinity of the study area. This may require significant levels of mitigation (and therefore associated cost) to result in acceptable levels of impact at sensitive receptors.

Constraints

A summary of the key potential constraints highlighted earlier through the review of available documents is presented below:

- A number of policies in the Rochford District Council and Southend-on-Sea Borough Council Local Plans and Core Strategy Development Plan Documents, and within the East of England Plan, could act as constraints where it cannot be demonstrated that local amenity will not be significantly impacted by noise arising from future development.
- Clearly, the geography of existing and future receptors within and in the vicinity of the study area and the proposed location of future development will be a key factor influencing how the policy objectives are met. Opportunities for mitigation have been discussed above.
- There is the potential for significant increases in aircraft noise (both in the air and on the ground), increases in road and rail traffic noise and vibration and increased industrial and commercial activities associated with future expansion of the airport. There is also the potential for increased noise and vibration impact from non-aviation-related operations within the study area. At some receptors, these noise sources are likely not to operate in isolation, but may create a cumulative noise and vibration impact. This should be considered carefully when determining planning applications in order that the requirements of the relevant policies are met over time.

[1] Telephone discussion between Jason Evans (Halcrow) and Martin Howlett (Rochford District Council) on 12October 2007
[2] Telephone discussion between Jason Evans (Halcrow) and Neil Vann (SoSBC) on 12October 2007

It is also worth noting that where highways have to be altered as part of future development, other than by resurfacing, residents living in nearby houses may be entitled to an offer of sound insulation or a grant in respect of the cost of carrying sound insulation works, subject to qualification to a number of strict criteria under the Noise Insulation Regulations.

Opportunities

A number of opportunities have been identified, which would assist with noise and vibration minimisation during future development of the study area.

- Where possible, position low noise and vibration producing developments between the airport/other existing and proposed noisy industries and sensitive receptors in order to provide acoustic screening. In addition, where possible phase the site development such that proposed buildings which will provide significant acoustic screening are constructed at the closest position to existing receptors at an early stage, thereby minimising noise at receptors from future construction and operational noise sources on-site.
- Where possible, maximise the separation distance between noisier new developments (including those which high levels of transportation) and sensitive locations and position 'low noise impact' developments in between. Where this is not possible, ensure that strict noise and vibration minimisation criteria are implemented at the planning stage.
- Where possible, avoid positioning car parking facilities close to noise sensitive receptors.
- Where new access roads to/from the study area are required, carefully select alignments which provide maximum possible separation distance between the road and sensitive receptors. Where this cannot be achieved, noise impacts can be minimised by provision of acoustic bunds/barriers or screening provided by new intervening 'low noise impact' industrial/commercial buildings.
- Where possible, avoid positioning new sensitive uses near to existing noisy industries or within close proximity to the airport.
- Provide low noise surfacing to all new highways and highways to be resurfaced in future in order to help mitigate an increase in road traffic noise associated with the study site.

5.3 Air Quality

This section considers air quality and greenhouse gas emissions associated with London Southend Airport. Current operations have been considered together with current air quality in the vicinity of the airport. The appraisal has gone on to review relevant regulations and policy to highlight issues, constraints and opportunities in relation to the potential future development of the airport and surrounding area.

5.3.1 Policy, Legislation and Guidance

National Planning Policy

EU Framework Directive 96/62/EC on ambient air quality assessment and management came into force in November 1996 and had to be implemented by Member States by May 1998. The Directive aims to protect human health and the environment by avoiding, reducing or preventing harmful concentrations of air pollutants. As a Framework Directive it requires the Commission to propose "Daughter" Directives setting air quality objectives, limit values, alert thresholds and guidance on monitoring, siting and measurement for individual pollutants. The Daughter Directives published to date include:

- Directive 1999/30/EC relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air;
- Directive 2000/69/EC relating to limit values for benzene and carbon monoxide in ambient air;
- Directive 2002/3/EC relating to ozone in ambient air; and
- Directive 2004/107/EC relating to target values for arsenic, cadmium, nickel and benzo(a)pyrene in ambient air.

The Air Quality Standards Regulations 2007 [SI No. 2007/64] implement Council Directive 96/62/EC on ambient air quality assessment and management and all related Daughter Directives. These regulations supersede earlier regulations. The obligation for complying with these limit values rests with central government

Regional Planning Policy

The **East of England Plan** – Draft revision to the Regional Spatial Strategy (RSS) for the East of England, December 2004, is a statutory framework for local authorities to provide more detailed local development plans. The Plan includes *Policy ENV7*, which specifically refers to air quality in the Region. This policy identifies a number of key objectives, proposals and policies which are required to be met in order to protect and improve the region's air quality. These include the reduction of motor traffic, encouragement of the use of cleaner fuels and mitigating any existing and potential air quality problems.

Local Planning Policy

Adopted Rochford District Replacement Local Plan, June 2006 - The plan states that the air quality in Rochford District has been assessed in accordance with the relevant governmental legislation and that no exceedences of the National Air Quality Strategy objectives were found. The Plan states the following;

"Planning has a role to play in maintaining this good level of air quality by separating potentially polluting land uses from other existing or proposed land uses and in ensuring that new development is not allowed where it would exacerbate already poor air quality conditions. Where development proposals are likely to involve emissions into the air or where a sensitive development is proposed near an existing source of emissions, the Council will require the submission of appropriate details to enable a full judgement of the impact of the development to be made."

Relevant policies to Air Quality include: Policy PN4: Air Quality

Southend on Sea Local Development Framework 2001 – 2021 states the following with regards to air quality:

"Development proposals will be expected to contribute to the creation of a high quality, sustainable urban environment which enhances and complements the natural and built assets of Southend. This will be achieved by: preventing, reducing or remedying all forms of pollution including soil, water, noise and other forms of airborne pollution".

Legislation and Guidance

Part IV of the **Environment Act 1995** sets out a system of Local Air Quality Management (LAQM); it is a component of the UK's approach to managing air quality. Under LAQM local authorities have a duty to make periodic reviews of local air quality against the objectives set by national regulation. Where a local authority's Review and Assessment of local air quality indicates that air quality objectives are not expected to be achieved, local authorities are required to designate Air Quality Management Areas (AQMAs).

The **Air Quality (England) Regulations 2000 [SI No. 2000/928]** and **Air Quality (England) Amendment Regulations 2002 [SI No. 2002/3043]** include national air quality objectives which, in most cases, are numerically synonymous with the European limit values although some have earlier compliance target dates. However, the air quality objectives are for specific use by local authorities in undertaking their LAQM duties in pursuit of Part IV of the Environment Act 1995.

Relevant Climate Change Policy

The Government's policy on climate change is set out in **Climate Change: The UK Programme 2006**. The Programme details how the UK plans to achieve its legally binding Kyoto Protocol target to reduce a 'basket' of greenhouse gases[3] by 12.5% below base year levels by 2008-2012. The Government also has a national goal to cut CO_2 emissions by 20% below 1990 levels by 2010 and, in the long term, reduce emissions by 60% by 2050.

Section 2 Part 4 of the Programme sets out the strategy for transport emissions. At present, only domestic aviation is included in the UK Kyoto Protocol target and the national CO_2 reduction goals. Forecasts, however, suggest that by 2030, CO_2 emissions from UK aviation (of which 97% will be from international flights) will amount to about a quarter of the UK's total contribution to global warming[4] by 2030. As yet, there is no international agreement on allocating these emissions to national greenhouse gas inventories.

5.3.2 *Key Features*

Halcrow contacted[5] Rochford District Council in order to obtain additional information regarding the baseline air quality environment within and in the vicinity of the study area. During the discussions it was confirmed that the primary air quality concern of Rochford District Council associated with the proposed runaway reconfiguration would be in relation to additional road traffic emissions in the vicinity of the airport.

Rochford District Council and Southend-on-Sea Borough Council have not declared any Air Quality Management Areas (AQMAs) therefore air quality is currently expected to achieve national air quality objective in the vicinity of the study area.

A review of baseline information provided in the *'Air Quality Assessment'* Chapter of the Environmental Statement (ES) for runway reconfiguration and associated works (Southend Airport Company Ltd, 2003) has been undertaken. It reported that the majority of pollutants were below the Air Quality Strategy thresholds. Baseline air quality levels were taken from the NETCEN air quality archive website and were reported as 26.2 $\mu g/m^3$ and 22.4 $\mu g/m^3$ for NO_2 and PM_{10} respectively. A two and a half week diffusion tube survey to monitor likely NO_2 levels was also undertaken in November 2002. This survey gave an average NO_2 concentration of 37.1 $\mu g/m^3$, which is significantly higher than the level reported by NETCEN however this result should be viewed with caution, due to the short term nature of the survey.

Background air quality predictions are also available through the UK Air Quality Information Archive (UKAQIA)which provides estimates of background air pollution concentrations across the UK at a resolution of 1 kilometres^2 grids for the pollutants of most concern. Data relevant to the study area is presented in the table below for the year

[3] The basket of greenhouse gases consists: carbon dioxide; methane; nitrous oxide; hydrofluorocarbons; perfluorocarbons; and hexafluoride – each weighted by their Global Warming Potential (GWP).
[4] It has been estimated that the global warming potential of aircraft emission is 2-4 times that of the emissions alone due to the effects of emissions at altitude.
[5] Telephone discussion between Paul Stephenson (Halcrow) and Martin Hawler (Rochford District Council) on 12 October 2007

2010. Predicted background concentrations of NO_2 and PM_{10} are considerably below the UK objective levels set for Local Air Quality Management.

Table 5-2: Predicted Background Air Quality Data

Pollutant	Annual Average Concentration (µg.m^{-3}) 2010
PM_{10}	20.7
NO_x	24.2
NO_2	17.5

Under the legal agreement associated with the planning permission for the new terminal development, the Airport has agreed to submit proposals for an air quality study within six months of the commencement of the development.

5.3.3 Opportunities and Constraints

Constraints

A summary of the key potential constraints is presented below:

- A number of policies in The East of England Plan, Rochford District Council and Southend-on-Sea Borough Council Local Plans could act as constraints where it cannot be demonstrated that the amenity value of surrounding local receptors will not be significantly impacted by poor air quality arising from future development. All future planning applications which may have a potential air quality impact within the study area should be subject to an air quality assessment in line with the objectives set in The Air Quality (England) Regulations 2000 [SI No. 2000/928] and Air Quality (England) Amendment Regulations 2002 [SI No. 2002/3043].
- Under the legal agreement associated with the planning permission for the new terminal development, the Airport has agreed to submit proposals for an air quality study. Air quality has also been raised as an issue during the consultation phase of the draft Master Plan. The results of this air quality study may impact upon the future development of the study area.
- The Government White Paper **The Future Development of Air Transport in the United Kingdom** is committed to meeting the mandatory EU limits for NO_2 and PM_{10} and has stated that 'major new airport development could not proceed if there was evidence that this would likely result in breaches of the air quality limits.' Whilst future background air quality levels in 2010 are anticipated to be well below these EU limits, air quality is anticipated to decrease with the significant increase in aircraft movements and related additional road traffic associated with the development.
- Air quality studies should consider the cumulative impact of the differing isolated development occurring across the site, in order to ensure that the requirements of the relevant policies are met over time.

Opportunities

As stated Rochford District Council and Southend-on-Sea Borough Council have not declared any AQMAs therefore air quality is currently expected to achieve national air quality objectives in the vicinity of the study area. A number of opportunities have been identified, which would assist with the minimisation of any potential air quality impacts during future development of the study area.

- Where possible, maximise the separation distance between, new 'heavy industrial' developments, developments which will generate significant employee traffic and sensitive receptors.

- Where the re-routing of traffic is required, consider route options which would avoid significant traffic congestion where possible.
- The development of a sustainable transport infrastructure, which promotes the use of public transport to minimise the road traffic related air quality sources.

5.4 Flora and Fauna

This ecological appraisal has been undertaken to provide a description of baseline ecological conditions and to identify the likely ecological constraints and opportunities within the study area relating to the potential future development of the site. A desk study was undertaken to obtain background information on any designated nature conservation areas that may be within or connected to the study area, relevant local planning and biodiversity policies, and biological records for the area. A walkover survey of the study area was undertaken on 8th October 2007, using Phase 1 habitat survey methodology[6]. The habitats present were recorded on Figure 7-1 and broadly assessed in relation to their potential for protected species.

5.4.1 Relevant Policy, Legislation and Guidance

National Planning Policy

Planning Policy Statement 9 – Biodiversity and Geological Conservation (August 2005) outlines the Government's commitment to the conservation of wildlife and natural features. It is mainly concerned with the protection of statutorily designated sites, although PPS9 also seeks to ensure that planning policies maintain, enhance, restore or add to biodiversity and geological conservation interests. Paragraph 14 states that:

"Development proposals provide many opportunities for building-in beneficial biodiversity … features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate."

Local Planning Policy

Within **Southend-on-Sea Local Plan,** biodiversity conservation is covered by Policy G6: *Nature Conservation*.

Rochford District Replacement Local Plan (RDRLP) contains comprehensive policies for the protection of biodiversity. These are listed below.

- Policy NR4 – Biodiversity on Development Sites
- Policy NR5 – European & International Sites
- Policy NR6 – Sites of Special Scientific Interest
- Policy NR8 – Other Landscape Features of Importance for Nature Conservation
- Policy NR9 – Species Protection

The Local Plan uses the Essex Biodiversity Action Plan (EBAP) as the local framework for the protection of biodiversity, and, in deciding applications for planning permission, the Council will take into account the effects on habitats and species identified in the EBAP.

[6] As described in the *Handbook for Phase 1 habitat survey – a technique for environmental audit*, Joint Nature Conservation Committee, 1993.

Other key requirements to be found in the biodiversity conservation policies, and of particular relevance in relation to the potential development of the study area include:

- adequate ecological information is to be provided for proposals submitted for development on Brownfield sites, or other sites thought to be of significance for nature conservation;
- incorporation of measures into the layout and design of their development schemes to facilitate and encourage biodiversity;
- integration of features such as ponds, hedgerows and tree belts into development schemes, and provision of replacement features where the removal of existing features is unavoidable; and satisfactory ecological survey of the site where it is evident that a proposal could affect a protected species.

Legislation

Specific habitats and species receive legal protection in the UK under various pieces of legislation, including:

- The **Wildlife and Countryside Act 1981 (as amended)** - which is the principal legislation covering wildlife protection and natural habitats, including the designation of Sites of Special Scientific Interest (SSSI);
- The **Countryside Rights of Way Act 2000 (CRoW Act)** - which increases protection for SSSIs, strengthens wildlife enforcement legislation, and provides for better management of Areas of Outstanding Natural Beauty (AONB);
- **The Conservation (Natural Habitats) Regulations 1994 (as amended 2007)** which is known as the Habitats Regulations and transposes Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the EC Habitats Directive) and the Council Directive 79/409/EEC on the conservation of wild birds into national law, and is therefore concerned with the protection of 'European sites' and 'European protected species'; and
- **The Hedgerow Regulations 1997** (SI No. 1997/1160) - which is intended to protect important countryside hedges from destruction or damage.

The ecological appraisal takes account of the legislative protection afforded to specific habitats and species where applicable.

5.4.2 Key Features

Natural Areas

The study area is situated in the London Basin Natural Area, as defined by Natural England, which is characterised by urban areas and agricultural landscapes containing islands of semi-natural habitats. These habitats include large areas of woodland, with extensive stands of mature beech woods, significant areas of lowland mixed deciduous woodland and numerous large wood pastures and parklands.

The Natural Area profile lists grassland (particularly species rich semi-improved or unimproved grassland) as one of its priority habitats, and a number of priority species which could potentially occur in the study area, e.g. brown hare, skylark.

Designated Sites

No part of the study area is designated for nature conservation purposes. However, the tidal limit of the internationally designated Roach Estuary is situated within the north-eastern edge of the site, and the boundary of the designated site is only about 1

kilometres downstream. The Roach Estuary forms part of the Crouch and Roach Estuaries (Mid-Essex Coast Phase 3) Special Protection Area (SPA), Ramsar Site, Essex Estuaries Special Area of Conservation (SAC) and Crouch and Roach Estuaries SSSI. These designations are based largely on the international importance of the estuary for waterfowl populations. It also forms part of the Essex Estuaries SAC and European Marine Site on the basis of its estuarine and saltmarsh habitats.

Between a 1 and 2 kilometres radius of the site there are two SSSIs and three Local Nature Reserves (LNR), namely: Hockley Woods SSSI/LNR, Garrold's Meadow SSSI, Marylands LNR and Magnolia Fields LNR. In addition, the Rochford District Local Plan has identified three Local Wildlife Sites within 1 kilometres of the site, namely Potash Wood, Sutton Ford Bridge and Doggett's Pond.

Habitats, Flora and Fauna

The landscape of the site is characterised by a mix of agricultural land, residential areas, industrial estates and the airport itself (Figure 5-1). Key features of the landscape, from an ecological perspective, are large areas of amenity and agricultural grassland, large hedgerows or linear tree belts, and some streams and ponds.

Information on bird life in the study area is sparse, but a number of legally protected[7] mammal, reptile and amphibian species have been recorded within the search area, namely: pipistrelle bat *Pipistrellus* sp., brown long-eared bat *Plecotus auritus*, noctule bat *Nyctalus noctula*, water voles *Arvicola terrestris*, common lizard *Lacerta vivipera*, slow worm *Anguis fragilis* and great crested newt *Triturus cristatus*. Not all of these species have been recorded within the site area itself, details of those which have are documented below. Even though species have not been recorded on site there is still potential for them above to be present on site.

For the purpose of this appraisal, it is useful to divide the site into three sections, i.e. northern, central and southern.

(a) The northern section

The northern section, between the airfield and the perimeter roads, is characterised by arable fields and pasture; large hedgerows and linear tree belts; amenity grasslands including a golf course and sports fields; and several ponds. This area can be further divided into:

The eastern segment which is occupied mainly by the golf course, although there is a row of houses with large gardens along the northern edge, and a recreation ground and pond on the eastern side of the railway line south of the railway station. Rayleigh Brook runs across the golf course where it merges with Eastwood Brook to form Hawkwell Brook before entering the River Roach via the recreation ground pond. A large number of trees are scattered across the golf course, and there are a few ponds. Water voles have been recorded in the brooks, and a roost of pipistrelle bats have been recorded in the golf course area. The potential exists for other notable species to occur in this area, including great-crested newts in the ponds[8]. As a result of the protected species that occur (and potentially occur), for the purpose of this study, this area has been assessed as having a district value for its ecology.

[7] Under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) which provides legal protection from intentional killing or injuring and, in some cases, destruction of or damage to places used by the animals for shelter

[8] Great crested newts have been recorded in Doggett's Pond, less than 1 kilometres away.

The western segment which consists predominantly of arable fields bordered by large hedgerows and linear tree belts, although there are two sports fields and a disused Brickworks' site on the western edge. Rayleigh Brook runs through the centre of this area, and Eastwood Brook forms the south-eastern boundary. The hedgerows/tree belts are key habitats, potentially designated under the Hedgerow Regulations, and may be considered to be of district or county value on the basis of the RDRLP and local BAPs. These hedgerows, as well as the brook, the disused Brickworks' site and the fields themselves, provide potential habitat for a wide range of protected or notable species such as brown hare, *Lepus europaeus*, dormouse *Muscardinus avellanaris*, bats, grey partridge *Perdix perdix*, skylark *Alauda arvensis*, song thrush *Turdus philomelos*, and reptiles. In addition, four badger *Meles meles* setts have been recorded along the western boundary close to the perimeter road (Cherry Orchard Lane).

(b) The central section

The central section, which mainly comprises the airport and Lancaster Business Park, is characterised by grassland and boundary habitats. Most of the airfield grassland shows characteristics of semi-improved grassland, although it was surveyed and assessed for the Rochford District Wildlife Sites Review but failed to meet the site selection criteria. Nevertheless, this grassland is potential habitat for such species as skylark, a UK BAP species. The Eastwood Brook forms the western boundary and is flanked by a wide strip of tall ruderal vegetation and thick hedgerows. Potential habitat exists along the brook for a range of bird species, as well as water vole and bats, but there are some areas of Himalayan balsam *Impatiens glandulifera* which is an invasive alien species. This section has been assessed as having local value for its ecology.

(c) The southern section

The southern section, to Prince Avenue, is characterised by arable land and residential development. However, SoSLBAP highlights the local/district value of the hedgerows along Eastwoodbury Lane and the allotments along Rochford Road, and indicates the potential presence of skylarks, bats and reptiles in the area covered by this study. A population of common lizard is known to have been present in the past on the boundary of the site area at Comet Way, but this was translocated to make way for road construction.

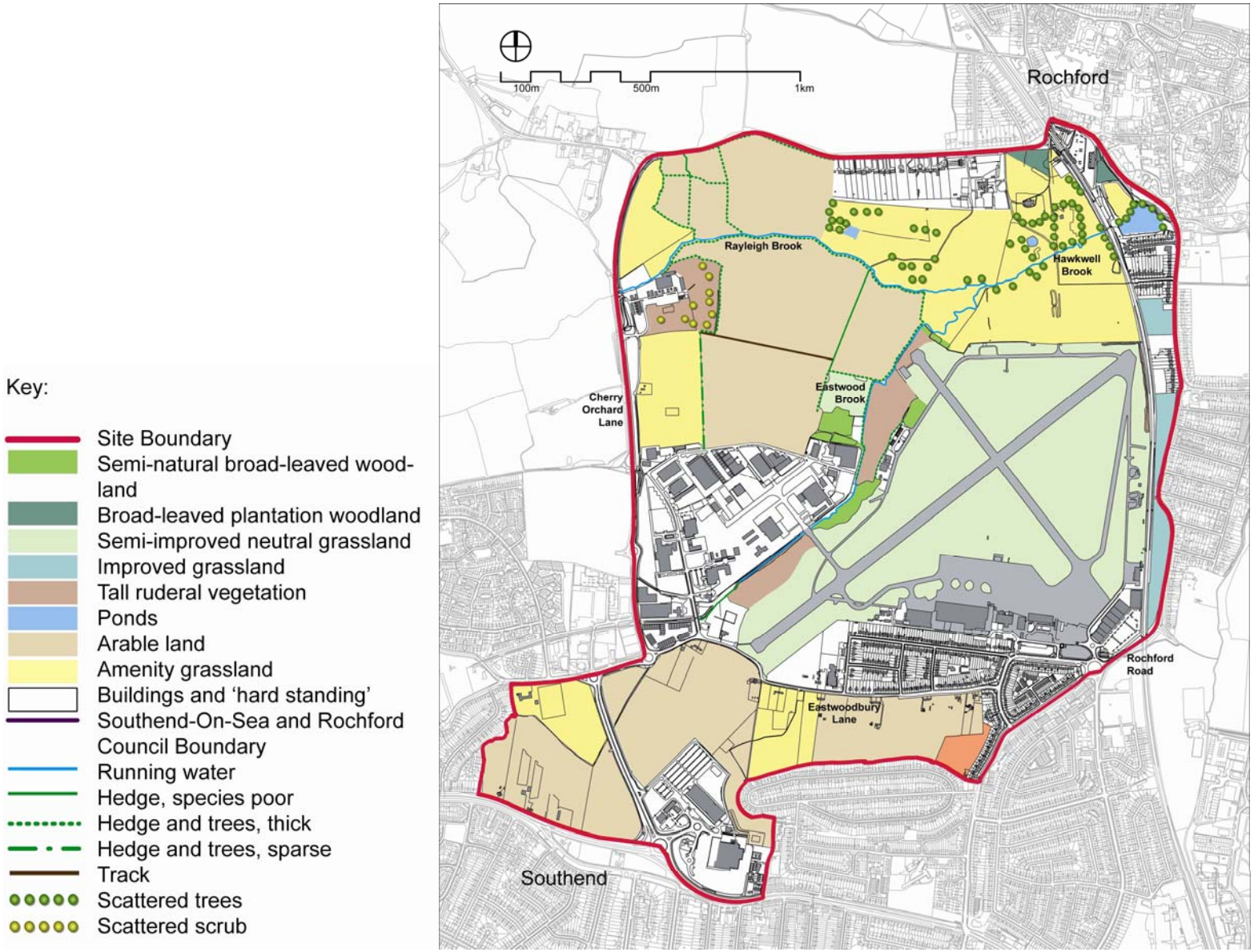
5.4.3 Opportunities and Constraints

The following provides an overview of the issues, constraints and opportunities associated with flora and fauna and the proposed development of the study area.

Constraints

- Potential future development related to expansion of the airport could potentially cause disturbance to the internationally important estuary waterfowl populations, due to the proximity of the site to the Crouch and Roach Estuaries SPA/Ramsar site/SSSI and the Essex Estuaries SAC. This potentially would need to be assessed in relation to the UK Habitats Regulations in liaison with Natural England.
- The presence of valuable habitats in the study area, especially the hedgerows, linear tree belts, and ponds in the northern section. In accordance with local planning policy, it is likely that they would need to be integrated into future development schemes, or replaced if the removal of existing features were unavoidable.
- A number of legally protected and other notable species have been recorded in the site (particularly bats, water voles and reptiles), and there is potential for others to occur. Specific species surveys are likely to be required for the ES, which would be taken into consideration as part of the adjudication of the planning application for any proposed development.

Figure 5-1: JAAP Habitat Map



Opportunities

- There is the opportunity to maintain and enhance areas of existing and ecologically important habitat, including hedgerows and waterways, especially Eastwood Brook.
- Works could remove stands of the Himalayan balsam an invasive species which degrades the ecological diversity of streams.

5.5 Landscape

This section highlights the sensitivity of the site to landscape and visual change. The section highlights key landscape features and areas of visual amenity which may pose constraints to development options due to impacts on landscape character and visual amenity of the area. A site visit was undertaken by a chartered landscape architect on the 3rd October 2007, in order to identify key landscape features and visual amenity areas. The area assessed includes the Study Area and areas adjacent to the site boundary, which are within the zone of visual influence, i.e. areas which could be visually impacted by changes to the landscape within the site.

5.5.1 Relevant Policy, Legislation and Guidance

Planning policy relating to landscape character and designated Green Belt areas, which may be relevant to the site, is described in the following national guidance and local statutory documents.

National Planning Policy

Planning Policy Guidance 2: *Green Belts* (1995) - provides detail on inappropriate development within Green Belts and refines the categories of appropriate development. This emphasises that the visual amenities of the Green Belt should not be injured by proposals for development within or conspicuous from the Green Belt which might be visually detrimental by reason of their siting, materials or design.

Planning Policy Guidance 15: *Planning and the Historic Environment* (1994) details the importance of listed buildings and conservation areas as unique and irreplaceable records. PPG15 ensures that protection should be given not only to the assets themselves, but also to the settings which contribute to their character.

Local Planning Policy

Rochford Replacement Local Plan (2006)

Several policies in the plan relate to landscape and visual amenity. Particular regard should be given to the following:

- Policy R1 – Development within the Green Belt
- Policy NR1 – Special Landscape Areas
- Policy NR2 – Historic Landscape

Southend-on-Sea Local Plan (Adopted 1994)

Policies within the Southend-on-Sea Local Plan highlight similar requirements and considerations for the protection of important landscape features and visual amenity:

- Policy G1 – Development within the Green Belt
- Policy C2 – Historic buildings

- Policy C4 – Conservation Areas
- Policy C11 – New buildings, extensions and alterations
- Policy C14 – Trees, Planted Areas and Landscaping
- Policy C15 – Retention of Open Spaces

5.5.2 Key Features

The northern part of the site area, including the airport, is located within the Metropolitan Green Belt as detailed in the Rochford District Replacement Local Plan, within which there is a general presumption against inappropriate development.

Part of the land to the west of Cherry Orchard Way is designated as the Hockley Woods Special Landscape Area, described in the Rochford District Replacement Local Plan as *'a large unspoilt area, containing a complex of ancient woodlands and farmland on undulating ground between Hockley and Southend-on-Sea'.*

Cherry Orchard Jubilee Country Park is located to the west of Cherry Tree Way; "*The Council is committed to the development of the Country Park, recognising the significant contribution it will make strategically to the Thames Gateway Green Grid and to the breadth of informal leisure and recreational opportunities available for the public"* (Rochford District Replacement Local Plan, 2006).

In general, the northern section of the site has a rural character, although the roads are very busy. Rochford has the character of a small country town, and its centre, the area around the railway station, including the public open space and the area around Rochford Hall, are all within Rochford Conservation Area. The setting and relationship between Rochford Hall, St Andrew's Church and a number of nearby buildings is highly sensitive to visual change. The southern, south western and eastern areas predominantly comprise industrial/business parks and post-war housing estates with associated facilities (shops and schools). There are a number of horse paddocks further south between Southend Road and the railway line. Existing scrub with a few mature trees helps to screen the airport.

At present the entrance to London Southend Airport is from Eastwoodbury Crescent, situated in the centre of the site. A number of administrative buildings and large sheds and the airport terminal line an access road which runs along the back of gardens of properties on the north side of Wells Avenue. The landscape character of the airport area is characterised by broad open spaces with large sheds on the southern boundary.

The area to the south of the airport is dominated by post-war housing. To the south of Eastwoodbury Lane there are smallholdings, arable farmland and allotment gardens. Adjacent to this is a public open space, containing footpaths and play areas for children and teenagers. Maintenance is low key, with mostly meadow, scrub and old field hedgerows. This public open space is overlooked by the large Royal Bank of Scotland building which has tree planting along its western boundary. This south western corner of the site also includes a car park for the Royal Bank of Scotland building, a hotel and a superstore with additional associated parking.

In the south west section of the site are areas of open space between houses and industrial business estates and sports fields. These retain some rural characteristics such as hedgerows. There are some sports pitches and an area of arable farm land which is crossed by a public right of way to the west of Nestuda Way (B1013).

Existing hedges and lines of trees largely screen the existing airport site from the Roach Valley Way and The Glebe Farm and Glebe Cottage. These features should be retained and any gaps filled as required. Other properties to the south of Hall Road are screened from the airport by trees within the golf course and the natural topography.

The main landscape features and visual receptors within the perceived zone of influence include:

- residential properties both within and adjacent to the site
- workers in surrounding industrial and office developments
- users of the transport network
- users of public rights of way
- users of the country park
- users of the golf course and other sports facilities
- listed building – Rochford Hall and out buildings, St Laurence and All Saints churches
- existing vegetation, including mature hedgerows and trees

5.5.3 Opportunities and Constraints

Constraints

Constraints associated with landscape issues, can be related to either visual receptors which could by affected by any future development or landscape features which could be degraded as a result of any development. Constraints associated with visual receptors include the following.

- Development of paddocks situated on Southend Road would have an adverse visual impact on residents of the houses on the other side of the road and on users of the road.
- Development of the site could potentially increase visual impact on local residents, situated within the perceived zone of influence, both within and adjacent to the site. Development will potentially be visible from the B1013 roundabout, as well as the railway line.
- Development of the airport and airport industrial areas would result in a significant loss of visual amenity to local residents and users of Eastwoodbury Lane, including a number of scattered residential properties along Eastwoodbury Lane close to the end of the runway.
- Development of the brick works site is likely to have a significant impact on properties on Cherry Orchard Lane.

Constraints associated with landscape features include the following.

Further expansion of the Aviation Business Park should consider the visual impact to receptors. This is particularly significant because of the proximity of the Cherry Orchard Jubilee Country Park and Special Landscape Area to the west of Cherry Orchard Way and the River Roach Way. Further development is likely to have an adverse visual impact on these areas which is particularly significant as users are there to appreciate their surroundings.

Rochford Hall, its associated out buildings, St Laurence Church and All Saints Church, each grade 1 listed buildings, are visually attractive features in the landscape.

The loss of natural features including mature hedgerows and trees will decrease the visual quality of the study area.

Opportunities

There is the opportunity to improve stretches of Eastwood Brook and Hawkwell Brook by planting marginal plants.

Planting of belts of trees would both enhance the visual amenity and landscape quality of certain areas, and screen receptors from the potential visual impacts of developments. Suitable areas include the following.

- The north side of Eastwoodbury Crescent.
- The country park along the western side of Cherry Orchard Way. This would screen any developments to the north of the present Aviation Business Park, including the brick works site and the B1013.
- Wells Avenue. Many of the residents have planted trees at the end of their gardens to screen the sheds behind. If this area were to be redeveloped, there is an opportunity to set the access road further into the site and provide a buffer strip of planting along the boundary to act as an additional screen.
- Paddocks situated off Southend Road could be planted as community woodland, improving habitat, screening of the airport and providing new public open space for the nearby residential streets.

5.6 Recreation

This section highlights recreational features which may constrain future development as well as recommending potential recreational enhancements for the site area. Sources of information include a range of publicly available information such as local community websites and council websites.

5.6.1 Relevant Policy, Legislation and Guidance

National Planning Policy

PPG 17 – *Planning for open space, sport and recreation* – highlights the need for detailed planning for open spaces, sport facilities and recreational areas for local communities.

Local Planning Policy

Rochford District Replacement Local Plan

Policy LT6 – Private Open Spaces - "*Only in exceptional circumstances will the Council grant permission for development that would lead to the loss of existing playing pitches, children's play spaces, formal recreational areas, informal open spaces including allotments and amenity areas, whether in public or private ownership. Where open space is lost the Council will, other than in exceptional circumstances, expect open space or recreational provision of equivalent value to be provided*"

Policy R1 – Development within the Green Belt

Southend on Sea Local Plan

Policy G1 – Development within the Green Belt

5.6.2 Key features

The site area contains several public and private open spaces important for recreational use. Areas include a play area off Nestuda Way, adjacent to the Bank of Scotland building; school sports pitches to the west of Nestuda Way and north of Princes Avenue; and an allotment area off Rochford Road.

Rochford Hundred Golf Club is situated to the north of the Southend Airport and dominates the northern quarter of the site area. The 18 hole golf course is open to both members and non-member on a pay and play basis.

There is an extensive network of public rights of ways crossing the site. The largest of which is the Roach Valley Way, which runs within the north western corner of the site. The majority of the public rights of way do not appear well used, potentially because the surroundings are already degraded by the airport, industrial/business estates, roads and the golf course which makes access difficult.

Cherry Orchard Lane, in addition to being a minor access road, is a cycle route providing a sustainable transport link off the busy B1013 between the business and industrial parks and Rochford via a cycle path along the Hall Road footway. Cherry Orchard Lane has a neglected feel which may restrict the number of users.

Within the north eastern corner of the site there is a single fishing lake situated between Southend Road and the railway line.

5.6.3 Constraints and Opportunities

Constraints

- Development could result in the loss and/or degradation of valuable recreational areas and/or facilities.

Opportunities

- There is the potential for development to create valuable recreational areas and facilities.
- There is a potential to provide sustainable transport links between areas of housing and employment (Laurence Industrial Estate) and to link with the present cycle route along Cherry Orchard Lane. The current path along Eastwood Brook is neglected and overgrown at present.

5.7 Ground Conditions

This section reports on a desk study review of historical Ordnance Survey maps and geological maps undertaken to help identify any potential constraints, associated with land contamination and geotechnical properties, to future development options of the site area. The review of contaminated land was conducted within an area which incorporated the study areas, as well as a buffer zone of 50 metres from the site boundary.

5.7.1 Policy, Legislation and Guidance

National Planning Policy

Planning policy related to ground conditions includes:

Planning Policy Statement (PPS) 23: Planning and Pollution Control aims to ensure the sustainable use of land, encouraging the reuse of previously utilised land, and complements the legislation described above; and

Local Planning Plan

Policy PN2 – Contaminated Land

"*Planning applications for development on, or adjacent to, land which may have been contaminated by a previous use must include evidence that the possibility of contamination has been investigated and proposals for dealing with any remediation works are included.*

Development will only be permitted where:

- *it would not give rise to significant harm or significant risk of significant harm to health or the environment or cause pollution of controlled waters;*
- *it safeguards users or occupiers of the site or neighbouring land; and*
- *it protects the environment and any buildings or services from contamination Where appropriate, applicants will be expected to sign an agreement under Section 106 of the Town and Country Planning Act 1990 to ensure that remedial measures necessary to allow the development to proceed are carried out."*

Legislation

The legislative framework governing the definition of contaminated land is contained within Part IIa of the **Environmental Protection Act 1990**. The potential for land to be contaminated is assessed and suitable management measures identified in accordance with the Contaminated Land Report 11 – Model Procedures for the Management of Land Contamination (Environment Agency, 2004).

Guidance

The statutory guidance (DETR Circular 01/2006) which accompanied the Contaminated Land (England) Regulations, 2000 and brings into effect Part IIA of the EPA 1990 describes a risk assessment methodology in relation to 'significant pollutants' and 'significant pollutant linkages' within a source-pathway-receptor model of the site.

5.7.2 Key Features

(a) Contaminated Land

Several current and historical land uses have been identified within the site, which may have led to potentially harmful substances being released into the soil. These are detailed in the London Southend Airport Phase 1 Geo-environmental Audit (Halcrow, 2007) and are summarised here:

- two graveyards;
- redundant brickworks with associated kiln and tanks;
- a closed landfill site;
- current Southend airport with associated repair and fuelling activities;
- several industrial estates currently containing a variety of manufacturing processes (e.g. lighting, printing, electrical goods, printed circuits, wood products, plastics, sportswear);
- current and former petrol filling stations;

- garage and repair services; and
- sheet metal work and dry cleaning.

(b) Geology and Hydrogeology

The site lies within the area covered by the Geological Survey of England and Wales, 1:50,000 series map (Solid and Drift), Sheet 258/259, Southend and Foulness, which shows that the site is situated on Loam (River Brickearth) and buried channel deposits over London Clay of Eocene age. Sand and gravel River Terrace Deposits associated with the existing alignment of the River Roach are shown on the map in the north and west of the site.

The London Clay is described in the British Geological Survey Lexicon of Named Rock Units as "Fine, sandy, silty clay/silty clay Glauconitic at base." The London Clay is classified as a Non Aquifer (negligibly permeable) by the Environment Agency. The area around the meandering tributaries contains alluvium over 1st terrace sand and gravels, which are classified as a Minor Aquifer (low permeability).

The site does not lie within a Groundwater Source Protection Zone.

5.7.3 Opportunities and Constraints

(a) Contaminated Land

The main pollutant linkages of relevance to the site are presented in

Table 5-3 and Figure 5-2. The risk categorisation was determined based on Halcrow's Risk Categorisation document.

(b) Geology and hydrogeology

Ground conditions within the site may potentially cause problems for the future development due to the presence of unconsolidated soils resulting from geomorphological processes that have acted on the ground since the last glaciation. In particular, the area is reported to be underlain by collapsible soils known as loess. Collapse settlement of these soils may be induced by wetting, vibration or by exceeding the critical load capacity, which can result in damage to pavements and distress to structures on shallow foundations. It is reported by Lake *et al.* (1986)[9] that the extent of the loess deposit may have been misinterpreted in the past and that the full extent is presently not known. It is important that the location and extent of the loess deposits within the site be determined by investigation.

Glacial activity during the last ice age within this area has resulted in the formation of a broad U-shaped valley which cut into the London Clay strata. The buried valley was subsequently infilled with sands, gravels and brickearths which can be up to 25m thick. The bearing capacity of the buried valley deposits may therefore be variable. Soft alluvial deposits within the vicinity of the watercourses may be prone to consolidation settlement and longer term settlement due to secondary compression. The stability of existing earthwork slopes, e.g., the embanked sections of the railway, need to be considered during any redevelopment. The presence of any foundations and underground structures from earlier phases of development (unknown at the present time) may pose obstructions to any future development.

[9] Lake, RD., Ellison, RA., Henson, MR. and Conway, BW. 1986. Geology of the country around Southend and Foulness. Memoir for 1:50 000 sheets 258 and 259, New Series. HMSO, London

Figure 5-2: Site Conceptual Model

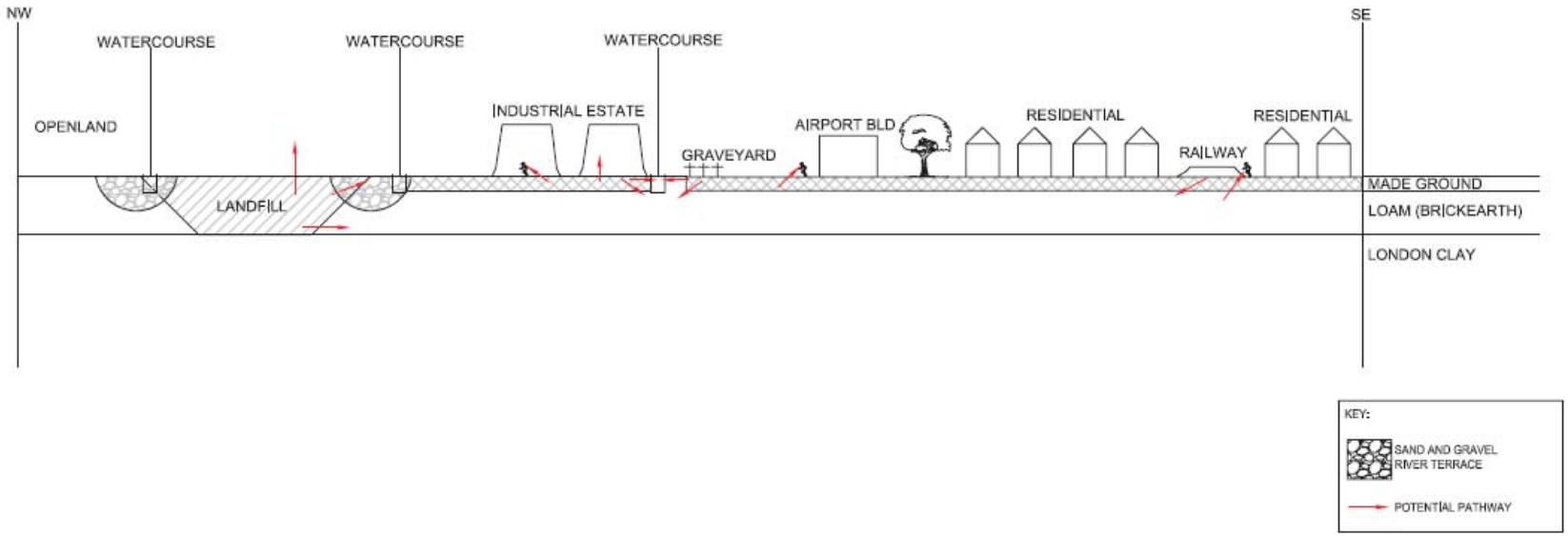


Table 5-3: Provisional Source-Pathway-Receptor

Source of Contamination	Possible source	Pathways	Receptors	Potential Significance (risk classification)
Organics in soil (e.g. Hydrocarbons, BTEX, Phenols, solvents, oils, PAH).	Railway, petrol station, airport, industrial estate, landfill	Direct contact, ingestion, inhalation of fumes during works	Humans	Low Risk
		Leaching	River Roach and tributary Sand and Gravel Minor Aquifer Perched water	Medium Risk
Herbicides/Pesticides	Railway, farmland	Leaching	River Roach and tributary Sand and Gravel Minor Aquifer Perched water	Medium Risk
Soil bound toxic metals	Railway, petrol station, airport, farmland, industrial estate, brickworks, landfill	Direct contact, ingestion, inhalation.	Humans	Low Risk
		Wind blown dust.	Humans (including off site)	Low Risk
		Leaching	River Roach and tributary Sand and Gravel Minor Aquifer Perched water	Medium Risk
Soil bound phytotoxic metals (e.g. Cu, Hg, Ni, Zn)	Railway, petrol station, airport, farmland, industrial estate, brickworks, landfill	Root uptake	Flora and vegetation	Low Risk
Soil gases	Railway, petrol station, industrial estate, airport, landfill	Migration through permeable strata Inhalation in confined spaces, including excavations, drains and service trenches	Humans	Medium Risk
Asbestos	Any buildings within the site	Inhalation	Humans	Medium Risk
Aggressive chemicals to concrete (e.g. sulphates and sulphides)	Railway, industrial estate, landfill, natural geology	Direct contact	Buildings	Low Risk
Pathogens	Farmland, graveyards, landfill	Direct Contact, ingestion, inhalation.	Humans	Low Risk

5.8 Archaeology and Cultural Heritage

This section highlights existing archaeology and cultural heritage within the site area, and what constraints and opportunities these may pose for future development options, as well the potential for unknown archaeological and cultural heritage features of interest. The assessment covers the study area plus a one kilometre 'buffer' zone projecting from the edges of the site boundary. Data were obtained from Southend-on-Sea Borough Council and from the Essex County Council Historic Environment Record (HER). Listed building information was obtained from the National Monuments Record (NMR) as developed and maintained by English Heritage.

The archaeological and cultural heritage data have been separated into designated and non-designated sites below. Using the HER data as a guide, likely further archaeological requirements have been assessed.

5.8.1 Policy, Legislation and Guidance

National Planning Policy Guidance

Planning policy relevant to the treatment of archaeology, historic landscapes and historic buildings, both designated and non-designated, which may be relevant to the site, is covered by the following national guidance and local statutory documents.

Regard should be given to the following National Planning Policy documents:

- Planning Policy Guidance 15: Planning and the Historic Environment (1994). This recognises that the listed buildings, conservation areas and other historic sites, which together form some of the individual elements of the historic environment, are a unique and irreplaceable record that contributes to our understanding of both the present and the past. In any development control decision, planning authorities are required to fully take account of, and mitigate the possibility of, unnecessary erosion or damage to this resource.
- Planning Policy Guidance 16: Archaeology and Planning (1990). The underlying principle is that archaeological remains should be seen as a finite and non-renewable resource and should be regarded as a part of the environment to be protected and managed. Where nationally important archaeological remains, whether scheduled or not, and their settings, are affected by a proposed development there should be a presumption in favour of their physical preservation. If physical preservation *in situ* is not feasible, an archaeological excavation for the purposes of 'preservation by record' may be an acceptable alternative. From an archaeological point of view, this should be regarded as a second best option.

Regional Policy

Essex Structure Plan (Adopted 2001)

The Essex Structure Plan, in relation to archaeology and cultural heritage states that particular regard should be given to the following:

- Policy NR5: Historic Landscape Features
- Policy HC1: Historic Settlements
- Policy HC2: Conservation Areas
- Policy HC3: Protection of Listed Buildings
- Policy HC5: Protection of Archaeological Sites
- Policy HC6: Archaeological Assessment

Local Planning Policy

Rochford Replacement Local Plan (2006). Several policies in the plan relate to archaeology and cultural heritage. Of particular relevance is

- Policy B1: Conservation Areas (General)
- Policy BC5: Development Affecting Archaeological Sites
- Policy BC6: Development Affecting Regional, County and Local Archaeological Sites
- Policy CS7: Conserving and Enhancing Heritage

Southend-on-Sea Local Plan (Adopted 1994). Policies relevant to archaeology and cultural heritage are:

- Policy C1: Ancient Monuments and Archaeological Sites
- Policy C2: Historic Buildings

Legislation

The **Scheduled Monuments and Archaeological Areas Act 1979** is the key piece of legislation concerning the protection of archaeological sites and ancient monuments.

5.8.2 Key Features

(a) Statutory and non-statutory designations

In terms of Scheduled Monuments (SMs):

- **Rochford Hall and associated ruins (SM No. EX41)** - a later medieval moated manor house – is situated approximately 200m north of the study area boundary. The schedule applies to the uninhabited ruinous portions of the buildings. The remaining inhabited portion of the building is a Grade I listing (see below). As the schedule incorporates extant remains, the setting of the monuments will be a potential constraint to future development.
- **Prittlewell Priory (SM No. 29418)** - a Cluniac Priory lying alongside the Prattle Brook is approximately 600m from the south east corner of the study area. The schedule includes both buried and extant remains, so the setting of these monuments will be a potential issue.

There are 81 listed buildings within the wider area covered, of which 3 lie within the study area. These buildings are:

- A milestone on the verge of the Southend Road (NMR listed building No. 123241) which is a Grade II listing;
- 'Cherry Orchard', (NMR No. 123182) a timber-framed 17th century Grade II listed house, and;
- The Church of St Laurence and All Saints (NMR No. 122902) on Eastwoodbury Lane which is a Grade I listing.

There are two more listed buildings that appear to abut the north western corner of the study area boundary. These are both Grade II listings:

- Nos. 17 and 19 Southend Road (NMR No. 123240) and;
- Nos. 39 and 41 Southend Road (NMR No. 123242).

The remaining listed buildings in the area are mainly to the north of the site and the majority are concentrated within Rochford town centre. This appears to be the closest area of historic settlement to the site, and is also a designated Conservation Area. The southern boundary of the Conservation Area borders the northern edge of the site boundary.

Non-designated archaeological sites and monuments

Data received from Southend Borough Council and Essex County Council HER indicate a total of 223 individual features within the study area and buffer zone which comprise archaeological sites; archaeological interventions; modern industrial sites; finds spots, and historic buildings. In total, 72 archaeological features are recorded as existing within the study area.

The data represent the known archaeological resource, but is not a total sum of the archaeology present within the site. Further detailed assessment would be required to make a determination of the likely archaeological potential within the site boundary.

It is clear from the number of records that the site contains a range of archaeological features originating from the prehistoric to the modern period. This is also reflected outside the site boundary; a total of 151 features are located within the 1 kilometres buffer zone. There is a particular concentration of sites to the south east of the site boundary at Prittlewell.

The site appears to have seen a certain level of prehistoric activity, both with respect to transient usage by hunter-gatherer communities and also areas of settlement from the Neolithic period onwards, as shown by the location of ditches marking areas of former communities. Together with evidence of funerary practices, it becomes clear that the site was subject to a variety of prehistoric activity.

The stand-out feature from the Romano-British period appears to be a Roman road bisecting the site. Although Romano-British sites within the site appear to be limited in comparison with other periods, the line of the road, which is perhaps more of an estimated projection rather than a fully proven orientation, indicates the presence of a very significant feature from this period.

The later medieval period is also represented reasonably well within the site, with a number of pottery spreads being present. The ecclesiastical centre of St Laurence's Church and All Saints Church appears to account for a number of entries in the database, including a listed designation.

The post-medieval and modern periods are also well represented across the site, with WWII features such as AA gun emplacements, and a plethora of other Defence of Britain (DoB) features including pillboxes, munitions stores and road blocks indicating the strategic value of the former Southend Airfield during WWII. Many of these DoB features have been destroyed by post-war development or clearance, but many still survive as extant structures within the site. It is clear from the data received that a high premium is put on these DoB features by Essex County Council, and that they should be treated as if they were designated monuments.

5.8.3 Opportunities and Constraints

In relation to statutory and non-statutory designations, the study area does not contain any SM monuments but there are two in relatively close proximity. These may be an issue to take into account with respect to the options for the JAAP.

The presence and settings of the listed buildings within the site may be a potential constraint to future designs. The presence of Rochford Conservation Area, which abuts the site, could also be a potential constraint.

The most likely archaeological issue that will potentially constrain future development will be the large quantity of non-designated archaeological sites throughout the site. The presence of areas of artefacts and settlements, together with the WWII DoB sites, indicates that there is likely to be further such features throughout the site which have not so far been detected. It is clear that human activity has taken place across the site in various forms since the prehistoric period, and that there is likely to be other, as yet undetected sites which could potentially become constraints to future development.

5.9 Water

This section details potential issues, constraints and opportunities for future development at the site in relation to the effect on local surface water bodies and flooding. Details have been taken from the Environment Agency website, as well as published Environmental Statement relevant to the site area. The assessment covers the study area plus an area of 250 metres from the site boundary. This area aims to include all resources which could be affected by future development both inside and adjacent to the site.

5.9.1 Relevant Policy, Legislation and Guidance

National Planning Policy

National Planning Policy related to water resources includes: Planning Policy Statement 25 *Development and Flood Ris*k – the statement details

Local Planning Policy

Rochford District Replacement Local Plan (Adopted June 2006). Policy relevant to water use, quality and flood risk are:

- Policy PN3: Protection of Water Quality
- Policy NR11: Development within Flood Risk Area – discusses what types of developments would be allowed with flood risk areas, and what planning requirements would be necessary.
- Policy NR12: Sustainable Drainage Systems – discuss the need for sustainable drainage systems reviews for developments
- Policy UT1: Foul and Surface Water Requirements – discuses the end to consider availability and capacity of foul and surface water sewers

Southend-on-Sea Borough Local Plan (Adopted March 1994)

- Policy U2: Pollution Control

Legislation

Legislation relating to water resources and potential development of the site are:

- **Water Resources Act 1991** – regulates discharges to controlled water, including rivers, lakes, estuaries, coastal waters and groundwaters.
- **Environment Protection Act 1990** - introduced to prevent the pollution of air, land and water, by regulating relevant processes.

5.9.2 Key Features

The main surface water features within the site are Eastwood Brook and Rayleigh Brook which flow in a north easterly direction through the site and converge to form Hawkwell Brook. This then flows into the River Roach approximately 400m to the east of the site boundary. Adjacent to the site, Prittle Brook flows in a northerly direction along the eastern boundary of the site before joining the River Roach to the north east.

Eastwood Brook flows in a north easterly direction, within a mainly urban catchment. The brook runs through Eastwood, situated to the south west of the site and around the perimeter of Laurence Industrial Park, to the west of Southend Airport. The brook then runs into Rayleigh Brook in the grounds of Rochford Hundred Golf Club, to form Hawkwell Brook.

Rayleigh Brook flows in an easterly direction across the northern part of the site. The brook flows east from Rayleigh through a rural catchment, before flowing into Rochford Hundred Golf Club. Hawkwell Brook is formed by the confluence of Rayleigh and Eastwood Brook, which flows in a north east direction around the south of Rochford town centre. After flowing through a fishing lake in the north east of the site, Hawkwell brook eventually flows into the River Roach, approximately 1 kilometres from the north eastern boundary. Prittle Brook flows eastward through Southend, before heading north and flowing parallel to the eastern boundary of the site, feeds to the River Roach.

Many of the agricultural fields within the site contain drainage ditches along their margins. Water levels within these ditches are quite low, with highly fluctuating flows.

Water quality in all four brooks ranges from Fair to Poor. Water quality monitoring undertaken by the Environment Agency under their General Quality Assessment (GQA) programme has highlighted significant failures and marginal compliance with river quality targets. Reasons for poor performance in the water quality targets relate to biochemical oxygen demand (BOD) and ammonia levels. Each brook is designated as having fair or fairly good biological quality, with chemical water quality ranging from fairly good to poor. Both levels of nitrates and phosphates within the four brooks are classed as being high or very/excessively high, supported by the notification that watercourses within this area are at risk from diffuse pollution, stated under the Water Framework Directive.

The estuarine section of the River Roach (the Roach estuary), situated 400m to the north east from the site boundary, is an internationally important site for nature conservation. The estuary is also important for shellfisheries, mussels and oysters, with the majority of the Roach estuary being designated as a Shellfish Harvesting Area under new Hygiene Regulations (Regulation 852/2004/EC, Regulation 853/2004/EC and Regulation 854/2004/EC). This makes the River Roach highly sensitive to changes in water quality, although the Environmental Statement produced for Reconfiguration of Runway and Associated works (Southend Airport Company Ltd, 2003) concluded that water quality within the River Roach is not affected by the inputs from either Prittle or Hawkwell Brook.

Licensed water abstractions within the site area include Rochford Hundred Golf Club and Tabor Farm Ltd, both for spray irrigation. There are several surface water discharge licences relating to the airport and industrial site, along both Eastwood and Prittle Brook.

The Environment Agency's flood maps indicate areas of flooding relating to Eastwood, Rayleigh and Hawkwell Brook within the site. Areas potentially affected by flooding include Aviation Way Industrial Park and areas of Rochford Hundred Golf Club. The flood risk is classed as a medium risk, having a less than 1.3% (1 in 75), but greater then 0.5% (1 in 200) chance of flooding each year.

5.9.3 Opportunities and Constraints

Constraints

- Development could be constrained by areas of flood risk. Types of development will need to comply with PPS 25, and any development will require a comprehensive Flood Risk Assessment.
- Development could result in a change in the fluvial characteristics of the watercourses highlighted, affected any aquatic specie present.
- Development could cause degradation of the quality of water for surface abstractions, though the mobilisation of introduced or existing contaminants.

Opportunities

- Development could incorporate the enhancement of the local watercourses, through planting, and general maintenance.
- Development could introduce both sustainable drainage systems and water resource usage.

5.10 Conclusions

This chapter documents a comprehensive environmental appraisal of the site proposed for future development in relation to the Joint Area Action Plan. The collation of baseline information of the site area has enabled a range of issues, constraints and opportunities related to future development to be highlighted.

The main issues and constraints to be considered for future development of the site are:

Noise and Vibration

- Areas of dense residential housing, like that found in the south eastern corner of the site, will contain receptors highly sensitive to noise and vibration levels
- Receptors will also be sensitive to cumulative affects of any construction works related to proposed development, and current background noise, originating from aviation, or industrial land uses.

Landscape

- Development could result in the loss of valuable open spaces, with important landscape features and valuable visual amenity areas present within and surrounding the site.
- The site has a range of receptors which will be sensitive to visual impacts related to development. These receptors are found across the site and include residents; occupants of industrial estates and business parks; and people using the site for recreation.

Ground Conditions

- The site has several areas which may contain elevated concentrations of compounds within the ground, derived from previous land uses e.g. landfill.
- The characteristic of the geology and soils of the site highlight the potential for unstable or unsuitable ground for certain types of development.

Water

- The site has areas of medium flood risk, notifying a 1.3% (1 in 75) chance of flooding each year. The type of development could be constrained by the Government's Planning Policy Statement 25 – Development and Flood Risk.

Flora and Fauna

- The site contains valuable habitats including hedgerows, linear tree belts, and ponds. Development works may be constrained by the presence of these features and related protected and important species.

The following constraints matrix (Table 5-4) summarises existing constraints and opportunities related to the site area. Constraints and opportunities have been summarised for individual areas of the site.

Table 5-4: - Potential Key Constraints and Opportunities

	Environmental Topic																				
Area	**Noise / Vibration**	**Adjacent residents**	**Adjacent Wildlife Areas**	**Air Quality**	**Local Air Quality**	**Flora / Fauna**	**Protected Sites**	**Notable species and habitat**	**Landscape**	**Landscape Character**	**Visual Amenity**	**Recreation**	**Recreational Area**	**Footpaths/cycle routes**	**Water**	**Surface Water quality**	**Flood risk**	**Ground Conditions**	**Contaminated Land**	**Geo-technical**	**Cultural Heritage**	**Archaeology**	**Historic/Listed Buildings**
A – Agricultural Land and Golf Course		o	-		o		o	-		-	-		+/-	+/-		+/-	-		-	-		-	-
B- Industrial Areas		o	+/-		o		o	-		o	o		+/-	+/-		-	-		o	-		o	o
C – Southend Airport		-	o		-		-	-		-	-		+	o		+/-	o		-	-		o	-
D – Southern Area (South of Eastwoodbury Lane)		-	-		-		o	o		o	--		+/-	+/-		+/-	o		-	-		-	o

Key - (o) = no issue (+) = potential opportunity (-) = potential constraint (+/-) = combined potential opportunity and constraint

PART 2: ECONOMIC STUDY

6 Socio-economic Context

6.1 Introduction

This section sets out the principle socio-economic characteristics of Southend and Rochford. Any considerations and plans for the future of the airport and the employment land requirements of the area need to take account of the prevailing socio-economic conditions and how they are likely to affect the future of the airport and the businesses located around it.

At present, the Airport supports some 1,000 FTE jobs, most of them in the highly-skilled, high-value Maintenance, Repair and Overhaul activities sector but also in other ancillary aviation-related activities such as business jet operations, flying schools and avionics. According to York Aviation's report the aviation cluster on and around the Airport provides 930 FTE direct jobs, 40 indirect and 80 induced.

Table 6-1: Summary of Baseline Employment and Income Impact in 2005

	FTEs			*Income (£m)*		
	Air	***MRO***	***Total***	***Air***	***MRO***	***Total***
Direct	120	810	930	£2.8	£19.5	£22.3
Indirect	10	30	40	£0.2	£0.7	£0.9
Induced	10	70	80	£0.3	£1.6	£1.0
Total	140	910	1,050	£3.3	£21.8	£25.1

Source: York Aviation, EEDA Socio Economic Impact of Southend Airport

6.2 Economic Activity and Unemployment

Economic activity rates show the percentage of the population that is either working or actively seeking employment. Statistics for 2006 show that 80% of Southend's working age population and 81% of Rochford's working population were economically active. The above rates compare favourably with the national average which was close to 79% in 2006 (Table 6-2).

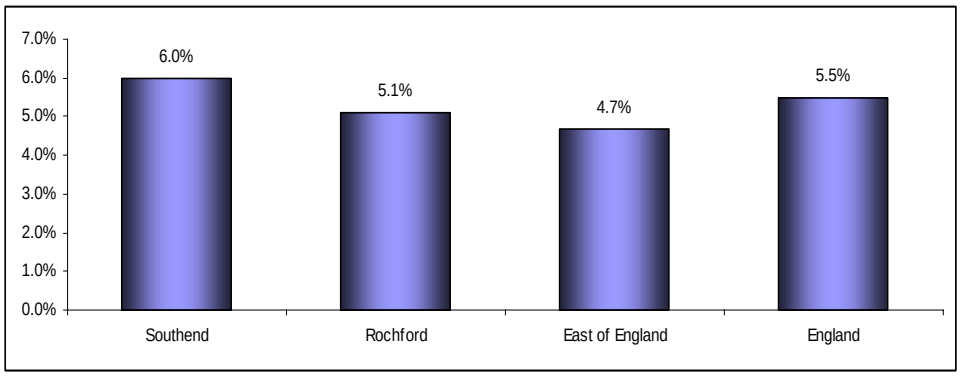
Table 6-2: Economic Activity Rates (%)

Year	Southend	Rochford	East of England	England
2004	81.2	82.0	81.7	78.3
2005	78.7	79.6	81.3	78.4
2006	80.4	81.1	80.7	78.6

Source: Nomis

Unemployment appears to be higher than average in Southend while it is about average in Rochford. In 2006 the unemployment rate in Southend was 6% (higher than the regional and national averages) while Rochford had a lower unemployment rate (5.1%) than the Southend and national averages but still higher than the regional average (Figure 6-1).

Figure 6-1: Unemployment Rate



Source: Annual Labour Force Survey, 2006, Nomis

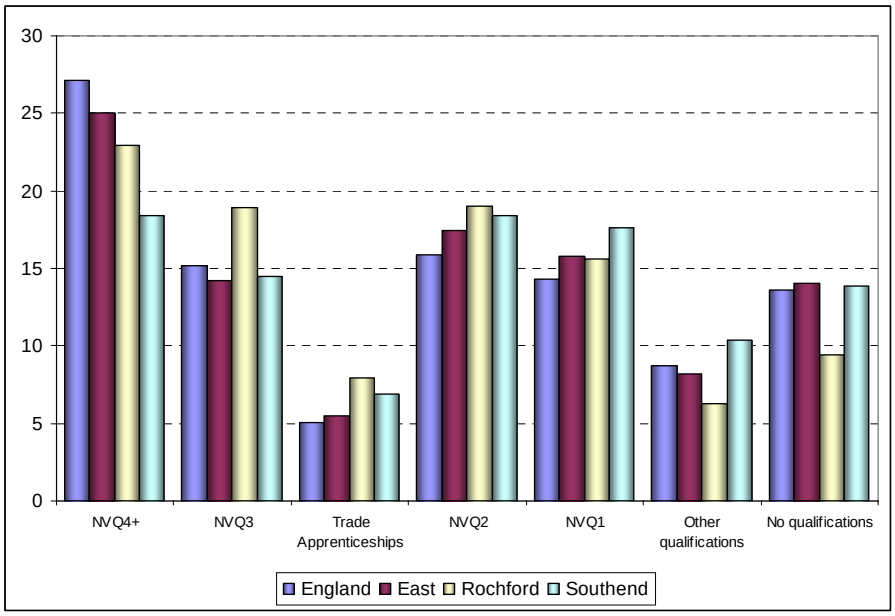
6.3 Qualifications and Skills

In terms of qualification and skills, Southend has a noticeably lower proportion of people with NVQ level 4+ qualifications (compared to the regional and national averages) and a higher proportion of people with NVQ level 1 or no qualifications (Figure 6-2). Rochford has a lower than average proportion of people with NVQ 4+ qualifications but a higher than average proportion qualified to NVQ level 3 or holding trade apprenticeships. It also has a low level of people with no qualifications at all.

A recent business survey highlighted the difficulty many local businesses had in recruiting people with the appropriate level of skills. The proposed plans for a Training Centre for MRO companies in the area would go a long way towards helping address this problem and safeguard the prosperity of the local MRO sector.

According to York aviation's report, most airline and airport employers are not looking for specialist skills but are experiencing a shortage of basic and generic skills in basic literacy and numeracy, IT skills, customer service skills, and supervisory or management skills. Having said that, there is a specific requirement from the MRO sector for more licensed aircraft engineers.

Figure 6-2: Skills and Qualifications (2006)



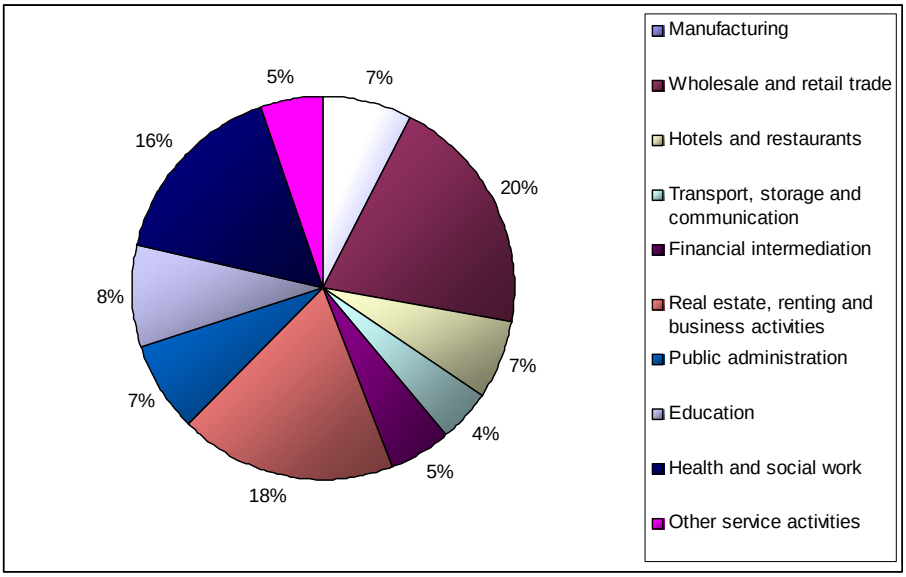
Source: Annual Business Inquiry, (2006) Nomis

6.4 Employment by Sector

Overall, employment has declined considerably over the past few years in both Rochford and Southend. According to Annual Business Inquiry (ABI) data, a net loss of 2,600 jobs was recorded between 2000 and 2005 in Rochford and a net loss of 8,300 jobs in Southend. That is a decline of 12% over the period 2000 to 2005 (although it should be noted that this data is subject to sampling and non-sampling errors).

In terms of employment profiles Rochford and Southend are quite different. Southend's employment breakdown is dominated by wholesale and retail, business activities and health and social work jobs. These three sectors jointly account for over half (53%) of the jobs in the district (Figure 6-3).

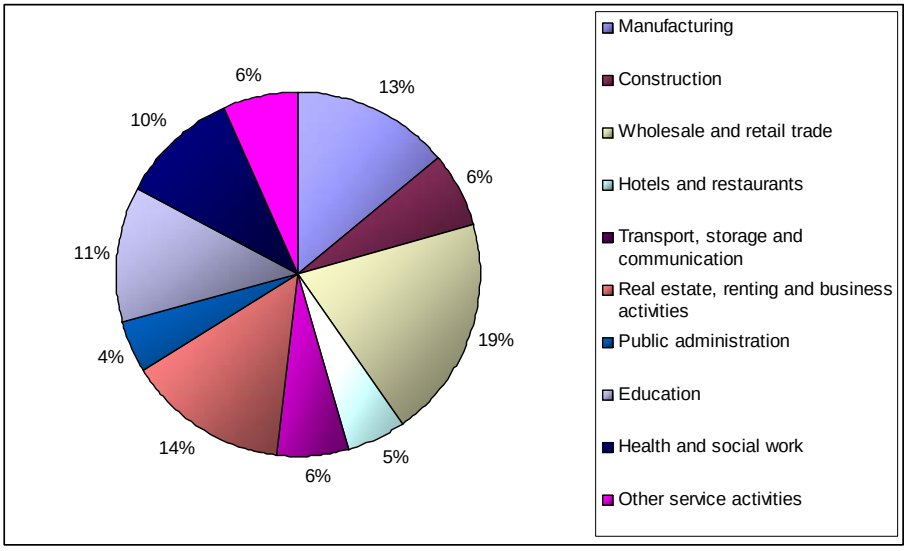
Figure 6-3: Southend Main Employment Sectors



Source: Annual Business Inquiry, (2005) Nomis

Rochford on the other hand has a more balanced sectoral distribution of jobs with manufacturing accounting for 13% of all jobs in the district (compared to only 7% in Southend).

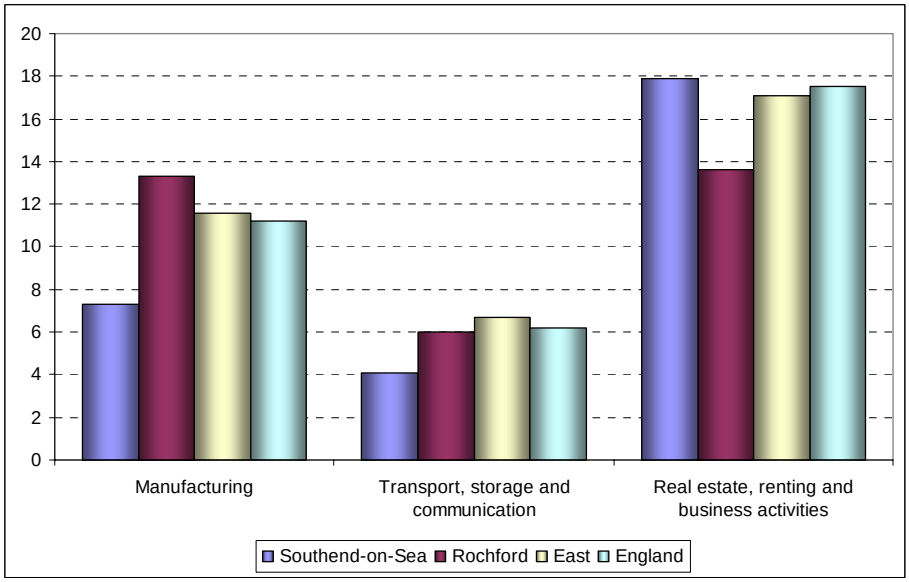
Figure 6-4: Rochford Main Employment Sectors



Source: Annual Business Inquiry, (2005) Nomis

As Figure 6-5 illustrates Southend has lower than average numbers of B2 (manufacturing) and B8 (transport and storage) jobs while Rochford has a substantial proportion of manufacturing jobs (higher than both the regional and national averages).

Figure 6-5: Southend and Rochford Employment Sector Comparison

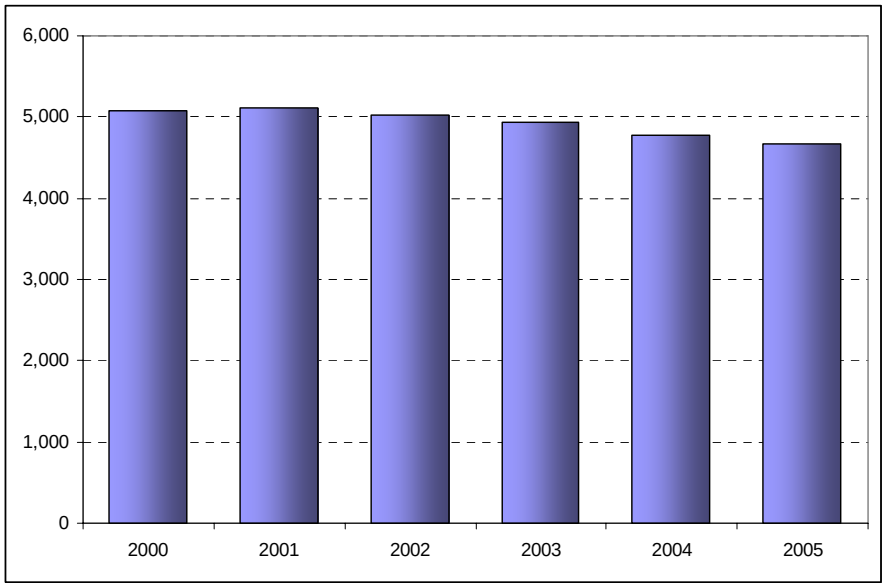


Source: Annual Business Inquiry, (2005) Nomis

6.5 Business Start Ups and Closures

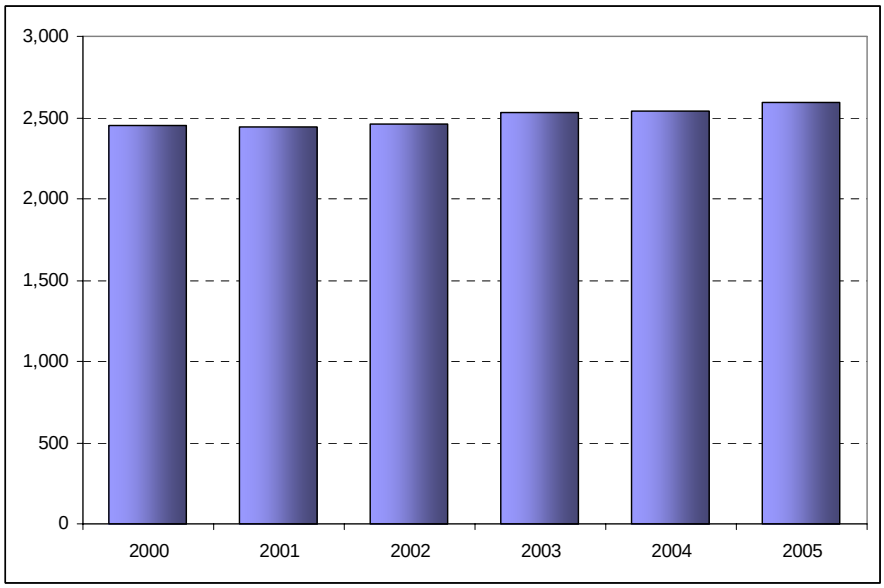
Annual changes in the stock of VAT registrations are a good indicator of the rate of business start-ups and closures in an economy. VAT stocks declined considerably year on year between 2001 and 2005 in Southend while Rochford witnessed a positive trend (Figures 6-6 and 6-7).

Figure 6-6: Southend VAT stocks at the end of the year, 2000-2005



Source: Nomis

Figure 6-7: Rochford VAT stocks at the end of the year, 2000-2005



Source: Nomis

In terms of industrial VAT stocks, Southend saw a significant decline in the number of manufacturing and transport, storage and communication VAT stocks while Rochford saw a modest decline in manufacturing stocks and an increase in the number of transport, storage and communication stocks (Table 6-3).

Table 6-3: VAT stocks at the end of the year: manufacturing and transport, storage and communication

	Southend		Rochford	
Year	Manufacturing	Transport, storage and communication	Manufacturing	Transport, storage and communication
2000	550	225	265	130
2001	535	225	265	120
2002	495	220	260	125
2003	480	200	260	130
2004	465	190	260	140
2005	435	190	255	150

Source: Nomis

7 Future Potential of the Aviation Sector

7.1 Introduction

This section presents initial analysis into the potential the aviation sector may hold for the study area. At a strategic level, as required by the brief, the analysis focuses on the policy framework and support for aviation clustering and an overview of the MRO sector.

7.2 Aviation Clustering

7.2.1 Overview

Clusters are generally defined as groups of inter-related industries. These groups have two elements. Firstly, firms in the cluster must be linked. Secondly, groups of inter-linked companies locate in close proximity to one another. Within a cluster the entire value chain (the groups of people involved in the stages of the activity, for example development through manufacture to distribution) should be represented. These can range from academic institutions with sector expertise to venture capitalists, and specialised suppliers.

Linkages between firms are both vertical, through buying and selling chains, and horizontal, through complementary products and services, the use of similar specialised inputs, technologies or institutions etc. Most of these linkages involve social relationships or networks that produce benefits for the firms involved.

Clusters can raise innovation and productivity in a number of ways. Companies benefit from sharing knowledge about best practice and reduce costs by jointly sourcing services and suppliers. Frequent interactions facilitate formal and informal knowledge transfer and encourage the formation and efficiency of collaboration between institutions with complementary assets and skills. The critical mass effect attracts further companies, investors, services and suppliers to the cluster, as well as creating a pool of skilled labour.

Clustering is one of the key drivers of regional economic growth, but it is not the only growth strategy that can be employed. Informal networking, developing supply chains and improving workforce skills can all contribute to improving competitiveness and creating growth.

7.2.2 Aerospace Cluster Policy Drivers

The aerospace industry is one of the UK's most dynamic and successful sectors, in an increasing competitive global environment. A Society of British Aerospace Companies' (SBAC) survey indicates that in 2006, the sector has a turnover of more than £19.81 billion, with companies directly employing 124,000 jobs across the UK economy. However, UK aerospace companies are also facing significant commercial challenges, due to the pressures of industry globalisation and supply chain consolidation. These challenges bring both risk and opportunity.

Globalisation threats include:

- Low cost entrants to the market (e.g. Poland)
- Large aircraft buyers demanding offsets (e.g. Saudi Arabia)
- Countries that have identified aerospace as being strategically important and investing public money to support large aircraft programmes and leveraging workshare (e.g. Japan)

One of the biggest challenges facing the UK aerospace industry over the longer term is the growing trend for trans-national aerospace companies to locate work in countries that have the most favourable industrial, scientific and technological, and general economic climate.

7.2.3 National Cluster Policy

Until April 2004, DTI/BERR funding for aerospace research was through the specific Civil Aircraft Research and Demonstration (CARAD) programme. Whilst some legacy projects are still ongoing, all new funding is through the Department's generic Technology Programme. As part of this, it has established a Knowledge Transfer Network (KTN) for aerospace and defence technologies, which is jointly funded by BERR and Ministry of Defence, with support from the Engineering and Physical Sciences Research Council. It ensures access to a network of industry, government and academic experts for independent strategic advice and allows industry a channel to the national aerospace and defence agendas. The Network also brings together partners in the aerospace industry to advance the UK's world-class manufacturing and supply chain.

The Society of British Aerospace Companies (SBAC) is the UK's national trade association representing companies supplying civil air transport, aerospace defence, homeland security and space. Together with its regional partners, SBAC represents over 2,600 companies, assisting them in developing new business globally, facilitating innovation and competitiveness within the firms and across supply chains, and providing regulatory services in technical standards and accreditation.

The SBAC works with UK Trade and Investment and UK MoD Defence Export Services Organisation to help UK companies access a number of priority markets, both at home and abroad. It also works with The Sector Skills Council for Science, Engineering and Manufacturing Technologies (SEMTA) on skills development in the aerospace sector.

In 2005, the regional aerospace representative organisations, the Farnborough Aerospace Consortium (FAC), Northern Defence Industries (NDI), North West Aerospace Alliance (NWAA), the Aerospace Wales Forum (AWF), the West of England Aerospace Forum (WEAF) and Midlands Aerospace Alliance (MAA), joined the SBAC in a move that strengthened the partnership between the regions and the national body for the aerospace industry. Discussions are ongoing with other regions and members of the UK Aerospace Forum to assist them in building a stronger and more cohesive partnership for the benefit of all companies in the sector.

The DTI and the aerospace industry, through the Society of British Aerospace Companies (SBAC) established an **Aerospace Innovation and Growth Team (AeIGT)** in 2002 to ensure the UK aerospace industry maintains its strong global position and developed world class technologies. Over 140 senior representatives from aerospace companies, government departments, trades unions, universities and research bodies were involved. It had the remit to set out a 20 year vision for the industry, that by 2022:

"The UK will offer a global aerospace industry, the world's most innovative and productive location, leading to sustainable growth for all its stakeholders."

The 2003 AeIGT Report recommended five areas for action:

- Focused aerospace applied research and demonstration
- Systematic and continuous delivery of productivity improvement
- Continuous development of a world-class workforce

- Creation of the right economic conditions, socio-economic environment and focused policies
- Spearheading international sustainable development in aerospace

The AeIGT developed a strategy to enhance the global competitiveness and success of the UK aerospace industry. Following its recommendation in 2003, actions in the following four main areas are now being implemented: Technology; Process Excellence; Skills; and Sustainable Aviation.

Since mid-2005, implementation of the AeIGT work has been overseen by the Aerospace Innovation and Growth Leadership Council, which comprises leading aerospace industrialists, senior Government officials, regional partners and trades unions. The **National Aerospace Technology Strategy (NATS)** came from the recommendations of the AeIGT for a focussed programme of applied research and demonstration, and for an authoritative forum to coordinate the activities that make up the programme.

The NATS identified the areas of applied research and demonstration needed for the continuing success of the UK aerospace industry. This has led to the development of Aerospace Innovation Networks (AINs) to determine and progress research in 13 technological areas including advanced aerospace materials and structures, advanced electrical power systems, high temperature materials, systems engineering, and so on.

The NATS is overseen by National Aerospace Strategy Group which coordinates the various funding streams from across government. A regional forum was set up to allow the RDAs to become involved with the NATS and there has been significant progress with securing funding from these sources. Delivery and coordination of the NATS at a working level is through the Aerospace Technology Steering Group (ATSG), which comprises representatives from the industry, BERR, MoD, RDAs and academia. A UK Regional Forum was created in 2005 by the UK RDA to better accommodate requests for funding research and technology (R&T) projects that sit within national strategies.

The RDAs are therefore full partners in the NATS, and as at March 2007, they had committed around £43 million to NATS technology validation programmes (DTI Report on Progress with the National Aerospace Strategy).

7.2.4 Regional Cluster Policy

The East of England Development Agency's cluster policy is founded on establishing the strengths and weaknesses of the regional economy, and identifying those sectors and clusters which provide significant and distinct regional competitive advantage. EEDA's approach to clusters was reviewed and updated by KPMG in 2006 to take account of emerging sectors and clusters. The review identified 13 sectors that were assessed as being significant to the sustainable growth of the East of England region, of which two, namely High Technology and Advanced Manufacturing and Transport Gateways are directly relevant to this assessment. Advanced manufacturing was considered to have an important role to play in the aerospace industry.

The most relevant cluster activity supported by EEDA is the **Eastern Aerospace Alliance** (based in Stevenage) and is an active business network set up to further the business interests of aerospace companies in the region. The Aerospace sector (including airports) in the East of England represents 8% of the regional economy with £4bn of business per annum directly attributable to the sector and another £2bn of business per annum attributable to the aftermarket. Companies directly engaged in Aerospace and Defence (excluding airports) employ almost 10,000 people and a total of 30,000 people are employed in the supply chain. The region is home to some of the world's leading aerospace including BAe Systems, Matra BAe Dynamics, Smiths Industries, Cobham Aerospace, GKN Westland, Astrium, TRW, Raytheon, and Lockheed Martin. Additionally Boeing carries out significant sub-contract work in the region. Supporting all of these in their supply chains are a significant number SME's providing products and services to the sector.

The aims and objectives of the EAA are:

- To raise the profile of the aerospace sector in the Eastern region and at national and European level
- To provide a channel for member companies to develop their position in the supply chain, addressing their critical high tech and R&D skills needs
- To provide a lobbying voice for the sectors interests at a local, regional, national and international levels and also the environment for competitive growth of the sector in the Eastern Region
- To develop the alliance to a position where it can offer access to the major aerospace exhibitions to those members who would not otherwise have a presence.

7.2.5 Cluster Success Factors

DTI (now BERR) research on clustering has identified three types of factors that are important for the development of successful clusters: critical success factors, contributing success factors and complementary success factors. These are outline below.

Critical Success Factors	• The presence of functioning networks and partnerships • A strong innovation base, with supporting R&D activities where appropriate • The existence of a strong skills base
Contributing Success Factors	• An adequate physical infrastructure • The presence of large firms • A strong entrepreneurial culture • Access to sources of finance
Complementary Success Factors	Not specifically cluster related but might include • Business support e.g. for new start-ups, marketing and marketing intelligence etc. • Leadership • Competition • Proximity to markets • Quality of life

The critical players in developing a cluster must be the firms themselves, as only through their active involvement will a cluster grow and become strong. Business leaders therefore have a vital role. Education institutions also have a role, and can act as educational and R&D/innovation catalysts to cluster development.

7.3 Overview of the MRO sector

7.3.1 MRO Market Trends

The MRO sector is one that is seeing some major dynamic changes, with a blurring of service providers and industry participants. Originally airlines undertook the bulk of maintenance themselves, but this is being increasingly outsourced to third party providers to control costs. The increasing costs of labour, technology and maintenance infrastructure, the downturn after September 11th and several high profile airline bankruptcies led to a contraction of airline MRO activities, particularly in North America.

The outsourcing trend is expected to increase as legacy carriers streamline their operations to reduce costs. They are also looking at lean techniques and cheaper PMA (parts manufacturer approved) parts i.e. non-OEM (original equipment manufacturer) parts. Maintenance consultancy AeroStrategy, estimates that just over 50% of overall maintenance at major airlines globally is outsourced, a figure expected to rise to 60% by 2016. Outsourcing will be further driven by the introduction of new engines with high barriers to entry, in addition to increasingly sophisticated components.

Consultancy TeamSAI research indicates that about 80% of all outsourced work remains in the operator's region, while the remaining 20% is exported to other regions. Traditionally, there has been a general rule that the larger the aircraft, the more likely an operator is to have heavy maintenance work done further afield.

The overall shift towards outsourcing has been creating opportunities for independent MROs. There also appears to be a trend in partnering between companies with airframe specialists teaming up with engine and component overhaul firms to offer a one-stop shop.

Increasing maintenance solutions are being provided in the form of 'total support' and 'life cycle support' packages, long-term comprehensive contracts and so-on. MRO providers are offering a range of single-commodity or single-service agreements, or 'integrated solutions' in components and engines, and broader solutions covering any combination of aircraft, engine, components, and services.

Increasing competition is being seen from airframe and engine OEMs that are now moving into the maintenance market, becoming service integrators, sometimes working in partnership with airlines or independent MRO companies. The engine OEM companies have led this move, rather than airframers, because of the amount of technology in an engine. New aircraft technologies such as electronic navigation aids, electronic flight bags, and composite materials etc., have also driven the need for additional capital investment in equipment and training. Therefore, airlines are increasingly relying on the OEMs who have already made this investment.

Figure 7-1: Factors Encouraging Successful Cluster Development

Key Factor	Requirements
Networks and Partnerships	Strong networks and relationships facilitate formal and informal flows of knowledge and information. Networks must have a purpose though e.g. deliver common skills/training needs, joint marketing etc.
Innovation & R&D Capacity	Product development and well-developed R&D structures are vital. Innovation relates to product or process, and R&D new knowledge. Innovation encouraged through networking and sharing ideas. Research institutes can act as catalysts for R&D. Support through funding, technology transfer schemes, and provision of research infrastructure etc.
Presence of Strong Skills Base	Successful clusters access and develop a strong skills base, which is a key factor in attracting and retaining companies. Quality and availability of training is important. Cluster managers should engage with local business leaders, education providers and Learning Skills Councils in the development of skills policies. Creating strong links between Higher Education Institutions (HEIs) and business essential to improve economic performance. Development of cluster skills centres.
Presence of Large Firms	Can form a focal point for wider cluster actions. Can act as 'anchors' providing a critical mass of skilled staff as well as being sources of technology, markets & expertise. They have multiplier effects in local economy for materials and services. Can stimulate networking, and act as 'mentors' to SMEs. The proximity of suppliers and other supporting firms can assist innovation and reduce transaction costs.
Physical Infrastructure	Modern and robust physical infrastructure, including the provision of facilities for companies and employees as well as good transport links. Suitable premises and adequate land supply. Availability of sites and premises for potential investors and for the expansion of existing businesses. Planning policies to facilitate cluster development – interlinkage with regional economic development
Entrepreneurial Culture	Ability/willingness to be flexible, to adapt to market changes & exploit new opportunities / technologies – 'can do' mentality
Access to Finance	Access/ proximity to venture capital firms, specialist resources, public & private R&D funding, business angels & investor networks
Business Support	Support for new business start-ups, spin-outs from companies or universities; business advice & guidance; marketing, market intelligence& networking assistance.
Leadership	Strong leadership from individuals or institutions - 'Champions'. Helps to remove obstacles, enhance collaboration, and develop vision
Competition	Clusters thrive on competition, but this does not preclude collaboration. Clusters may develop where key customers stimulate the development of competitive advantages amongst suppliers. Competition can stimulate innovation culture.
Proximity to markets	Access to national and international markets can secure continuing cluster development
Quality of life	An attractive environment can attract key workers and firms

New low cost maintenance providers in Eastern Europe and the Far East are also entering the market, further intensifying competitive pressures in the industry.

Research by Scottish Enterprise, which is strongly promoting investment in MRO activities in Scotland (particularly in a cluster centred on Prestwick Airport) has identified the following trends:

- Maintenance outsourcing is still increasing for airframe and line maintenance operations, but has reached a stable level for engines and components
- Total integration offerings for MRO are expected to increase significantly to 2010, with a corresponding decrease in 'a la carte' services
- The market has seen the consolidation and acquisition of MRO companies, a trend which is set to continue as companies move towards being total integrated service providers, as well as furthering internal development of existing capabilities
- Asia will continue to grow their MRO activity, with North America seeing the biggest drop, followed by Europe. Air travel in emerging markets such as India, Latin America, and Asia/Pacific is expected to grow much faster in future than the mature markets of North America and Western Europe. Boeing believes that over the next 20 years, the centre of gravity of the world airline fleet will move substantially towards the Asia-Pacific region.
- Parts manufacturer approved (PMA) parts (non-OEM) will continue to increase in all MRO areas, with an anticipated growth of 7% over the next three years
- Shortages in core materials for aircraft manufacture and maintenance, such as composites and some metals, may of necessity lead to some new challenges and opportunities in recycling, manufacturing, new material production etc.

The industry therefore has a quickly emerging need for service providers who can not only excel at the their current portfolio of capabilities, but also adapt themselves to the needs of carriers who are divesting their maintenance activities, and those of new entrants, be they low cost airlines or carriers in emerging markets, for comprehensive solutions.

7.3.2 Forecasts of the Global MRO Market

According to a forecast prepared for 'Overhaul and Maintenance' (O&M) magazine (April 2007) the worldwide MRO for commercially operated jet aircraft is worth US$ 41 billion, and is set to grow at a compound annual growth rate (CAGR) of 4.8% over the next five years, and then will slow to 4.0% CAGR from 2012 to 2017. By 2012, the value of the MRO market for western-built, commercially operated jets is expected to increase to $51.8 billion, and then to $62.9 billion by 2017.

The increased MRO spend over the 10 year forecast period is driven by airline fleet and utilisation growth, solidifying labour rates in traditionally low-cost labour regions and continued significant increases in engine parts and overhaul costs. Increasing capacity, however, will also cause MRO unit costs to continue to decline, although not as steeply as in the past several years.

AeroStrategy research indicates that a significant number of Airbus A320 and Boeing 737 New Generation series aircraft, which represented around 70% of total aircraft deliveries over a peak period of 1997 to 2002, will be subject to their first airframe heavy maintenance checks and engine removals, which will lead a short-term demand 'spike' over next few years.

The O&M forecasts divide the market into four sectors: Heavy maintenance visits (HMV) and modifications; Engine MRO; Component MRO; Line maintenance. Engine MRO represents the largest market sector, currently accounting for $17.1 billion, or approximately 42%. Spending on engine MRO is expected to increase at 4.5 – 4.7% per annum, reaching $21.6 billion in 2012 and $26.9 billion in 2017. A contributing factor to the rise in engine MRO spending is that new technology engines, which utilise new and expensive alloys and coatings because they burn hotter, are more costly to maintain. The bulk of engine MRO costs are related to parts.

HMV and modifications currently account for $8.6 billion, or 21% of the overall MRO market value. It is estimated to grow at a CAGR of 4.7% over the next five years, and then drop to 3.6% CAGR up to 2017, as newer, less maintenance intensive aircraft arte introduced by airlines. In particular, it is anticipated that the increased use of composite materials will help to keep airframe HMV costs down. Labour costs are a significant factor in this sector, with more than two-thirds of the cost of an HMV being labour costs.

The growing MRO capacity is driven by the increase in the number of aircraft being ordered and operated by airlines around the world. The 2007 O&M forecasts are based on a current global fleet of around 17,627 Western-built commercial jet aircraft, which is estimated to increase to 22,017 by 2012, and 27,457 aircraft by 2017. This represents a 4.5% CAGR over the 10 year forecast period. Fleet growth is in turn driven by traffic growth and the need to replace aging aircraft.

7.3.3 Trends in the European MRO Market

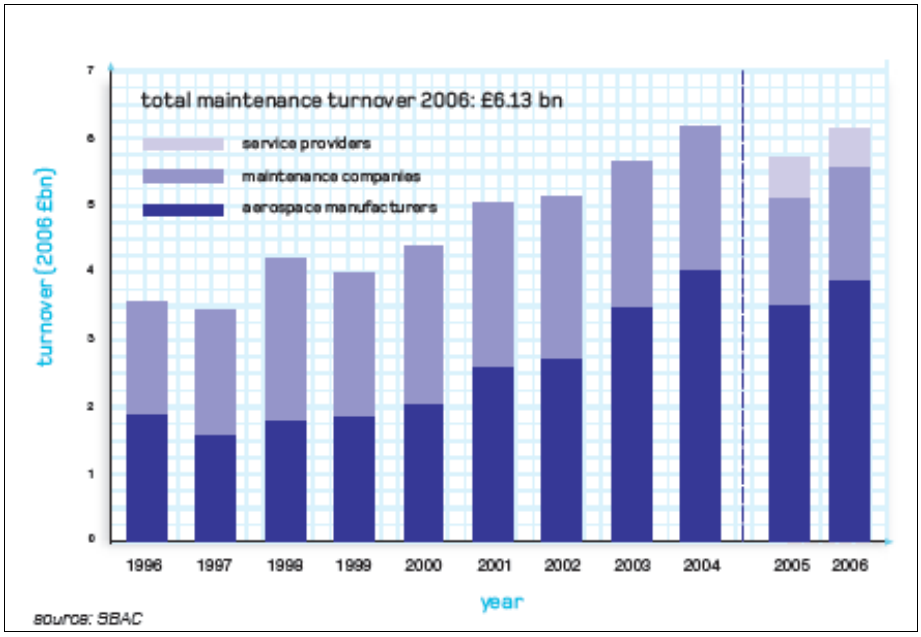
O&M estimates that Western Europe currently holds a 25% share ($10.4 billion) of the $41 billion global MRO market; second only to North America with a 38 % share. Current MRO spend Eastern Europe is only $1.2 billion, but is estimated to grow at 10.5% CAGR over the next 10 years. Enlargement of the EU, and the continued growth in intra-European air traffic between Eastern and Western European, together with the outsourcing of maintenance operations by low-cost carriers will continue to drive growth in the European commercial airframe and engine MRO market.

However the European MRO industry is also coming under significant pricing pressure. It has been adapting to major changes as its customer base shifts increasingly to a lower cost business model, and market share migrates to the highly skilled and well-educated, yet less-costly labour pools of Asia, and Latin America.

7.3.4 UK MRO Market Performance

The AeIGT Report indicates that UK MRO Sales in the year 2001 were, at $6.8 billion, approximately 16% of global MRO turnover. More recently the SBAC has published this year a UK Aerospace Industry Survey, which charts the turnover of UK MRO companies, as shown in Figure 7-2 below. Total MRO turnover in 2006 was £6.3 billion.

Figure 7-2: Turnover of UK MRO Companies



8 Market Assessment

8.1 Introduction

The market area assessed in this report, in relation to the property market, is the Southend-on-Sea Borough Council and Rochford District area, referred to as the 'market area'. The market assessment was undertaken by Savills Research.

A key aspect of the project has been to review the property market data, discussions with the local agency community and a site visit. Discussions with the agents include the Savills Chelmsford office as well as local agents within the Southend property market including Kemsley and Dedman.

The methodology adopted is to review the market statistics for the office and industrial markets, respectively. This is a historical analysis but gives an insight into the relative performance of the property market within the context of the wider UK. The past performance is no guide to the future but it does give an indication of the scale and type of development needed to attract and retain companies.

Savills Research have also reviewed a representative sample of employment locations, both office and industrial-related, throughout the market area and reviewed the type of offering for occupiers.

8.2 Office Market Analysis

The office market in Southend has been affected by various issues during the past decade, not least the availability of office product. The quality is not at a level to attract an appropriate level of inward investment to support job creation and growth. The town is constrained by its location with other key Essex office markets, including Brentwood and Chelmsford, being in closer proximity to London. At present, this creates an office market driven by indigenous demand. There has been an offering in the past with Victoria Avenue that forms a major entry point, and even a gateway, into the town centre. However, there is now a substantial level of dated office buildings and possibly unlettable without agreeing to substantial rental discounts.

There are a number of substantial office occupiers within the town centre, including the Government, RBS relocated to a new edge-of-town location on the A127, Lloyds Bank Card Services and HSBC Card Services. However, the office market is distorted by the size and quality of the existing stock. There have been some refurbishment schemes, including the introduction of mixed-uses, which helps support the values for developers. Residential-led schemes are most viable. For example, funding has been secured for a substantial conversion to key worker housing in Heath House on the western side of Victoria Avenue.

The key question is to address the state of the office market and the prospects going forward. With above average unemployment within the market area, there is potential for office-related occupiers to 'tap in' to this employment pool.

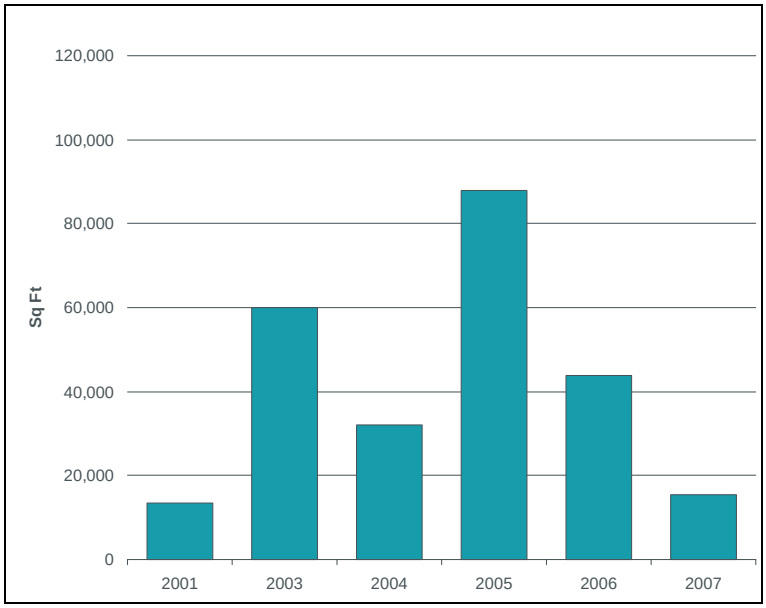
8.2.1 Office Property Market Overview

Southend-on-Sea is the largest office market for commercial offices in Essex whilst Rochford is the third smallest. Jointly they represent 16% of total office stock in the county. Office stock in the market area has fallen from its peak of 3.6 million sq.ft. in 2004 to its current level of 2.3 million sq.ft. The main reason behind the fall is the removal of obsolete office buildings from the market place. The existing office product available in Southend is generally poor.

Office take-up peaked in 2005 with just over 88,000 sq.ft. let. This is 85% up on the five-year average (2001-2006) of 47,500 sq.ft. Take-up to Q3 2007 stood at 15,500 sq.ft. This is down on the previous few years but there is a tendency that many deals will filter through the system in the fourth quarter, so Savills are expecting 2007 so be nearer the average by end of the year. The current data is presented in Figure 8-1 overleaf.

In quantum terms, the market is relatively small with only 1.7% of stock being transacted during the last five years on average. Discussions with local agents highlight the fact that Basildon is a preferred location at present and is 'blocking' office occupiers looking any further east.

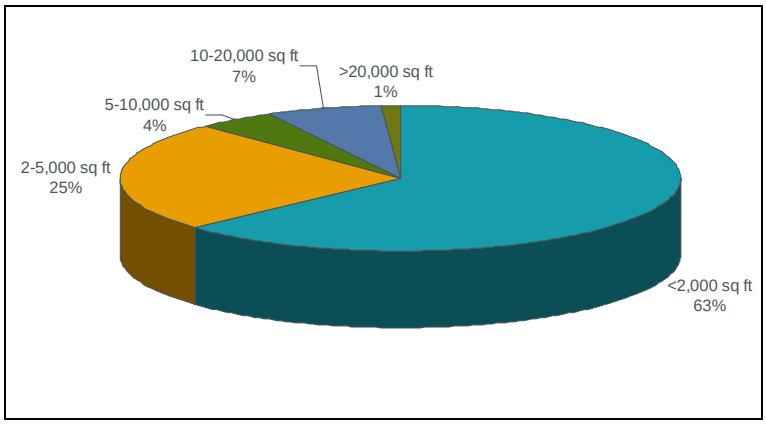
Figure 8-1 Southend and Rochford Office Take-up (sq.ft.)



Source: Focus

The low level of office take-up is justified by looking at the office take-up by size band as shown in Figure 8-2 overleaf. During the last five years it is possible to see where demand lies. The market area is characterised by small to medium sized deals, with over 60% of all deals in the last five years coming in at below 2,000 sq.ft. This data is based upon the number of deals (not square footage) since the beginning of 2001.

Figure 8-2 Southend and Rochford Office Take-up (sq.ft.)

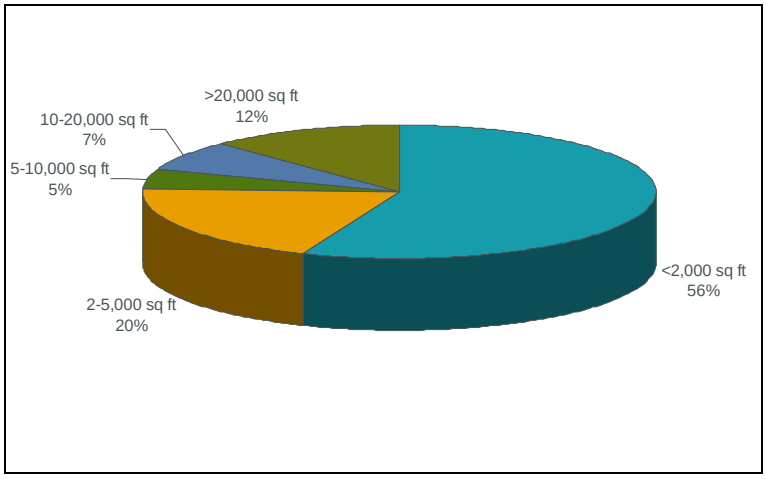


Source: Focus

Where better quality stock has been provided, there has been good demand. One agent mentioned Maitland House, which is off the High Street. This property was fitted-out to a good specification (compared to other offices in the market area) and has let around the £14 per sq.ft. per annum level. This type of evidence is encouraging in that if better stock was provided, including within close proximity to the airport, it could set new rent levels and attract or retain office occupiers. A view was that if the out-of-town market is good enough for RBS then there is no reason why other occupiers would not be attracted.

Current supply in the market area is nearly 310,000 sq.ft. (or approximately 10% of total stock), out of which 56% falls below 2,000 sq.ft. (see Figure 8-3 below). The most significant scheme, in terms of size, is available along the Victoria Avenue. Anecdotal evidence suggests that 40% vacancy rates have been identified in this sub-area. This is very high and is a sign that the office market in this location needs a major revival. Of course, the cheaper office space here will be appropriate for certain occupiers.

Figure 8-3 Southend and Rochford Office Availability by size band

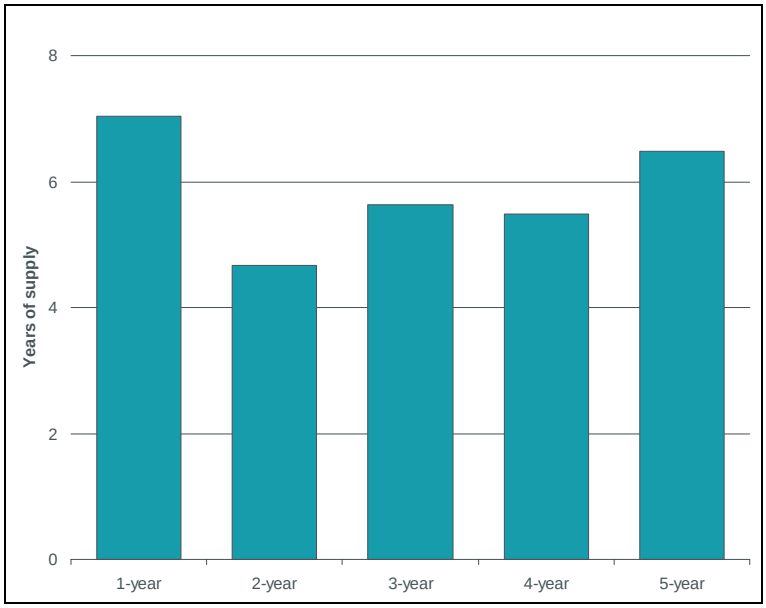


Source: Focus

Taking into account the average take-up in the last five years there is currently 6.5 years of supply in the market place. This is high compared to surrounding areas.

To run sensitivity on the years of supply measure, the annual average take-up for the last 1, 2, 3, 4 and 5-year periods are presented in Figure 8-4 below. The purpose is to show how the current supply is relatively constrained or over-supplied. What is shown is that there is anything between 4.5 and 7 years in the market at present depending upon which annual average is used for the analysis.

Figure 8-4 'Years of Supply' of offices using varying annual averages

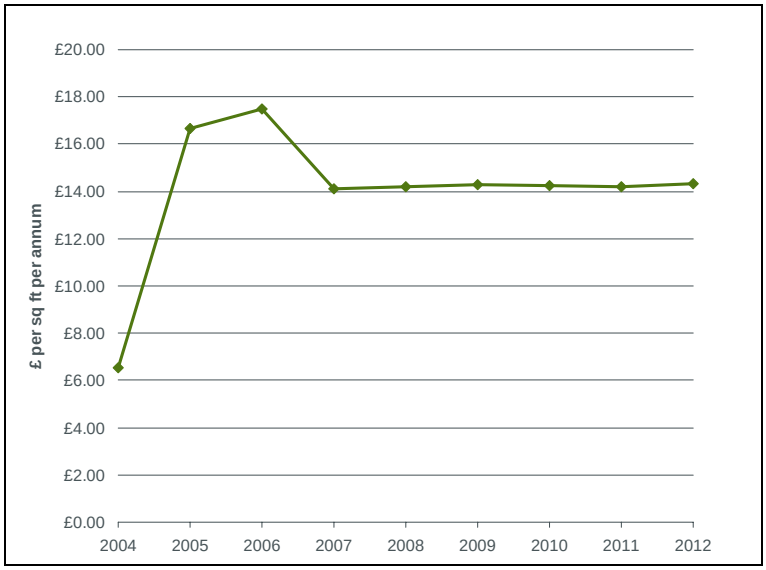


Source: Focus

Office agents within the market area have indicated that office conversion to residential is happening and is likely to continue. Higher values achievable are the driving factor. The agents also specified that any future development needs to be to the west of Southend-on-Sea, which enables better accessibility – this in our view would include the Southend Airport JAAP area.

With regards to the performance, using the data retrieved from the take-up data for offices, Savills has presented the top achieved rental levels achieved for offices for the market area in Figure 8-5 overleaf. Forecasts have also been included. Based upon the current office offering and the potential coming through the development pipeline, it is difficult to justify a rise in office rents over the next five years. The forecasts have also been influenced by the fact that £14 per sq.ft. per annum was mentioned as the top rent achievable at present.

Figure 8-5 Top Rents achieved for offices and forecasts

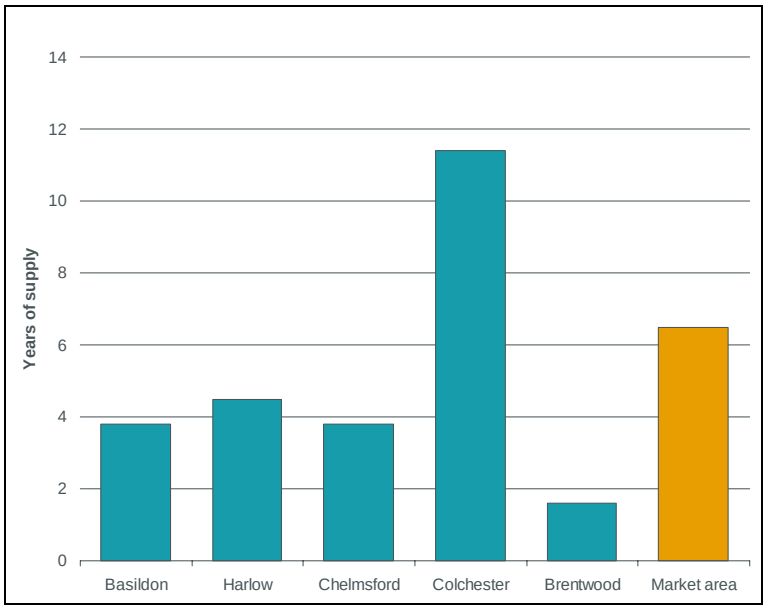


Source: Focus / Savills

8.2.2 Comparable Office Locations

Brentwood and Chelmsford are key office locations in Essex. Both have the advantage of being in closer proximity to London and have a superior provision of office accommodation. The 'years of supply' analysis as presented in Figure 8-4 above has been repeated for the key regional locations. As shown in Figure 8-6 below, the more significant office markets of Brentwood and Chelmsford have the lowest number of years of supply. Basildon, which also detracts occupiers from Southend, is also low compared to the market area.

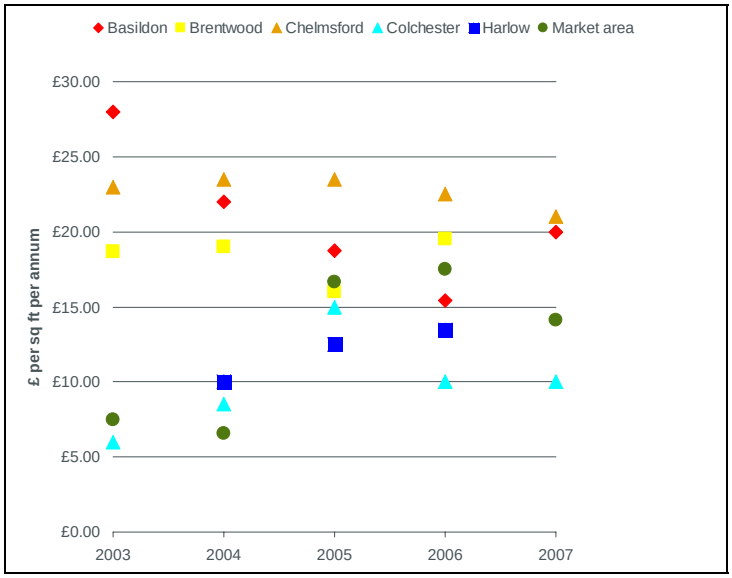
Figure 8-6 Competing Office Locations – 'years of supply'



Source: Focus / Savills

Chelmsford is the main commercial location in Essex, which is reflected in rents. It's a major manufacturing, technological and commercial centre with access to a large labour pool and is the home to over 4,000 businesses. It is also the chosen location for Essex County Council with The Majesty's Courts Service taking a pre-let at Priory Court, paying around £23.50 per sq.ft. per annum on a 35-year lease. Basildon and Brentwood are also performing well with good access to the M25 and both towns have more modern office stock.

Figure 8-7 Competing Office Locations – top rents achieved



Source: Focus / Savills

8.3 Industrial Market Analysis

The principal industrial estates have been the subject of an assessment and report by GVA Grimley in 2006 with a view to identifying a strategy for improving the range and quality of business and employment space. The recommendations include the reconfiguration of some of the estates to provide more up-to-date and efficient business space through a programme of land assembly and redevelopment. The market data presented in this report supports this fact.

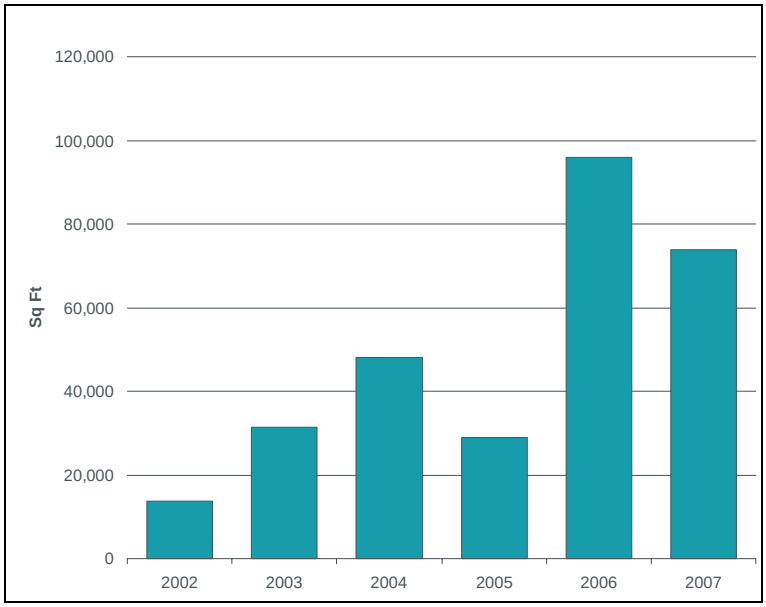
8.3.1 Industrial Property Market Overview

Industrial stock in Southend is 'middle of the pack' compared to the other Local Authority Districts in Essex; Rochford is low. It is unsurprising to see that Basildon and Thurrock, both with close proximity to the M25 motorway, have significantly higher levels of industrial-related stock, which include both factories and warehouses.

The conclusion to be drawn from the stock information is that the market area is not a major industrial location but serves indigenous demand and still has a role to play. Stock levels have remained static during the past few years.

Transactions in 2006 set a new five year record with just under 100,000 sq.ft. let (see Figure 8-8 overleaf). This is 120% higher then the five year average of 44,000 sq.ft. 2007 to date is slightly down on the previous year but already 69% up on the five-year average. There is a marked upward trend in industrial-related take-up during the last few years. However, the total quantum is exceedingly small. Of course, there may be some deals missing, but only 75,000 sq.ft. recorded is very low. Even double this number would be a small market considering the stock levels.

Figure 8-8 Southend and Rochford Industrial take-up (sq.ft.)

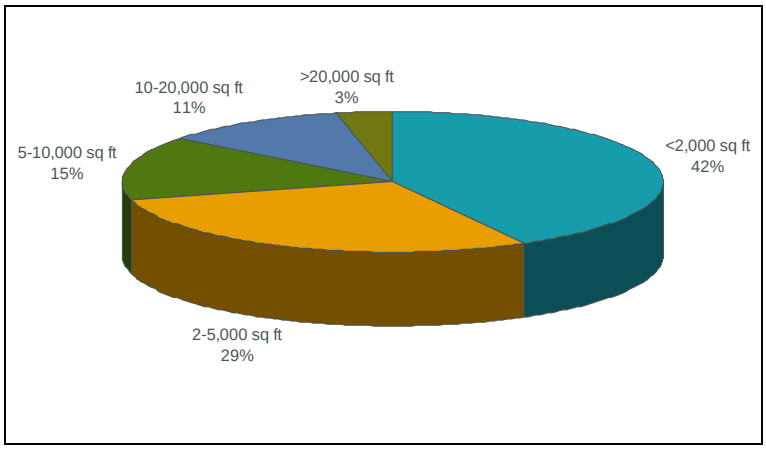


Source: Focus

As with the office market in the market area, the low level of take-up is justified by the significant proportion of deals (71%) signed below the 5,000 sq.ft. level since the beginning of 2001 as presented in Figure 8-9 below.

A discussion with one local agent highlighted the fact that one occupier is looking to consolidate its current property, presumably to increase efficiency. This is reflective of the type of demand in the market area at present. Indigenous companies will continue to drive the market, but it is likely that net additional demand will remain negligible. The market area requires net additional demand in some form of inward investment or significant expansion of current companies.

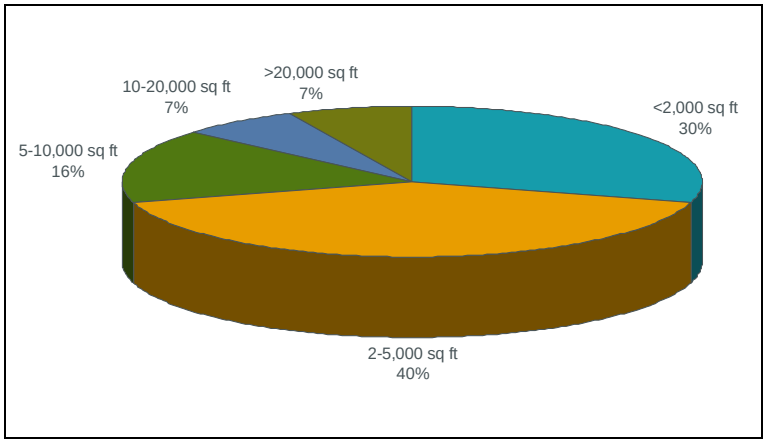
Figure 8-9 Southend and Rochford Industrial take-up (sq.ft.)



Source: Focus

In-line with the low take-up levels and the high proportion of small lot size, the current level of availability shows that 70% of property is below 5,000 sq.ft. This further illustrates the small-scale of the industrial market. Only 7% of current properties are above the 20,000 sq.ft. level, which itself is a relatively small industrial-related unit size.

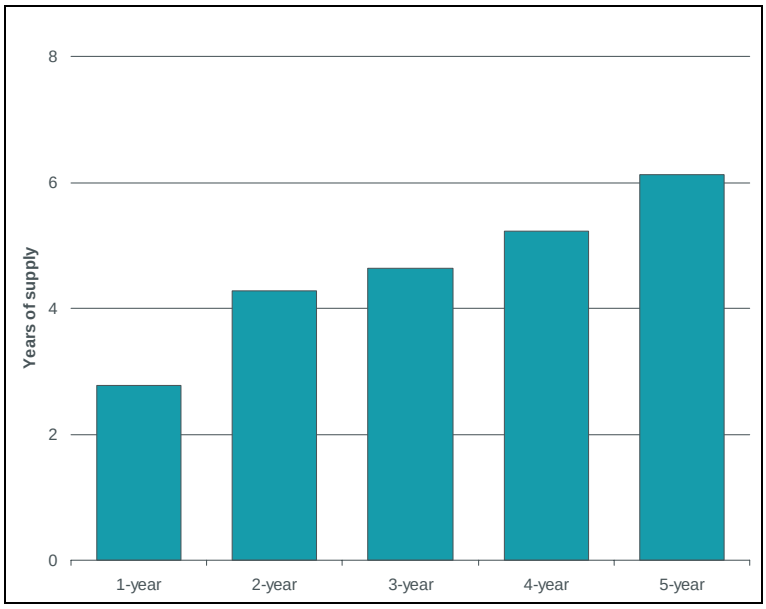
Figure 8-10 Southend and Rochford Industrial Availability by size band



Source: Focus

With the last couple of years showing higher levels of take-up, it is no surprise to see lower levels of 'years of supply, using the last 1 and 2-year periods, as shown in Figure 8-11 below. However, there are still between 3 and 4 years of supply on this take-up average. Based upon the last five years of take-up, there is over 6 years. This is high, considering that in a healthy market, there should be between 1.5 to 2 years of supply.

Figure 8-11 'Years of Supply' of industrials using varying annual averages



Source: Focus / Savills

The level of new development in the pipeline is exceedingly low, with current schemes in the market area only amount to just over 38,000 sq.ft. This requires no further comment and the market should be looking to attract some additional investment to maintain standards for future demand.

Despite the level of underperformance, the market area has shown a period of rising rents during the past few years, as shown in Figure 8-12 below. Considering the stock level and the relative under-performance of Essex, Savills expect rents to remain flat during the next couple of years before rising towards the end of the forecasts period. The rationale is that the market area remains a credible industrial location and demand levels are expected to be higher for such

property. However, even the higher rents will remain a discount to the wider market, which includes the rest of Essex and the UK.

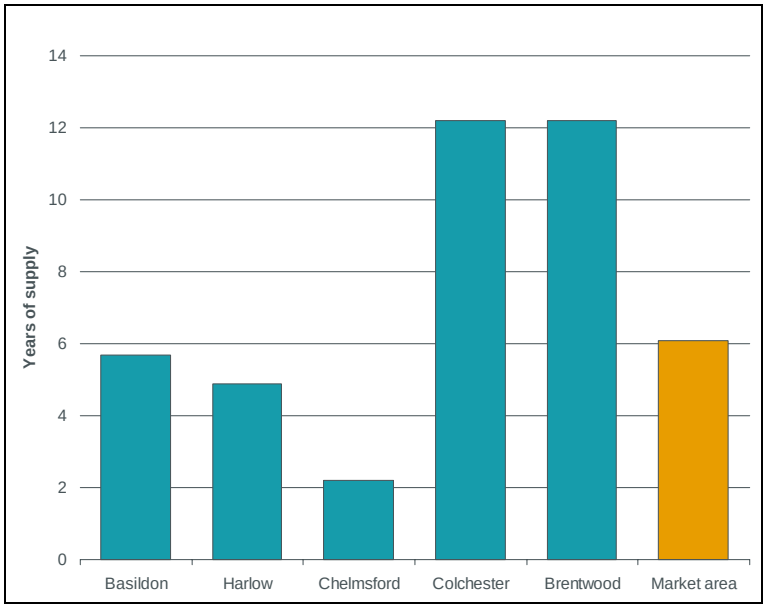
Figure 8-12 Top Rents achieved for industrials and forecasts

Source: Focus / Savills

8.3.2 *Comparable Industrial-related Locations*

To compare to other industrial-related markets, it is relevant to review the supply position, as shown in Figure 8-13. This is the key driver of future delivery of industrial property as well as gauges the likelihood of rental growth. With the exception of Brentwood, the other key locations all have a lower level of 'years of supply' at present. Despite being further from the M25, which is a key driver, the market area has around six years of supply compared to five for Harlow and just two for Chelmsford. Lower levels will encourage developers to build more property in those locations as demand and supply are moving together and more likely to result in restrictive supply in the future.

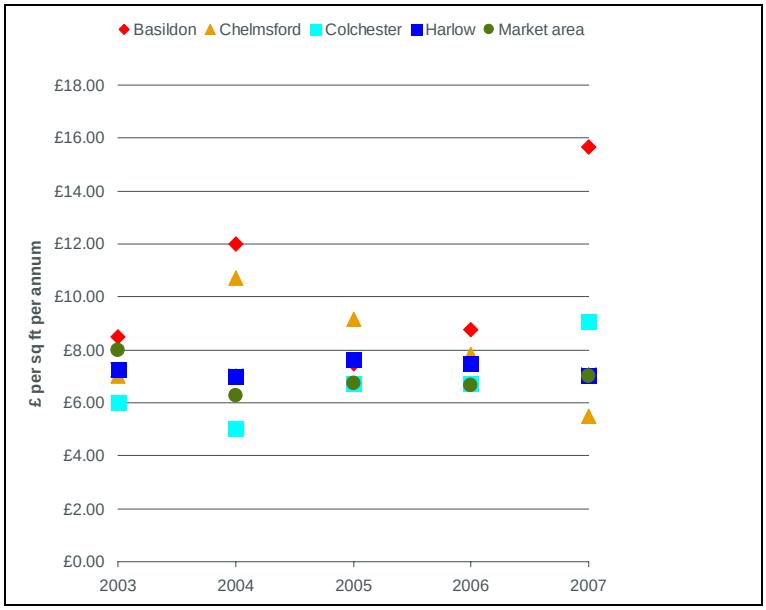
Figure 8-13 Competing Industrial Locations – 'years of supply'



Source: Focus / Savills

Basildon is a major industrial market in Essex, accounting for 31% of all take-up since 2002. Just under £16 per sq.ft. per annum was achieved in 2007, on a small industrial unit of 2,000 sq.ft. and on a short three year lease. Basildon has fairly similar years of supply compared to our market area but is on average achieving 50% higher rents, which shows a greater demand for industrial units.

Figure 8-14 Competing Industrial Locations – top rents achieved



Source: Focus / Savills

8.4 Potential for Inward Investment

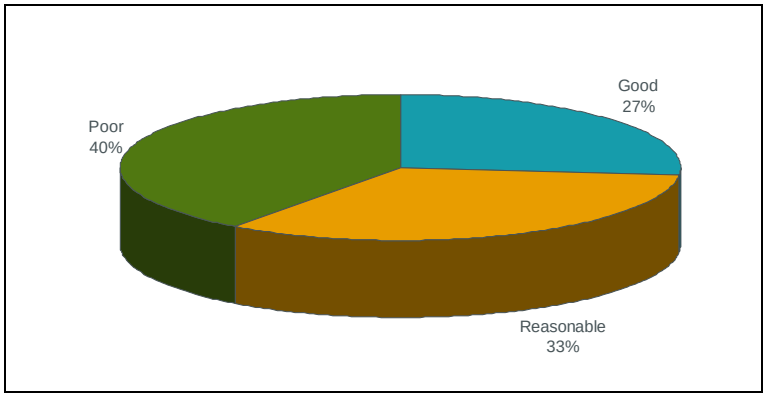
8.4.1 Existing Choice for Occupiers

Property markets have the capability of re-inventing themselves if the appropriate quality and quantity of floorspace is provided to meet the needs of corporates. A review of the existing offering to companies is required to determine the attractiveness of the district to inward investment as well as retaining existing companies. The key question is whether the Southend Airport JAAP area is an attractive proposition for existing and incoming companies in the future. To answer this, there needs to be a review of the existing employment locations to help determine the choice available.

As a starting point, it is important to assess the competing locations that exist today. This analysis should be reviewed in-line with the tenant survey (see Section 9.1). This provides the context and presents the opportunity. During a site visit to the market area during October 2007, Savills have reviewed a large proportion of the business space locations in the Rochford and Southend districts. The following charts outline the results, which helps to justify the conclusions at the end of this section.

In terms of access, most locations are relatively poor. This is due to the accessibility through residential areas in most cases. Accessibility is a key factor and a positive attribute for any office development at Southend Airport. Savills are seeing a trend towards town centres, in terms of office occupier preferences. However, Southend, like many other competing office markets, should have an in-town and out-of-town office market. The airport site would offer a good edge-of-town location which would be attractive to both occupiers and employees. The road access is key, but the potential rail link also provides an additional stimulus.

Figure 8-15 Access

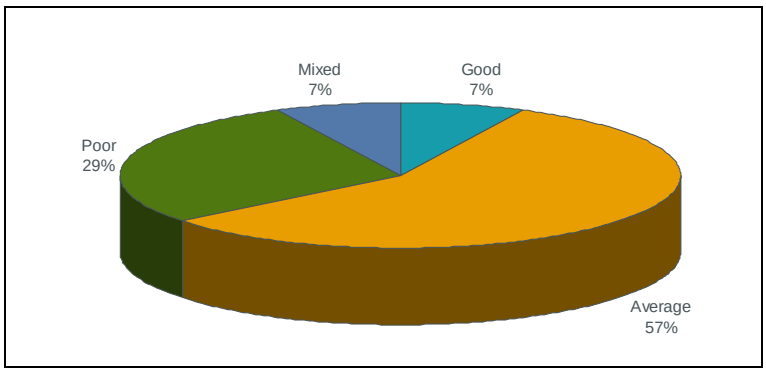


Source: Savills

The quality of the property, whether it is office or industrial-related, is average on the whole. However, a significant proportion is poor quality. This is fine for local occupiers, but the attraction of inward investment is more difficult to achieve considering the more accessible competing locations. Halcrow found that 74% of respondent to their survey felt that their current property met their business needs. Those that were not fully satisfied with their property stated that lack of expansion space was the issue. This is positive for future development of commercial floorspace in the future and coupled with the need for accessibility, the Southend Airport JAAP is as good a location as any town centre site.

Quality is also one of the major issues from the tenant survey. Good property at the right price will enable companies to grow and provide job opportunities. Most property at present is average, with 'poor' outweighing 'good' by a factor of four. This is unacceptable and should provide the stimulus to enable further office and industrial-related development.

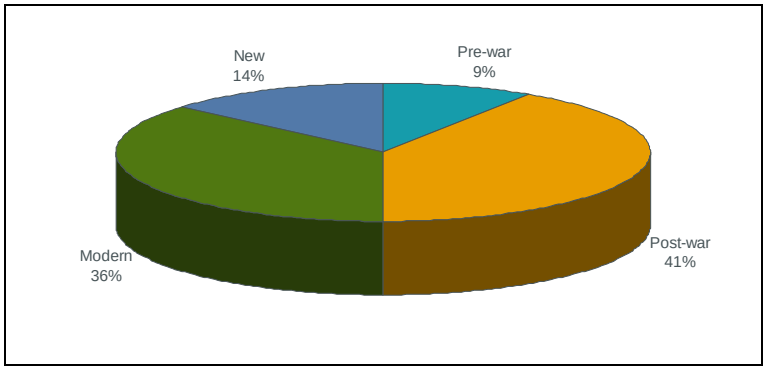
Figure 8-16 Property Quality



Source: Savills

There is a fairly even split of property by age, which is good for the market area. This means that a wide range of choice is available for current and future occupiers. However, only half of the existing locations could be classified as being new, restricting the ability for the area to attract new occupiers. A new supply of substantial space at Southend Airport JAAP area would reduce the perception of the area as only having poor quality stock.

Figure 8-17 Age



Source: Savills

For Southend, the town has traffic issues that may be partially solved in the future. The town also benefits from two separate rail lines into London and eight stations within the urban area. These are equally important factors in reigniting the office and industrial markets within the market area. However, future investment must be placed within the context of the level of competition. Other regional and local markets will remain in high competition with the market area.

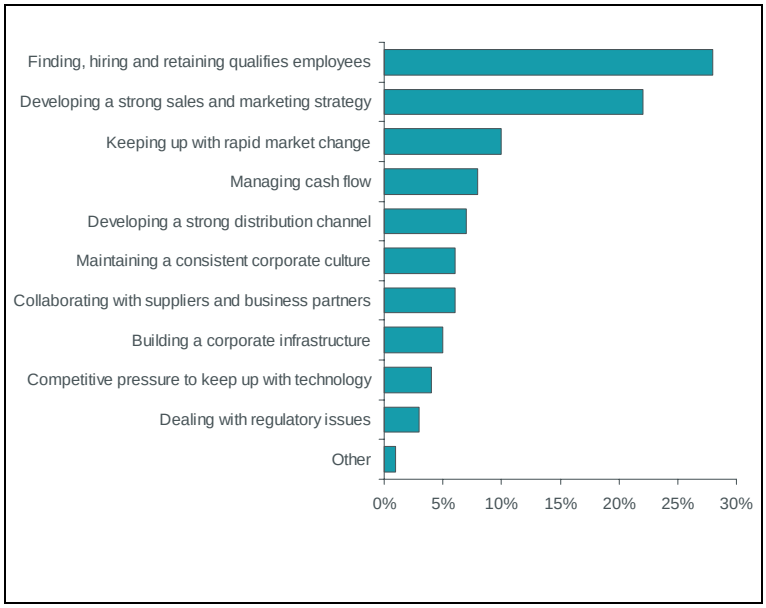
8.4.2 Accommodating the Office Market Demand

The demand forecasts in Section 9 suggest a future B1 floorspace requirement of around 110,000 sq.m. in the Southend and Rochford district areas. The location of this new floorspace is dependent upon the areas ability to meet the needs of modern occupiers by providing a critical mass of office development in an accessible location. The airport itself would not be an overriding factor in attracting companies, but as been seen in many other markets, it is a useful catalyst in establishing an office market and attracting occupiers and overall seen as a 'driver of change'. The recent announcement of the sale of the airport is potentially a step in the right direction in terms of raising the appropriate funds to establish Southend Airport as a major commercial operation.

As shown earlier, the current office property market in the Southend district is subdued, but this is no reason to believe the office market is extinct. Despite this, according to the employment analysis, business activities and public sector jobs account for a large proportion of the jobs in the district. It can be assumed that there is an adequate underlying level of employment that will one day need to be accommodated in more modern property – this potential demand could be met at the Southend Airport JAAP area.

The level of daily out-migration from the market area, as suggested by a local agent, suggests that there is a good supply of appropriately skilled office workers to work within offices the market area. As shown in Figure 8-18 below, there biggest challenge for companies within is the finding, hiring and retention of employees. One agent also highlighted the fact that there are a high proportion of executives within or close to the market area and these are the people that make the locational decision. The market area could benefit from this.

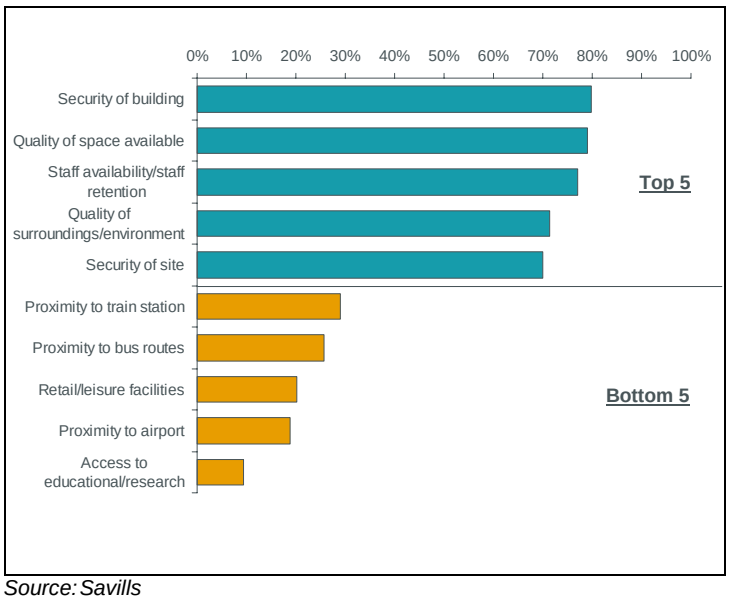
Figure 8-18 Major challenges facing companies going forward



Source: Deloitte

In the recent past Savills have conducted research to determine the factors that influence the decision making process. Figure 8-19 below presents the proportion of respondents that classified each factor as being of high or medium/high importance. The research looked at 20 factors, of which airport proximity was the second lowest. This was based on survey responses from 510 office-based businesses. The conclusion is that proximity to an airport is only of high or medium/high importance for a fifth of respondents. Security issues, quality of space and staff availability are all of higher importance. However, despite being a low influencing factor should not detract from the ability for land around airports to establish successful business parks (the Farnborough case study in Appendix I is a good example of a revitalised airfield).

Figure 8-19 Determinants of Office Occupier's location decisions



Source: Savills

Splitting the data from the responses into business sectors showed that for 'Business Services/Consultancy' companies (sample 216) the percentage fell from 18.8% to 16% and for 'Finance/Investment' companies (sample 85) the percentage fell even further from 18.8% to 11.9%. Compared to the whole sample, these types of businesses rate other factors as being of greater importance, particularly security, quality of office space, and staff availability/retention.

This shows that the airport may be more of a key locational factor for industrial-related companies, often as a function of the property being cheaper around an airport, than for office occupiers. As with offices, it is useful to have an airport close by but is not a significant locating factor. Companies that use a local airport are likely to have a very small proportion of employees that actually use it (often senior management). The trend of being close to an airport is also evident in the M4 corridor. Established and large business parks like Stockley Park has proven to be successful. However, despite being ten minutes from Heathrow, many of the companies on site have been attracted to the area due to the availability of staff, the quality of the building and the road transport network. Very few companies that Savills deal with have a located there purely for the airport proximity. This sentiment is echoed in the tenant survey, where 64% of respondents did not feel that proximity to the airport was important. What this means for the Southend Airport JAAP is that the airport itself is not the USP but the availability of land and accessibility are certainly attractive feature and this has been seen throughout other markets in the UK.

The property market will see a higher level of demand as a result of any expansion at the airport. Additional facilities will have a direct and indirect impact on employment levels immediately surrounding the airport.

Overall, Southend Borough and more particularly the Southend Airport area would be an appropriate location for a business park that offers an office environment separate from any industrial-related activity. The area needs to reinvent itself in terms of the office property offering. This will enable existing companies to relocate into more efficient buildings and will also attract inward investment. Companies from outside of the borough need to see an adequate supply of office property at an attractive rent level. The prospect of a rail station, with a 45-minute link into London's Liverpool Street, is more of an attraction than the airport in our view. Although we would make it clear that an airport is an excellent catalyst for attracting companies and presenting a suitable image to potential occupiers.

8.4.3 Accommodating Industrial Market Demand

The demand assessment (Section 9) estimates a requirement for an additional 78,000 sq.m. of floorspace. As with the office market, this would be well-placed within the Southend Airport JAAP area. However, it would be appropriate for new and improved industrial-related property to be provided separately from the office offering.

In our view, in terms of current and past demand levels and the provision of property, the market area is a stronger industrial location than office location at present. This is based upon the general balance of industrial-related locations compared to the number of office locations.

In short, it is appropriate for the market area to continue to provide new small scale industrial-related development, but nothing large-scale is required. Even with the modest expansion of the airport, it is unlikely that there will be a major upsurge in demand levels considering the strength of the competition elsewhere. Demand will remain mostly indigenous.

The current estates are 'slightly worn' in terms of the general environment and the quality of the buildings on offer to tenants. This was reflected in the 2006 GVA Grimley report that reviewed the market areas industrial estates. This is restrictive in attracting new occupiers, setting higher rental levels and ultimately attracting new investment in terms of new development.

Savills have identified the fact that demand levels are low, in terms of the quantum of demand and resulting take-up, and small, in terms of the lot size of the deals recorded. A possible reason for this is the fact that the industrial estates, particularly around the airport, seem to have been developed on a piece-meal basis and have suffered from under-investment.

Discussions with local agents identified that demand is mainly from local occupiers or national companies with local offices. It was also mentioned that the restriction on who can take space inside the airport boundary hinders the growth and should therefore be removed to maximise its attractiveness, Savills would not agree with this. The reason that companies are there at present is because there are similar airport-related occupiers, which enhances a 'community' spirit.

The overriding conclusion from all of this is the fact that the provision of new office and industrial-related product in or close to the airport boundary would certainly help in attracting inward investment and the airport itself is a credible 'driver of change' and a good catalyst for attracting new occupiers and retaining existing occupiers. The airport would be an attraction for some occupiers, but the majority would not be concerned. However, if the growth prospects and redevelopment of the airport was to take place, this would provide a further catalyst for securing inward investment and will help to create direct and indirect jobs.

8.5 Summary

- The office and industrial property market, in terms of take-up, which is driven by occupier demand, is relatively low considering the level of stock. The stock is relatively poor and this has restricted the demand, particularly from office occupiers.
- The investment market is also low for the market area. The more significant deals have involved offices let on a very secure Government covenant. The low level of investment transactions is reflective of a slow and inferior occupier market.
- An agent's view was that moving in to the market area is an unknown for an outside company. It would require a brave move for a large corporate to move into the market area at present. However, a view was that if the location is good enough for RBS then there is no reason why other occupiers would not be attracted in the future.
- A Savills survey based upon 510 office-based businesses shows that proximity to an airport is only of high importance for a fifth of respondents. Security issues, quality of space and staff availability are all of higher importance.
- The scale of the airport is currently small, with very low levels of terminal passenger numbers. However, future growth to proposed levels would push it much further up the UK airport rankings. Consequently, direct and indirect employment levels would rise. The direct impact on demand for office-space is uncertain, as an airport is not an overriding locational factor. However, a higher impact would be felt within the industrial market and local agents believe that speculative industrial property would let well.
- The majority of commentators believe that, increasingly in the future, staff attraction and retention will be the dominant, if not the sole factors driving

the choice of a location for an office, and the choice of an individual building in that location. The provision of quality office stock around the airport could certainly attract occupiers.

- New and improved industrial-related property offering around the airport would certainly be an attractive proposition to current and potential occupiers. There would be a stronger case for development if the airport expands and direct and indirect employment opportunities improve.
- Overall, the quality of property and the rent payable will be the significant locational factors for new property provided around London Southend Airport. There will be occupiers that benefit directly from the airport and have to be in close proximity. However, the majority of occupiers will not make significant use of the airport.
- Southend has the advantage that industrial and office rents are lower because land values are lower. The provision of new property in and around a redeveloped airport would certainly be more attractive to occupiers than at present. Equally, improved road and rail infrastructure would further secure inward investment.

9 Demand Assessment

9.1 London Southend JAAP Tenant Survey

A tenant survey was conducted by Halcrow Group Limited in November and December 2007 to collect information on the profile, needs and future plans of businesses around London Southend Airport. The questionnaire was designed by Halcrow with the principle aim of collecting the desired information[10]. This was handed out to businesses located in the business parks surrounding the airport.

A total of 116 business units were targeted in the study area. Of the 116 units, 21 appeared to be vacant and no questionnaire was dropped off. As a result, 95 questionnaires were handed out. A total of 29 questionnaires were returned within 4 weeks. A second visit to the area was undertaken and the same questionnaire was handed out to businesses that had not responded. From the second visit, a total of 16 additional questionnaires were collected, giving a total of 45 responses (47%). The results of the survey are outlined in the following sections.

9.1.1 Tenant Survey Results

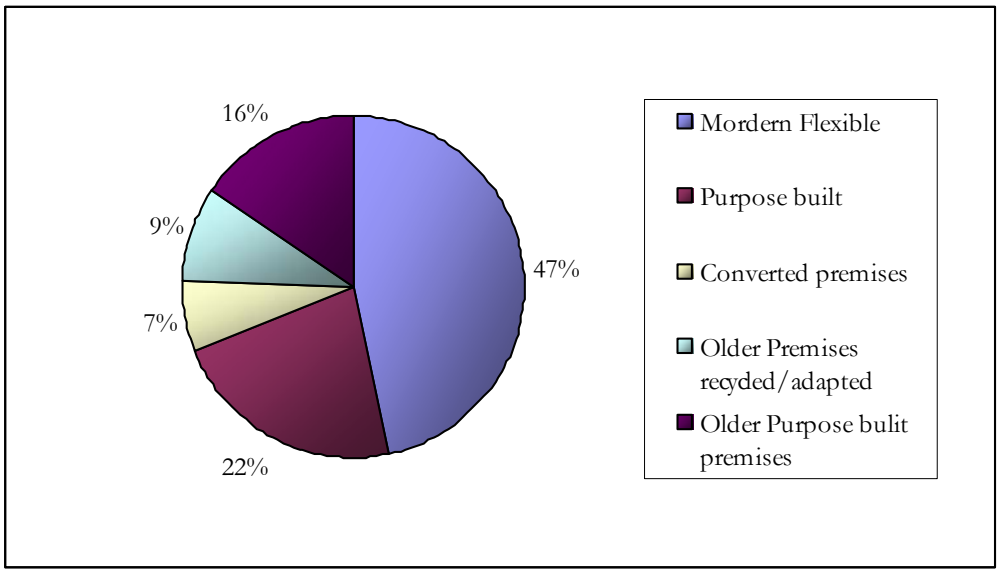
The first half of the questionnaire collected information on the profile of the business, i.e. the number of years the business had been trading, how long it had been trading in the area, its number of employees and the type of premises it occupied). Of the businesses that responded, 41% had been trading for over 21 years, 11% had been trading between 16-20 years and 32% had been trading for less than 10 years.

Some 41% of businesses employed between 1-5 full time employees, 28% between 6-15 employees, 10% between 16-30 employees and 10% of firms employed more than 31 full time employees. Approximately 24% of businesses had occupied their current land and premises for over 21 years with 30% of businesses occupying their premises for less than 5 years.

Almost half of the businesses surveyed occupied modern flexible premises, with the next highest proportion (22%) occupying purpose built premises. There were no businesses occupying speculatively developed premises.

[10] A copy of the questionnaire used is available in Appendix 2.

Figure 9-1: Type of business premises currently occupied



Source: Halcrow

The companies were asked to describe the age of their current premises and their responses are recorded in Table 9-1 below. The biggest proportion of businesses (40%) described their premises as being built in the 1980s, followed by 36% describing their premises as post war built premises. Only (8%) of described their premises as being built this since 2000.

Table 9-1: Age of Premises

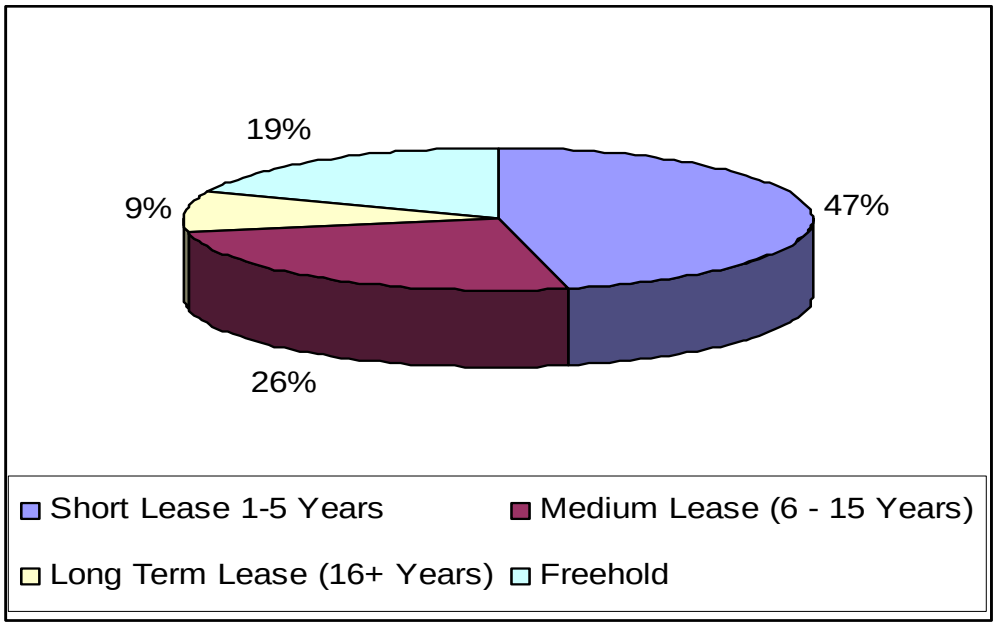
Age of Premises	Total	Percentage
2000	4	8%
1990	6	13%
1980	18	40%
Post war	16	36%
Pre war	1	2%
Total	45	100%

Source: Halcrow

Asked whether their current business premises met their business needs, 74% answered yes and 26% answered partially. The majority of businesses that answered partially offered expansion and the need for more floorspace as the main reason for their answer.

Figure 9-2 below shows the biggest proportion of businesses were on short term lease contracts (i.e. 1-5 years), followed by medium term leases (6-15 years) and freehold tenures.

Figure 9-2: Type of Tenure

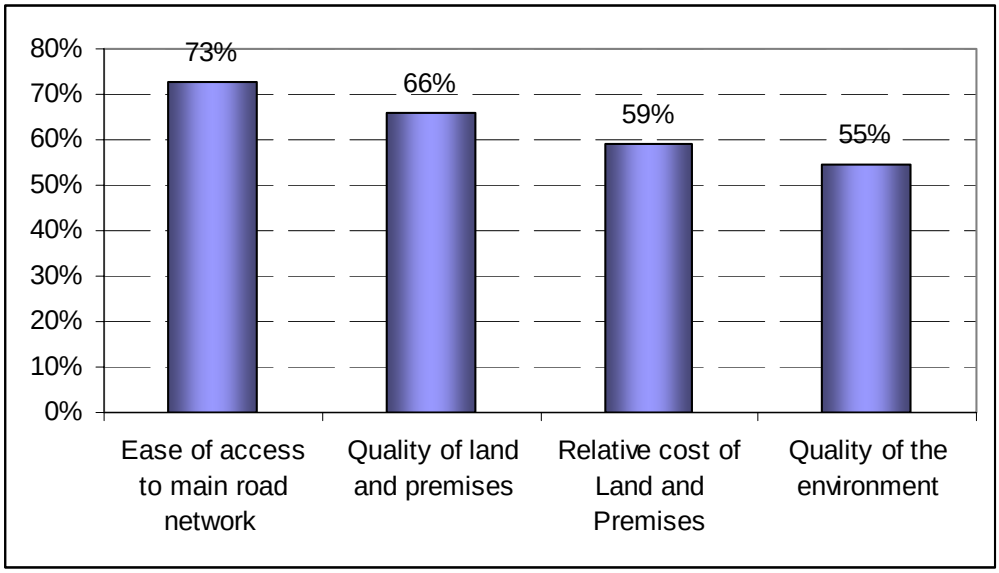


Source: Halcrow

The businesses surveyed were asked to rank the importance of a number of selected factors in attracting or deterring businesses locating in the employment market area they operated in. Respondents were asked to rate the factors using a scale of 1 to 5 where 1 was “definitely detracts” and 5 was “definitely attracts”. The results are presented in Figures 9-2 and 9-3 below. Ease of access to the main road network was ranked as the most attractive factor with 73% of businesses surveyed giving it a rank of 4 or 5. The quality of land and premises, the relative cost of land and premises and the quality of the environment were ranked the second and third and fourth most important factors in attracting businesses to the area respectively. Just over one third of businesses thought the close proximity and good accessibility to London Southend Airport were factors that definitely attracted businesses to locate in the area.

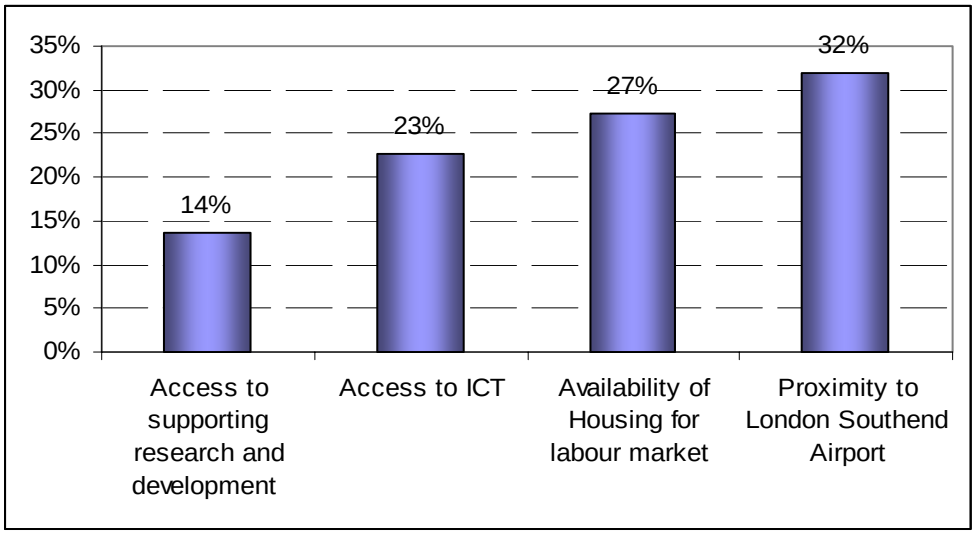
Interestingly, the ease of access to the airport and the proximity of London Southend Airport were selected as some of the factors deterring businesses from locating in the area.

Figure 9-3: Main factors attracting business to locating in the employment market area



Source: Halcrow

Figure 9-4: Factors deterring businesses from locating in the local employment market



Source: Halcrow

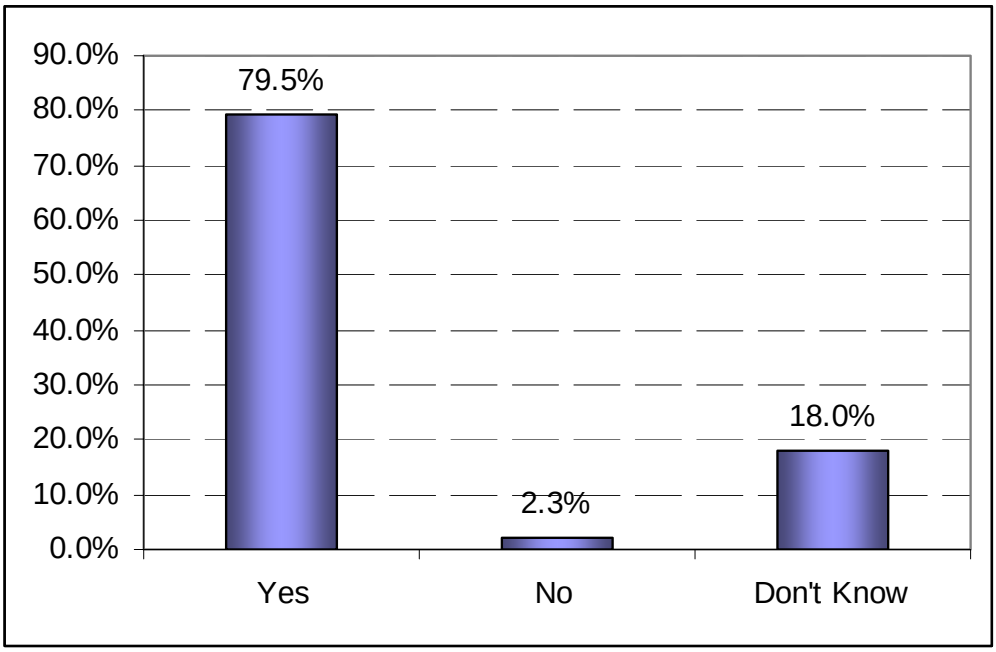
The final part of the business survey focused on the changing needs of businesses and the potential growth and expansion of London Southend Airport. Businesses were asked how they saw their needs changing in the future. Most of the respondents did not record an answer to the question, however of the 8 businesses that answered the question, 7 saw their business needs expanding in the future and only 1 recorded a downsizing in business.

Some 80% of the businesses surveyed said their future business needs could be satisfied in the Rochford and Southend area. Only 2% reported their business needs could not be satisfied locally.

With regards to the future expansion of the Airport, the majority of businesses 65% welcomed it, 33% of businesses were unsure. Only 2% of respondents said they did not welcome the Airport's growth and expansion. The main reason given

for the latter was concerns over the potential rise of rents as a result of the airport's expansion.

Figure 9-5: Can your future business needs be satisfied in Rochford and Southend?



Source: Halcrow

Only 21% of businesses surveyed said their proximity to London Southend Airport was important, 16% answered it was of some importance, but the majority of businesses 64%, did not feel their close proximity to the Airport was important.

Finally, businesses were asked whether they saw a need to relocate out of the area in the future. Approximately 84% of businesses surveyed did not foresee a need to relocate, 7% planned to relocate out of the area in the future and 9% did not know. Of the businesses that planned to relocate, the majority planned to move before 2021.

9.2 Future Demand Assessment

Employment land requirements within the JAAP will fit within the wider requirements of the joint local authority areas for the period to 2021. To understand the future demand position Halcrow have undertaken a 'strategic' demand assessment based on achieving the RSS employment targets. The methodology and results are presented below.

9.2.1 RSS Target Employment Forecasts

The RSS 2001-2021 requirements are for net additional employment of 13,000 jobs in Southend and 3,000 jobs on Rochford. To understand the potential growth and sectoral breakdown of this employment growth we have used a district level 30 sector forecasting base to provide forecasting parameters with which to develop Southend and Rochford 'RSS Constrained' forecasts. These are presented below.

Southend Employment - RSS Constrained, 000s

Employment*		2001	2006	2016	2021
Agriculture, Forestry & Fishing	1	0.02	0.01	0.00	0.00
Oil & Gas Extraction	2	0.00	0.00	0.00	0.00
Other Mining	3	0.00	0.00	0.00	0.00
Gas, Electricity & Water	4	1.69	0.02	0.11	0.15
Fuel Refining	5	0.00	0.00	0.00	0.00
Chemicals	6	0.08	0.07	0.08	0.07
Minerals	7	0.15	0.14	0.14	0.14
Metals	8	0.85	0.97	1.04	1.08
Machinery & Equipment	9	0.28	0.20	0.05	0.00
Electrical & Optical Equipment	10	1.67	1.38	1.38	1.33
Transport Equipment	11	0.07	0.01	0.01	0.00
Food, Drink & Tobacco	12	0.12	0.04	0.03	0.00
Textiles & Clothing	13	0.65	0.62	0.48	0.41
Wood & Wood Products	14	0.39	0.54	0.58	0.63
Paper, Printing & Publishing	15	1.17	1.38	1.50	1.55
Rubber & Plastics	16	0.87	1.00	0.88	0.84
Other Manufacturing	17	0.49	0.50	0.48	0.45
Construction	18	2.94	2.65	1.98	1.60
Retailing	19	9.74	10.02	9.94	9.84
Wholesaling	20	3.40	2.79	2.70	2.58
Hotels & Catering	21	4.82	5.49	6.48	6.95
Transport	22	2.40	2.83	3.27	3.55
Communications	23	1.44	1.38	1.77	1.95
Banking & Insurance	24	5.83	5.36	5.15	4.88
Business Services	25	10.19	12.14	15.19	16.78
Other F&Bs	26	1.86	1.91	2.00	2.03
Public Admin. & Defence	27	4.14	4.41	4.09	3.97
Education	28	4.11	3.74	4.36	4.74
Health	29	8.04	10.65	11.78	12.53
Other	30	5.02	5.42	6.70	7.38
Total Employment		**72.42**	**75.67**	**82.17**	**85.42**

** Employees plus Self Employed*

Rochford Employment - RSS Constrained, 000s

Employment*		2001	2006	2016	2021
Agriculture, Forestry & Fishing	1	0.77	0.64	0.52	0.44
Oil & Gas Extraction	2	0.00	0.00	0.00	0.00
Other Mining	3	0.01	0.02	0.02	0.02
Gas, Electricity & Water	4	0.87	0.86	0.82	0.80
Fuel Refining	5	0.00	0.00	0.00	0.00
Chemicals	6	0.01	0.00	0.00	0.00
Minerals	7	0.02	0.02	0.01	0.01
Metals	8	0.48	0.55	0.60	0.63
Machinery & Equipment	9	0.20	0.16	0.13	0.11
Electrical & Optical Equipment	10	0.58	0.40	0.35	0.30
Transport Equipment	11	0.77	0.74	0.62	0.56
Food, Drink & Tobacco	12	0.28	0.30	0.29	0.28
Textiles & Clothing	13	0.09	0.01	0.01	0.01
Wood & Wood Products	14	0.21	0.26	0.23	0.22
Paper, Printing & Publishing	15	0.78	0.88	0.93	0.95
Rubber & Plastics	16	0.26	0.32	0.34	0.37
Other Manufacturing	17	0.85	0.45	0.18	0.00
Construction	18	2.71	2.79	2.77	2.78
Retailing	19	2.13	2.11	2.00	1.93
Wholesaling	20	1.74	1.62	1.72	1.75
Hotels & Catering	21	1.53	1.85	2.25	2.46
Transport	22	0.72	0.71	0.62	0.56
Communications	23	0.40	0.39	0.51	0.56
Banking & Insurance	24	0.53	0.42	0.33	0.26
Business Services	25	3.76	4.48	5.62	6.20
Other F&Bs	26	0.85	1.00	1.18	1.28
Public Admin. & Defence	27	0.69	0.70	0.62	0.59
Education	28	1.40	1.39	1.47	1.53
Health	29	1.94	2.12	2.12	2.15
Other	30	1.65	1.80	2.26	2.50
Total Employment		**26.24**	**26.99**	**28.49**	**29.24**

** Employees plus Self Employed*

These core forecasts are then translated in to employment floorspace and land demand by applying a number of calculations[11].

(i) Total employment is translated in to employment land B Use classes by mapping SIC sectors to land use sectors (using Halcrow methodology).

(ii) B Use class employment is converted into a floorspace demand by applying standard employment densities at a use class level. National guidance parameters have been used for this purpose as follows. B1 – 20 sq.m. per worker; B2 – 35 sq.m. per worker; B8 – 50 sq.m. per worker.

(iii) Finally, this is translated into demand for employment land by assuming the following plot ratios levels for land take: B1 – 50%, B2 – 40%, B8 – 40%.

The results of this analysis are shown overleaf. Key findings are as follows.

- B-class employment is anticipated to account for only 43% of the net employment growth anticipated across the two local authorities. This rises to 55% in Rochford and falls to 41% in Southend. In this context, employment growth in non-B Use class sectors will be vitally important in achieving RSS growth targets.
- Trends in B Use class employment are strongly towards the growth in B1 sectors, supported by more limited growth in B8. These growth sectors are then partly offset by the continued decline in B2 industrial sectors across the planning period. These trends are consistent across both local authority areas, although there does seem to be slightly more manufacturing resilience in Rochford than Southend (albeit from a lower base).
- Translating the employment trends into land demand indicates that employment land demand across the two local authority areas will increase from 368ha. in 2001 to 397ha. in 2021 (an increase of c30ha. over the period). Commensurate with the location of employment growth, 24ha. (80%) is needed in Southend and 6ha. in Rochford.
- While the overall change in demand is reflected above, in establishing future land requirements over and above current allocations the quality of land and appropriateness to meet future demand is important. For example some of the B2 land not required in the future may not be appropriate for future demand from other sectors and therefore would need to be released from employment use.
- This demand analysis confirms the analysis outlined in the *Regeneration Framework for Southend,* which for comparison suggests a change in B Use class floorspace of 34,000 sq.m. in Rochford.

[11] As this is a strategic assessment benchmark parameters are used in the analysis

Rochford

Employment (nos)	2001	2006	2011	2016	2021	Change 2001-2021	Change 2006-2021
B1	4,988	5,593	6,194	6,641	7,157	2,169	1,564
B2	7,591	7,215	6,917	6,819	6,608	-983	-607
B8	2,567	2,619	2,772	2,896	3,024	457	405
Total	**15,146**	**15,427**	**15,883**	**16,356**	**16,789**	**1,643**	**1,363**
Floorspace (sq m)							
B1	99,755	111,855	123,880	132,825	143,135	43,379	31,280
B2	265,689	252,522	242,080	238,662	231,286	-34,403	-21,236
B8	128,369	130,945	138,607	144,805	151,210	22,841	20,265
Total	**493,813**	**495,322**	**504,566**	**516,292**	**525,631**	**31,817**	**30,309**
Land (ha)							
B1	20.0	22.4	24.8	26.6	28.6	8.7	6
B2	66.4	63.1	60.5	59.7	57.8	-8.6	-5
B8	32.1	32.7	34.7	36.2	37.8	5.7	5
Total	**118.5**	**118.2**	**119.9**	**122.4**	**124.3**	**6**	**6**

Southend

Employment (nos)	2001	2006	2011	2016	2021	Change 2001-2021	Change 2006-2021
B1	21,605	23,271	24,782	25,964	27,221	5,616	3,950
B2	10,461	10,207	9,697	9,413	8,932	-1,529	-1,275
B8	5,696	5,734	6,172	6,514	6,893	1,197	1,159
Total	**37,762**	**39,213**	**40,652**	**41,891**	**43,047**	**5,285**	**3,834**
Floorspace (sq m)							
B1	432,097	465,430	495,649	519,280	544,424	112,328	78,995
B2	366,150	357,259	339,398	329,461	312,634	-53,516	-44,625
B8	284,784	286,687	308,622	325,687	344,654	59,870	57,967
Total	**1,083,031**	**1,109,376**	**1,143,669**	**1,174,428**	**1,201,713**	**118,682**	**92,337**
Land (ha)							
B1	86	93	99	104	109	22.5	16
B2	92	89	85	82	78	-13.4	-11
B8	71	72	77	81	86	15.0	14
Total	**249**	**254**	**261**	**268**	**273**	**24**	**19**

Southend & Rochford

Employment (nos)	2001	2006	2011	2016	2021	Change 2001-2021	Change 2006-2021
B1	26,593	28,864	30,976	32,605	34,378	7,785	5,514
B2	18,053	17,422	16,614	16,232	15,541	-2,512	-1,882
B8	8,263	8,353	8,945	9,410	9,917	1,654	1,565
Total	**52,908**	**54,639**	**56,535**	**58,247**	**59,836**	**6,928**	**5,197**
Floorspace (sq m)							
B1	531,852	577,284	619,529	652,105	687,559	155,707	110,275
B2	631,839	609,781	581,477	568,123	543,920	-87,919	-65,861
B8	413,153	417,632	447,228	470,492	495,864	82,711	78,232
Total	**1,576,844**	**1,604,698**	**1,648,235**	**1,690,719**	**1,727,343**	**150,499**	**122,645**
Land (ha)							
B1	106	115	124	130	138	31.1	22
B2	158	152	145	142	136	-22.0	-16
B8	103	104	112	118	124	20.7	20
Total	**368**	**372**	**381**	**390**	**397**	**30**	**25**

9.2.2 Comparison with Regeneration Framework

As noted in the Regeneration Framework for Southend, the current capacity for Southend's economy to grow is different from the concept underpinning the RSS targets. The conclusion is that in the first period at least (2006-2016) the aim should be on planning for a likely scenario of the creation of 8,000 jobs – if this is looking likely to be achieved then the borough can move on to the more ambitious targets. This increase is mainly accounted for by an additional:

- 857 retailing jobs
- 1,783 hotel and catering jobs
- 2,385 health and related jobs
- 1,590 business and financial services jobs
- 300 communications jobs
- 1.040 jobs in other services.

These are offset by contraction in the manufacturing sector (loss of 3,733 jobs), utility sector (3,400 jobs), construction jobs (616 jobs) and public admin/education (1,178 jobs).

Based on these employment forecasts and intervention in the market to remove obstacles to growth, the study presents an aggressive Southend office requirement of an additional 57,000 sq.m. to 2021 and about 40,000 sq.m. of other B-class floorspace. This is supported by requirements of up to 11,000 sq.m. of offices and 35,000 sq.m. of general industrial in Rochford.

This equates to a total demand of 68,000 sq.m. of offices in the sub-region and 75,000 other B-class floorspace (143,000 sq.m. between 2006-2021). This compares with 122,000 sq.m. for the same period estimated using the Halcrow methodology. Given the strategic nature of the analysis, this variation is considered acceptable and gives confidence in using the analysis to provide some development parameters for the JAAP area.

9.3 Summary

- Businesses in the JAAP study area are generally long standing businesses (41% trading for more than 20 years) and been locating in their premises for a significant period of time (24% had been there for over 20 years). Almost half of businesses considered their premises as modern flexible space and almost two-thirds said their property was built since 1980.
- The characteristics of the area that were important to them and attract businesses were clearly: access to the main road network; the quality of land and premises; the relative cost and the quality of the environment. Characteristics that were more likely to deter businesses from locating there included the proximity to the airport; availability of housing and access to ICT infrastructure. The issue with the airport is supported by Savills research which indicates that proximity to an airport is only important for around 20% of office-based businesses.
- Commensurate with this only 21% said their proximity to the airport was important, reflecting a current low level of connection between the employment area and the airport. However, 80% of businesses felt the sub-region could satisfy their future business needs and 65% welcomed the expansion of the airport. The conclusion is that the majority of occupiers would not make use of the airport.
- In terms of the wider market context, the view is that the relatively low level of take-up reflects the fact that demand is being constrained by poor stock.

Given the relatively low importance on an airport in the general location decision making process, the direct impact of airport expansion on office demand in the area is uncertain. But, case studies such as Farnborough shows that office provision around slower airports could attract occupiers (and RBS demonstrates the potential of the JAAP location for offices). There is a view that new and improved industrial-related property offering around the airport would be a stronger proposition and attract current and potential future demand.

- Based on RSS employment growth targets for the period 2001-2021, analysis suggests that 43% of future employment growth would come from the B-class sectors and that the trends within this show a strong growth in B1 uses supported by more constrained growth in the B8 market. B2 industrial is set to continue declining. Translating employment into land demand estimates the change in demand across the forecast period is +30ha. (+25ha. in the period 2006-2021). On the assumption that the market is always in balance (i.e. supply meets current employment need – taking into account vacancies), the sub-region needs to supply 30ha. of additional land to be able to accommodate future employment delivery.

10 Employment Land Supply

10.1 Introduction

In order to help quantify the employment land requirement in the JAAP area some consideration needs to be given to the current stock of land and premises and the opportunities this affords for the future. Two sources of information have been used for this.

- Firstly, the site appraisal set out in the Baseline Report includes an assessment of the current employment areas in the JAAP. This is represented here for easy cross-referencing.
- Secondly, the JAAP has been set within a wider employment land context by summarising the status of other key employment sites in Southend Borough as presented in the *GVA Grimley report (2005*) and *Hearing Paper 5 – Employment from the public examination of the Core Strategy (2007).*

10.2 JAAP Employment Land Survey

A site survey of the study area and adjacent land was undertaken in early October 2007 together with a desk top research of the study area. The visual site survey was primarily focussed on employment land within and adjacent to the study area. The main purpose of the site survey is to develop a database of land use and assess the quality of employment land provision to help inform future constraints and opportunities in the area. The survey gathered information on existing employment land in terms of quantity, quality, opportunities and limitations of existing premises.

The survey included nine Industrial Estates/Retail Parks. The seven employment areas surveyed are Britannia Business Park, Laurence Industrial Estate, Aviation Way Business Park, Robert Leonard Industrial Park, Lancaster Business Park, Aviation Business Park, Southend Airport and two retail parks namely the Airport Retail Park and the retail park on Thanet Grange. In total 157 ‘sites’ were surveyed: 143 (91%) sites within Industrial Estates/Business Parks and 14 (9%) sites within the retail parks.

10.2.1 Current Stock of Employment Land

Based on the survey, land currently in employment use in the study area is approximately 165ha. (including the airport). Of this, 37ha. is taken up by industrial/business parks and 14ha. by retail parks. A total of 8ha. is currently vacant. The industrial estates and employment clusters in the study area range from small 0.55ha. to relatively large 21.67ha. concentrations of employment sites. Table 10-1 below shows the area of each of the employment clusters within the study area.

Table 10-1: Site Area by Employment Clusters

Cluster name	Ha. (Ha)
Britannia Business Park	6.78
Laurence Industrial Estate	1.26
Aviation Way Business Park	21.67
Aviation Business Park	5.74

Cluster name	Ha. (Ha)
Robert Leonard Industrial Estate	0.55
Lancaster Business Park	0.56
Southend Airport*	113.98*
Airport Retail Park	2.79
Thanet Grange Retail Park	11.24
Total	**164.57**

*****Area includes runways as well as employment land*

Robert Leonard Industrial Estate is by far the smallest employment cluster in terms of site area. The location of this estate, sandwiched between Lancaster Business Park and Aviation Way Business Park, offers no scope for expansion.

Aviation Way Business Park is by far the largest employment cluster. This Business Park has several vacant sites immediately to the north and south of the Athenaeum Club that are appropriate for development. A potential expansion area is the land situated west of Aviation Way Business Park and East of Cherry Orchard Way. Also within the Aviation Way Business Park is scope for redevelopment of (Athenaeum and Saxon Hall, Tah House) car parks, subject to a feasibility study.

Britannia Business Park is fully redeveloped though limited scope for expansion might be offered through intensification of use of the Booker Cash and Carry site, the Rectory with its extensive garden and the St. Laurence Community Hall. The latter two uses are incompatible with the prevailing industrial character of the area and could be relocated to more appropriate areas.

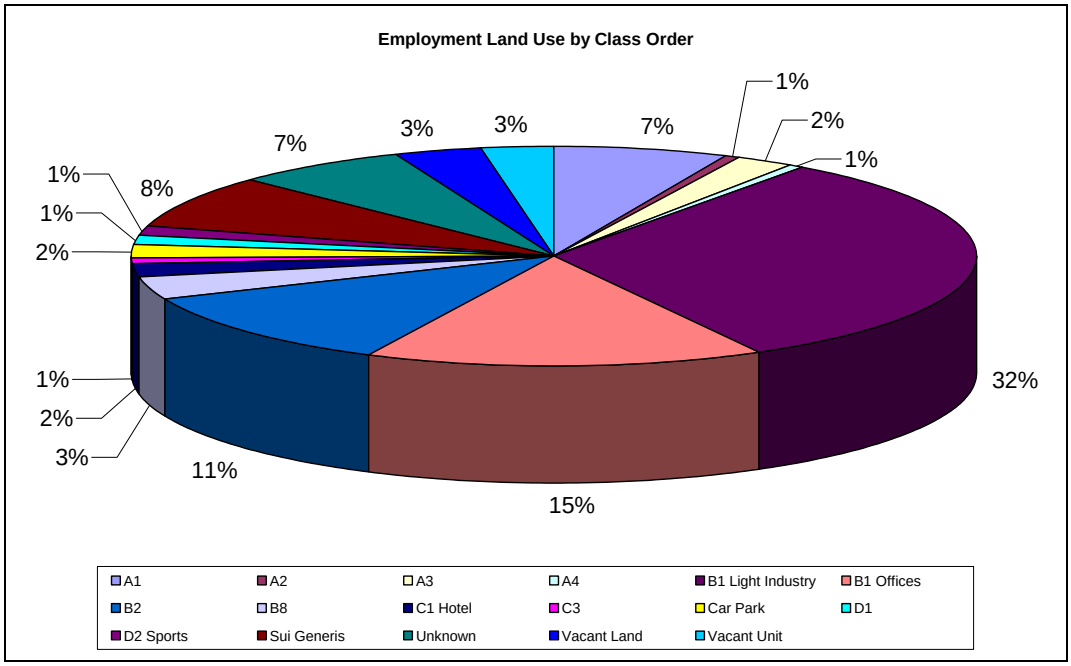
Employment land within the JAAP is fully utilised apart from a vacant unit and what appears to be under-used land around the Southend Flying Club. Overall there is very limited scope for expansion within the existing employment land.

10.2.2 Existing Employment Uses

The breakdown of employment land use for the study area and each employment cluster is shown in Figure 10-1. *It should be noted that the figures are subject to an error margin as they are based on visual site surveys and GIS calculations and therefore are used to provide an indication of current land use character.*

The profile of employment uses in the study area shows that approximately 78% of all uses in the study area are either industry or ancillary uses such as offices, training or car parks. Light Industry (B1) accounts for 32% of all uses within the study area. Also offices (B1) accounted for 15%, making a total of 47% or nearly half of the employment land. General Industry (B2) accounts for 11% of the employment land. Together retail, restaurants and offices (A1, A2 and A3) account for 17% of the total.

Figure 10-1: Percentage of Employment Land by Use Class Order



10.2.3 Building Stock Age

As part of the visual site survey qualitative elements of each site included a visual assessment of building age based primarily on architectural style and building material. Information on the approximate age of building stock collected during the visual site surveys is based on the surveyors' estimates based on their visual inspections of the buildings.

The broad age groups used to describe the age of buildings are pre-war, post-war (1930s- 1950s and modern (1960s – to present day). Overall, the majority of buildings 78% in the study area are deemed Modern, 12% were classed as post-war, and the only pre-war building is the St Laurence and All Saint's Church, a Grade1 Listed Building.

Figure 10-2: Age Profiles of Existing Employment Building Stock

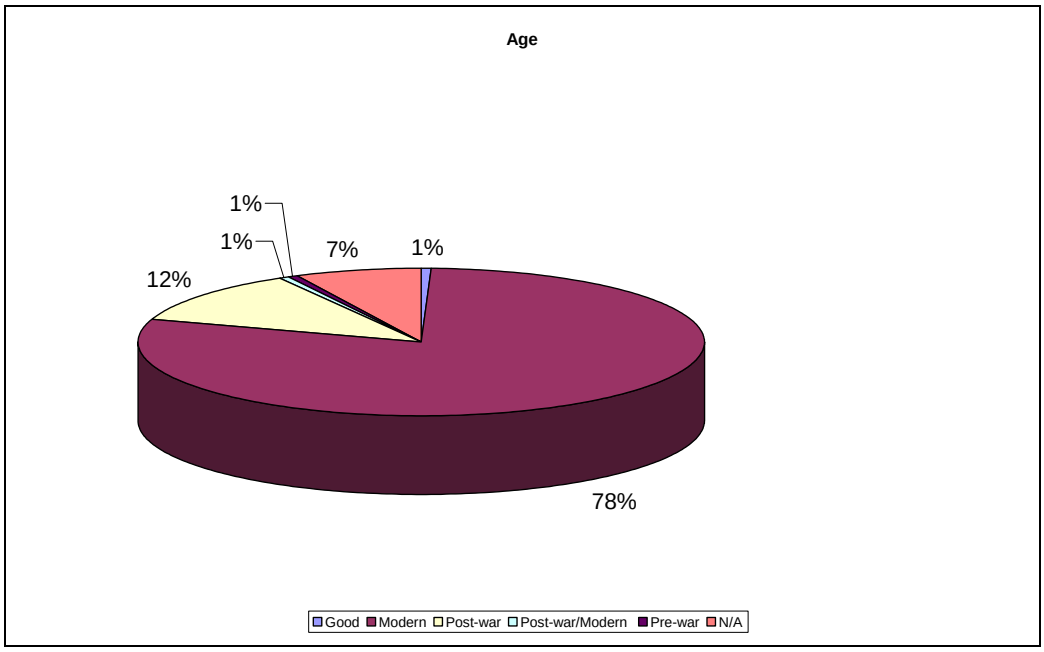
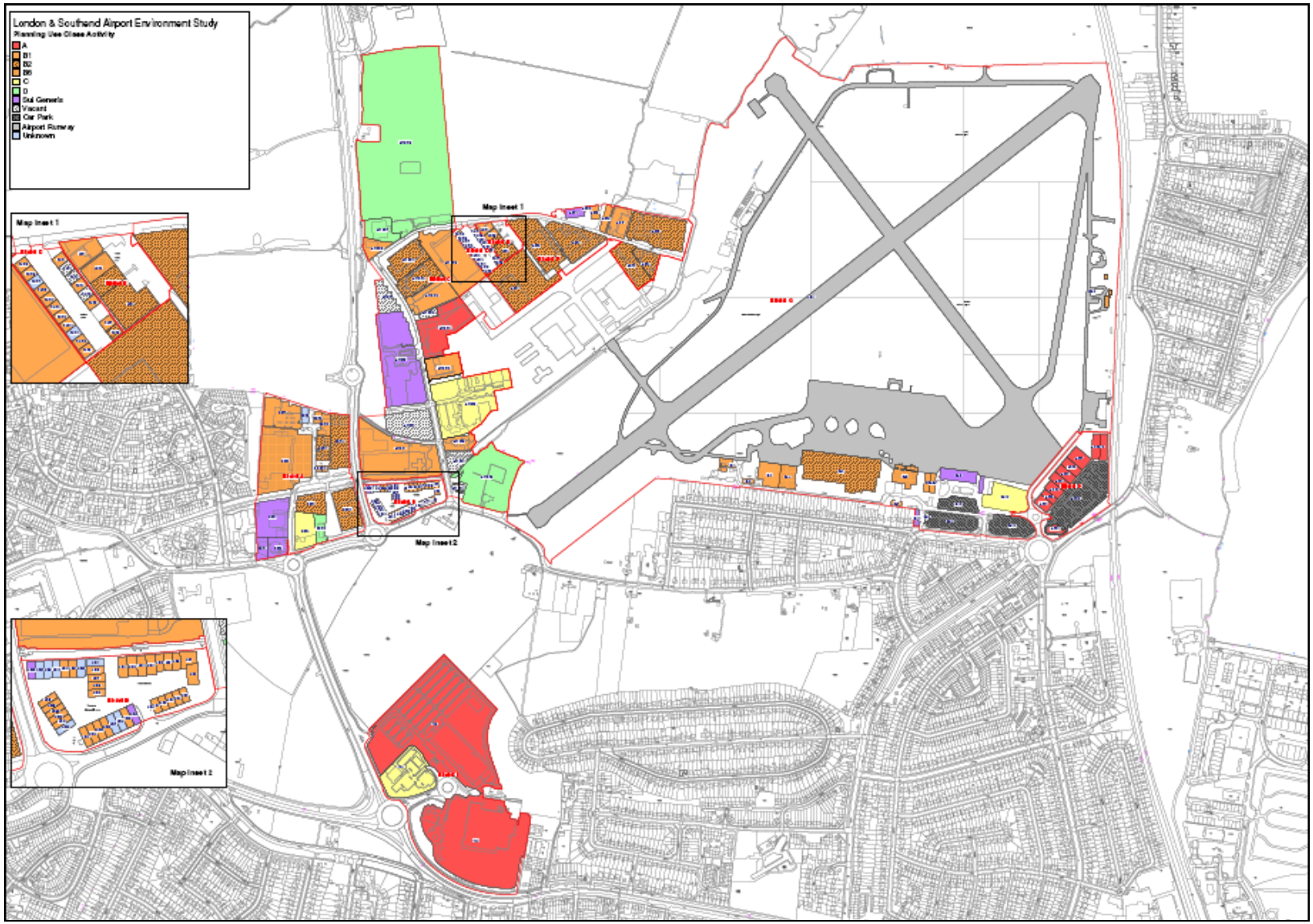


Figure 10-3: Existing Employment Land Use in the JAAP

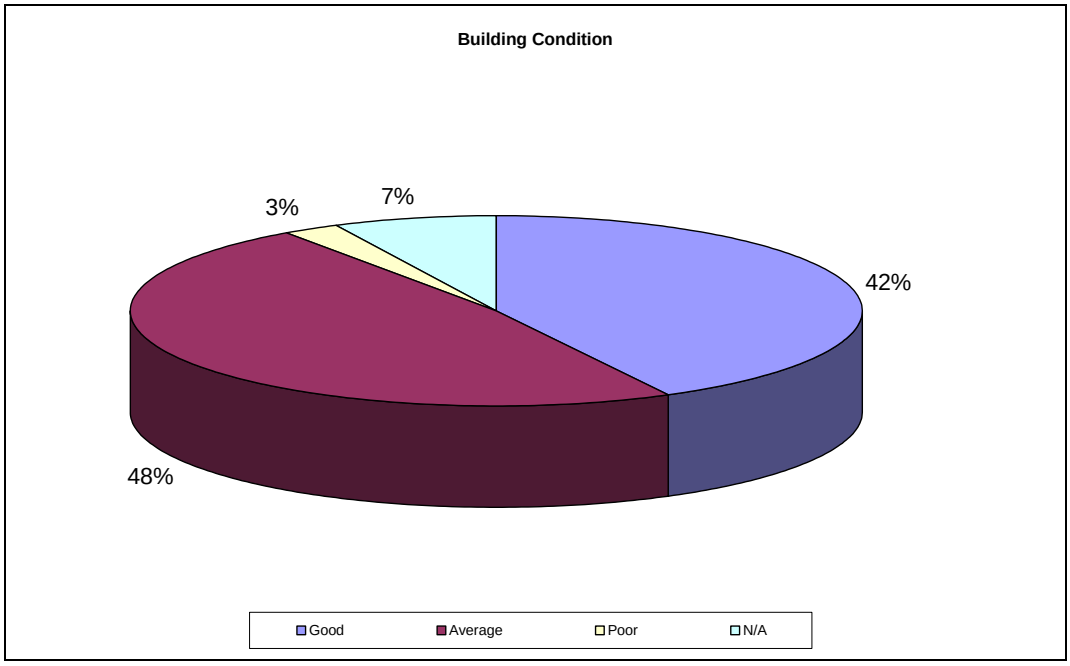


10.2.4 Building Stock Condition

The spatial distribution of Building Stock condition is shown on Figure 10-4. It is apparent that building stock of average condition is concentrated in Laurence Industrial Estate and Leonard Park Industrial Estate. The concentration of industrial activity within the relatively small units and confined spaces might have contributed to the degradation of the buildings over time. However the condition of these buildings requires minor external refurbishments and some maintenance to result in some discernible improvement.

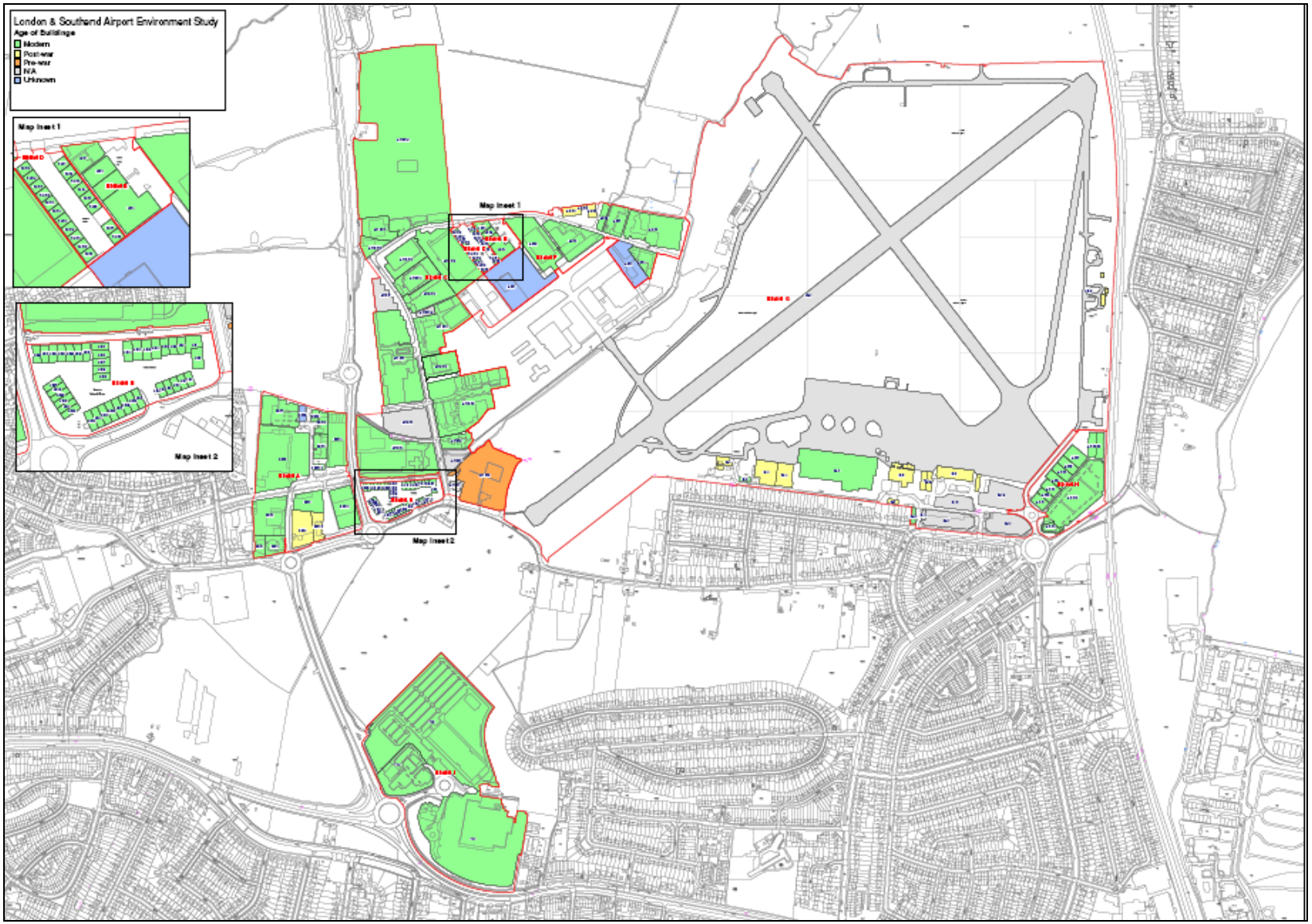
Based on the results of the survey approximately 42% of the buildings are in good condition, 48% of the buildings are in average condition and only 3% buildings were considered to be in poor condition. The remaining 7% was not applicable being vacant and/or car parks.

Figure 10-4: Profiles of existing Employment Building Stock Condition



Overall, the buildings are of a high enough quality to either fully meet the needs of businesses or to be capable of meeting them with some improvements and modifications. However, it should be stressed that quality by itself is not a guarantee that a site will meet business needs as factors like size and tenure are also important.

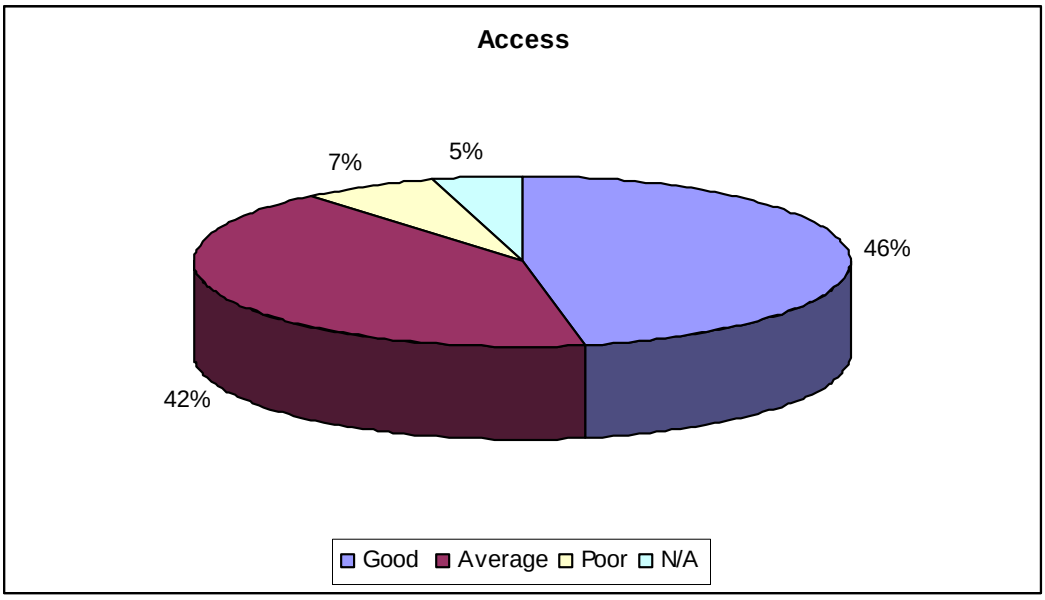
Figure 10-5: Building Age of Existing Employment Premises



10.2.5 Site Accessibility

Site accessibility refers to how accessible individual employment sites are by heavy goods vehicles (HGVs), light goods vehicles (LGVs) and other vehicles. It refers to the ease with which such vehicles can access employment site curtillages. It does not necessarily reflect how accessible they are to the wider road network or how accessible they are by public transport.

Figure 10-6: Degree of Accessibility of Study Area



In general site accessibility is either good or average. Apart from Laurence Industrial Estate and Robert Leonard Industrial Estate most of the employment areas have been laid out with adequate capacity and possibly additional capacity for operating at full capacity. The two rows of terraced unit layout of Laurence Industrial Estate and Robert Leonard Industrial Estate allows for a limited number of HGVs at one given time due to the linear road in Robert Leonard Industrial Estate. The layout of Laurence Industrial Estate provides good accessibility depending on the location of the unit within the estate. Space at the western part of the estate is constrained due to the configuration and orientation of units. Car parking at the front of each unit further restricts potential turning space for HGVs within these two estates.

10.3 Overview of Other Employment Land in Southend

The review of other employment land sets the JAAP land and future provision in its wider context and is based upon the evidence provided by the GVA Grimley report of 2005. The context can be summarised as follows:

Location	Size	Commentary	Future Potential
Progress Road	18ha. Over 78,000 sq.m. of floorspace	Largest industrial estate in Southend. Stock condition generally poor (69%) with a further 14% considered reasonable and 17% good quality. Quality is a factor of age and continued intensity of use. Overall appearance of the estate is poor with many of the secondary internal roads in poor condition and evidence of crime/vandalism. A number of units are vacant and some plots under-utilised. Some recent development has taken place in the north east corner of the estate.	Public sector intervention on the estate is aimed at supporting the development of modern business units. The estate is particularly suitable for the development of modern business premises that maximise the estate's accessibility and location.
Airborne Close	Not available	Small, compact industrial area adjacent to the A127. Generally includes light industrial and B8 storage units. Generally the appearance of the estate is good with significant amenity provision. There were no vacant units at the time of survey.	This is a successful and well occupied employment location that should be retained for future employment use. However, in terms of future potential there is no significant level of land or redevelopment to allow for intensification. Opportunity is likely to be on a site by site basis.
Comet Way	Not available	Small industrial/business park to the north-west of the town centre and located adjacent to other employment areas within Rochford District. The stock is polarised between good (56%) and poor (33%) provision. The better stock relates to a number of new high-quality office and industrial units developed post 1980. Most stock (44%) falls within the B1c Use Class with the remainder largely in B1a Use Class, all of which is modern. The environment on the estate is also good, with internal roads and spaces in good condition. The estate is also in close proximity to some residential areas	Comet Way is constrained on all boundaries except to the north where allocated employment land is within the JAAP area. Potential for redevelopment or enhancement of the existing employment provision may exist within the estate where current stock is ageing. Could be established as a key 'business park' for small enterprises.
Prittlebrook and Priory Crescent Industrial Areas	5.5ha.	A medium sized concentration of employment to the north of Priory Park. The quality of the estate is generally poor with 50% of stock classed as this and only 13% stock in good condition. This reflects its age, with almost two-thirds of stock	The area is constrained by the A1159 to the south, mainline railway to the east, by residential development in the north and a sports ground in the west. Much of the existing vacant stock is obsolete and

Location	Size	Commentary	Future Potential
		dating from the post-war period. The overall appearance of the area is average and generally mixed. Internal estate roads are average, there is little provision of pavements or pedestrian routes, and there was no evidence of crime or vandalism. However, overall layout of the area is poor.	inappropriate for modern use. For example the vacant offices are unlikely to attract a tenant without significant refurbishment. Any future for the area essentially lies in its complete redevelopment, the main potential being for a modern business park. Increased employment can be accommodated through attracting higher value and higher density employment uses.
Temple Farm Industrial Estate	12ha. 65,000 sq.m. of floorspace	Second largest estate in the Borough with good accessibility from the A127. The estate is organised around a grid system with similar units provided on each block. Current stock is considered good with 70% classified as such and only 9% classed as poor. The modern stock is made up largely by industrial units but includes some offices at the most easterly part of the estate. 91% of units are classed as B1c. General environment is good, reflecting the modern nature of much of the estate. At the time of survey there were 26 vacant units on the estate.	The estate is bounded by agricultural land (including to the north), the mainline railway and a cemetery (to the south). Potential expansion is limited and whilst undeveloped land does exist to the west, this is small and not capable of accommodating significant new employment uses. Undeveloped land to the north lies outside of Southend Borough
Stock Road	11ha. 35,000 sq.m. of floorspace	A medium sized employment area of generally reasonable condition. The more modern floorspace on the estate relates to the presence of a single occupier. Stock is split relatively evenly between A1 Use (23%), B1c Use (30%) and B2 Use (33%). In terms of environment the south easterly part of the estate is generally poor and the westerly part generally good (due to the presence and influence of the large single occupier. Overall quality however is compromised by a small number of large, heavy industrial occupiers. A number of vacant units were recorded.	Site is bounded by a Cemetery, to the west by the mainline railway and to the south by a sewage works and Eastern Avenue. Future opportunity relates to the potential relocation of the large heavy industrial occupiers to be replaced by greener light industrial uses.

Location	Size	Commentary	Future Potential
Sutton Road	Not available	The area is a small but densely populated area close to the town centre and bounded by railway lands and residential development. The estate comprises a number of retail outlets and a mix of uses which occupy neighbouring roads. There is a contrast in the quality and overall appearance of the area with Sutton Road being reasonable, Grainger Road being poor and Short Street being 'smart'. Vacant units are concentrated on Grainger Road.	Future development may be compromised by the neighbouring residential units and recent loos of employment land at Kenway Works. Land assembly at Grainger Road may offer potential to reconfigure this area of the estate for industrial and commercial uses.
Towerfield Road, Shoeburyness	6ha. 29,000 sq.m. of floorspace	Medium sized estate located in Shoebury. Generally the stock is reasonable quality (52%) with a further 41% considered good. Also most of the stock falls within the B1c category (93%). In terms of environment the appearance is average but the area is well located close to Shoeburyness train station. A small number of vacancies were recorded and generally the estate enjoys high occupancy levels. Overall the estate is well maintained.	The estate is bounded on all sides by residential development, local roads and railway (lines and land). In terms of expansion the estate is very constrained and redevelopment would need to take place on existing areas. There is an opportunity for intensification through more efficient provision of car parking to release development land.
Camperfield Road, Shoeburyness	6ha. 35,000 sq.m. of floorspace	Stock is generally B1/B2 built in the 1980's and of reasonable quality. It also accommodates on of the Borough's major employers (HM Customs & Excise). There were no vacant units in the area.	The only redevelopment opportunity would be associated with the relocation of HM Customs & Excise.
Vanguard Way, Shoeburyness	8.5ha. 30,000 sq.m. of floorspace	A medium sized industrial estate considered to be of good quality (78% of stock). However, a large number proportion of these units are in the new Seedbed Centre (incubation centre). 86% of units are B1c light industrial units. Overall appearance is mixed and skewed by the Seedbed Centre development. However, overall quality is compromised by a small number of large, heavy industrial occupiers. There was a relatively high level of vacancy of units, some vacant and under-utilised sites	The estate contains a large gasometer on related land to the west and is bounded on all sides by either residential development or local roads. It is also adjacent to railway lines and sidings to the south. There are potential improvement and development opportunities within the existing sites.

10.4 Summary

- Within the JAAP area the current employment land allocations are generally of good quality, well occupied and vibrant areas. The area is home to a diverse mix of businesses and not just B-class uses; the stock is generally modern (78% of sites) and condition is either good (42%) or average (48%).
- While there are around 21 units vacant at the present time (from business survey walk-over), there are a limited number of vacant sites providing development opportunities. There does appear to be some opportunities for intensification of employment land around the airport (for example Aviation Way). However, the overall conclusion is there is limited opportunity for expansion within the existing employment areas. Aviation Way presents the greatest future potential.
- The picture of wider employment land allocations in Southend is more mixed but equally constrained. The most successful sites tend to be located along the A127 corridor, benefiting from the accessibility to the main road network. However, the overall quality of the current stock is relatively poor and constrained in terms of expansion land. The future potential offered by a number of existing allocations lies in redevelopment/upgrade to help meet future employment needs. Where potential expansion land is identified it tends to be in neighbouring authority areas.

PART 3: SCENARIOS

11 Scenarios & Appraisal

11.1 Introduction

The section sets out the high level appraisal of the JAAP scenarios presented in the 'Issues and Options' report published in June 2008. Each one of the scenarios has been appraised in respect of the economic/employment impact and environmental impact.

Each scenario is briefly outlined below for reference. Further information can be found in the JAAP Issues and Options report.

11.2 JAAP Scenarios

11.2.1 Scenario 1: Low Growth (do minimum)

An obvious scenario for the JAAP would be to maintain the current 'status quo' in the area in respect of the encouragement of employment and the role of the airport. With regards to the latter, this scenario would see the current airport model continuing and would see limited investment in the airport (any investment would focus on maintenance of existing facilities). The airport would incrementally grow its MRO base within the constraints of its existing operation, primarily focused on the northern maintenance zone. Passenger traffic would remain a marginal function for the airport. No investment in the airport terminal or transport infrastructure would be made to support the role of the airport.

Likewise, wider employment growth in this scenario is constrained to being accommodated within the existing designated employment areas and particularly improvement/ intensification to Aviation Way Business Park. Through intensification there would be the potential to accommodate up to a further 620 jobs in up to 15,000 sq.m. of new office/light industrial floorspace. However, this restricted level of development is likely to constrain the needs of current businesses looking to expand their operation in the area (26% of whom felt current premises only partially meet their future needs) and fail to meet the policy aspirations set for the JAAP in terms of its employment role.

In land use terms, no new employment allocations would be committed and development would be concentrated within existing developed areas. Transport improvements required to the area would be minimal, relating to improvements to the roundabout at the entrance to Aviation Way Business Park to support employment growth in that area.

11.2.2 Scenario 2(a): Medium Growth

The JAAP area is already characterised by a focus towards the provision of employment for the Southend and Rochford economies. Key concentrations of employment include the airport itself; Aviation Way Business Park; Laurence Industrial Park; and the retail park to the east of the airport.

Scenario 2(a) envisages a continuation of this role through the intensification and protection of existing employment areas, supported by the provision of a new employment allocation to the north of Aviation Way (part of Site iia) and predicated on its suitability as a marketable employment location. With the envisaged growth in employment focused towards office and light industrial uses, the new allocation provides the opportunity for development of a new business park facility that is currently under provided in the wider sub-region. To facilitate this provision new transport infrastructure is envisaged to improve accessibility to employment areas. These improvements are likely

to include improvement to the existing roundabout at the entrance to Aviation Way; new access into Aviation Way off Cherry Orchard Way and improved capacity to the middle section of Cherry Orchard Way itself.

The future role of the airport under this scenario will be for it to continue in its current form. This would mean limited investment in the airport, with any investment focused towards maintenance of existing facilities. The airport would incrementally grow its MRO base within the constraints of its existing operation, primarily in the northern maintenance zone. Passenger traffic would remain a marginal function for the business.

11.2.3 Scenario 2(b): Medium Growth – 'Aviation Cluster'

Scenario 2(b) envisages London Southend Airport becoming a driver of the sub-regional economy and specifically shaping the future focus of the JAAP. The aim would be to support the growth and investment in the airport to enable it to develop a passenger based market of up to 2 million passengers. The model for growth is based around the published master plan which maintains the existing runway but provides new infrastructure (railway, hotel, and terminal) to develop and sell the asset to potential MRO, FBO and aviation companies. Passenger numbers would grow to 2 mppa by 2030 generated by the increased catchment provided by the railway connection to London. Growth in the MRO operation would see the reconfiguration and extension of the southern and northern maintenance areas, including an expansion to the airport boundary to include land adjacent to the northern maintenance area.

Supporting the growth of aviation-related employment within the airport boundary, a positive land use approach to areas adjacent to the airport would be adopted. The intensification and growth of employment in the vicinity of Aviation Way would be restricted to aviation businesses to help develop a coordinated and focused cluster.

11.2.4 Scenario 3: High Growth

Scenario 3 presents a high growth scenario that would see the JAAP taking a positive stance to both the role of the airport and the wider need for employment land in the two local authority areas. The airport model is based around an extended runway that will facilitate larger aircraft and increase the potential attraction of aviation companies (passenger and MRO), and associated infrastructure development. The runway would be lengthened to the south to provide a strip of 1,799 metres, extended across Eastwoodbury Lane into the current southern RESA. While the growth in terms of passenger numbers would remain capped at 2 mppa, the prospect of reaching this maximum capacity is greatly enhanced by the improved attractiveness of the airport asset. Under this scenario the airport would realistically represent an economic asset and driver for the sub-regional economy.

The land use implications of this scenario fall within and adjacent to the existing airport boundary. Within the boundary, land will be used as efficiently as possible to accommodate operators and MRO companies. Given operational constraints, redevelopment is focused on the northern and southern maintenance zones, the existing terminal area, and the area currently occupied by the flying clubs to the east of the runways. Outside the airport boundary employment related development will be allowed to the north of Aviation Way on sites ii(a) and site ii(d) – the rugby club site, and to the west of the current airport ancillary area (site iii) – the latter incorporated within a revised boundary. In addition, the area will grow its employment focus through extending Aviation Way to accommodate demand from both aviation sectors and wider sectors.

Given the JAAP's role in supporting both sources of employment, the new land allocated to accommodate employment would amount to around 21ha. principally for business park provision. The likely outcome would see a greater focus of aviation-related business in

the current Aviation Way employment area, with some areas potentially taken into the airport operational boundary to provide more area with direct runway access. Residential development will be used to improve the Brickworks' site and other areas of local amenity will be improved to maintain the overall environmental quality of the area for residents, businesses and visitors.

11.3 Economic Appraisal

This initial economic appraisal focuses on the employment implications on the JAAP scenarios. Consideration is given to the two main sources of employment impact: airport related employment impact, and the wider economic impact.

11.3.1 Airport Economic Impact

Evidence in respect of the airport impact is drawn from two existing sources: the 'London Southend Airport Master Plan Study, 2005' and the York Aviation LLP Report for EEDA (2006) which validates and builds upon the former. Between them these reports identify current employment associated with airport operations and how this potentially increases as the airport develops. Our assessment for each scenario is developed around consideration of these impacts.

Table 11-1 Statement on Airport Economic Impact

Scenario	Airport Model	Employment Impact
1	Current Model	If the model for the future of the airport is based on continuation of the current model of operations it is envisaged that additional employment associated with the airport would be marginal. The York Aviation report identified baseline employment supported by the airport (2005) in the Thames Gateway South Essex Region was 1,050 FTEs. These were broken down in to 930 direct jobs (120 airside and 810 MRO); 40 indirect FTEs (10 air-related and 30 MRO-related) and 80 induced FTEs (10 air-related and 70 MRO-related). Over the plan period we would anticipate airside jobs to remain static on the basis that marginal increases in air traffic would be associated with productivity gains that would reduce the jobs per passenger ratio at the airport. While incremental growth in MRO activity would occur, it would be constrained by limited aircraft capacity at the airport and limited available land within the airport boundary. In addition a relatively high proportion of jobs created could be temporary or contract in nature. Overall employment additionality to 2021 is considered negligible.
2(a)	Current Model	Under Scenario 2(a) the current airport model applies and so the analysis above would be relevant.
2(b)	Growth – Existing Runway	The growth of the airport to 2 mppa by 2030 will result in a significant increase in employment associated with the airport and aviation industry from current levels. Total employment supported by the airport to 2030 under this growth model is 2,400 FTEs. This includes 2,110 direct FTEs (910 air side and 1,200 MRO); 100 indirect and 190 induced FTEs. Within the plan period to 2021 the report indicates that in 2020 the employment supported would be 2,160 FTEs including 1,900 direct FTEs (700 air side and 1,200 MRO); 90 indirect and 170 induced FTEs. Therefore, the additionality created by this growth model to 2020 (over and above 2005 employment) is 1,110 FTEs including 970 direct FTEs and 140 indirect/induced FTEs.
3	Growth – Extended Runway	There is currently no published data available on the economic impact of the extended runway option for airport growth. However, based on the understanding that this option is less risky than the

		previous model and will enable the airport to grow at a faster rate, a key aspect of additionality relates to the earlier delivery of new employment opportunity in the area. It is envisaged that the airport could reach 2 mppa by 2015 and that passenger activity would be capped at this level. Therefore, it is assumed that the employment supported by the airport would in 2021 is 2,400 FTEs. This includes 2,110 direct FTEs (910 air side and 1,200 MRO); 100 indirect and 190 induced FTEs. In terms of additionality over 2005 baseline employment, this amounts to 1,350 FTEs including 1,180 direct FTEs and 170 indirect/induced FTEs.

11.3.2 Economic Development Impact

The wider economic and employment impact is associated with potential employment that could be located in the JAAP area if a specific development scenario transpires. This employment impact is estimated based on assumed levels of development (floorspace by use class) that is converted to jobs by using appropriate floorspace per job densities.

The methodology used is set out below.

- Each scenario assumes an intensity of development which is translated in to site specific proposals, identifying if development takes place and the nature of development in terms of use class. These assumptions are presented in the table overleaf
- Based on the size of each site and its use, employment floorspace is calculated using assuming site plot ratios. The proposals in terms of all employment uses are for B1 use only, either in the form of low density/business park office accommodation or flexible light industrial provision. The assumed plot ratios for these uses are 60% for offices and 40% for light industrial units.
- Floorspace is translated into potential employment using the following job densities: B1 (offices) – 20 sq.m. per worker, B1 (light industrial) – 35 sq.m. per worker.

Table 11-2: Assumptions of Site Development

Site Development in each Option

Site	Scenario 1 - Low Growth	Scenario 2(a) - Medium Growth	Scenario 2(b) - Medium Growth (Aviation)	Scenario 3 - High Growth
i	No development	Limited enabling residential to facilitate environmental improvement	Limited enabling residential to facilitate environmental improvement	site goes towards mixed use with employment uses towards the south to link in with growing employment cluster
ii(a)	No development	Empoyment development (50%)	Empoyment development (50%)	Employment development (100%)
ii(b)	Retained as arable land	Retained as arable land	Retained as arable land	Redevelopment for extended business park
ii (c)	Forms part of green lung/wedge	Forms part of green lung/wedge	Forms part of green lung/wedge	Forms part of green lung/wedge
ii (d)	No development	No development	No development	Redevelopment for extended business park
iii	remains green space	remains green space	Becomes airport MRO land	Becomes airport MRO land
iv	Intensification of exisitng land allocation	Intensification of exisitng land allocation	Intensification of exisitng land allocation	Intensification of exisitng land allocation
v	Retained and improved as amenity space	Retained and improved as amenity space	Retained and improved as amenity space, safegaurding future access route to airport	Retained and improved as amenity space, safegaurding future access route to airport
vi	Remains operational airport	Remains operational airport	More intensly used airport and potential land swap within Aviation Way	more intensly used airport and potential land swap of IPECO sites adjacent to site iii
vii	No development	No development	masterplan development of new airport terminal and associated car parking and hotel and railway station	masterplan development of new airport terminal and associated car parking and hotel and railway station
viii	no change from current	no change from current	relocated terminal and facilities allows for FBO expnasion in this area and more maintenance and hotel	relocated terminal and facilities allows for FBO expnasion in this area and more maintenance and hotel
ix	Green space enhancement	Green space enhancement	Green space enhancement	Green space enhancement
x	Area remains as airport RESA	Area remains as airport RESA	Area remains as airport RESA	Runway developed into this area, leading to the closure of Eastwoodbury Lane
xi	Open space	Possible park'n'ride	Possible park'n'ride	Possible park'n'ride

The resulting employment impact calculations are presented in Table 11-3 overleaf. In summary the conclusions on wider employment are presented below.

- *Scenario 1 – Low Growth* would see a potential increase of up to 750 jobs in the JAAP area associated with more intense use of existing employment land. This would be accommodated in up to 15,000 sq.m. of gross B1 floorspace.
- *Scenario 2 – Medium Growth* would see new land allocated and the potential for an additional 64,000 sq.m. of gross B1 floorspace, primarily provided in a new business park format. This development could support up to 3,200 jobs in general B1 employment sectors.
- *Scenario 2(b) – Medium Growth (Aviation)* would see the same level of development and employment impact as seen under the previous scenario. The difference is that the focus of employment growth would be on aviation-related employment.
- *Scenario 3 – High Growth* would result in the greatest economic impact with a total of 94,000 sq.m. of gross employment floorspace created to support up to 4,700 new additional jobs in the JAAP area.

Table 11-3: Wider Employment – Floorspace and Employment Calculations

Area of Change		Net Developable area@75%		Floorspace (sq.m.)			Employment (nos)		
No	**Description**	**(ha)**	**(sq.m.)**	**B1 (office)**	**B1 (light inds)**	**Total**	**B1 (office)**	**B1 (light inds)**	**Total**
Option 1 - Low Growth (do minimum)									
iv	Aviation Way Business Park*	3	30,000	9,000	6,000	15,000	450	300	750
	Total	***3***	***30,000***	***9,000***	***6,000***	***15,000***	***450***	***300***	***750***
Option 2 (a) - Medium Growth									
iia	Land north of Aviation way (50%)	10	97,500	29,000	20,000	49,000	1,450	1,000	2,450
iv	Aviation Way Business Park*	3	30,000	9,000	6,000	15,000	450	300	750
	Total	***13***	***127,500***	***38,000***	***26,000***	***64,000***	***1,900***	***1,300***	***3,200***
Option 2 (b) - Medium Growth (Aviation)									
iia	Land north of Aviation way (50%)	10	97,500	29,000	20,000	49,000	1,450	1,000	2,450
iv	Aviation Way Business Park*	3	30,000	9,000	6,000	15,000	450	300	750
	Total	***13***	***127,500***	***38,000***	***26,000***	***64,000***	***1,900***	***1,300***	***3,200***
Option 3 - High Growth									
iia	Land north of Aviation way	10	97,500	29,000	20,000	49,000	1,450	1,000	2,450
iid	Rugby Club	6	60,000	18,000	12,000	30,000	900	600	1,500
iv	Aviation Way Business Park*	3	30,000	9,000	6,000	15,000	450	300	750
	Total	***19***	***187,500***	***56,000***	***38,000***	***94,000***	***2,800***	***1,900***	***4,700***

Source: Halcrow

11.3.3 *Summary of Employment Impact*

	Additional Airport Employment	Additional Wider Employment	Total Additional Employment
Scenario 1 – Low Growth	-	750	750
Scenario 2(a) – Medium Growth	-	3,200	3,200
Scenario 2(b) – Medium Growth (aviation)	1,110	3,200	4,310
Scenario 3 – High Growth	1,350	4,700	6,050

11.4 Environmental Appraisal

This environmental review provides a preliminary appraisal of proposed JAAP consultation options and seeks to fulfil the following objectives:

- To identify environmental issues associated with each individual development option for the proposed JAAP.
- To identify environmental opportunities associated with each individual development option for the proposed JAAP which could enhance the site for leisure, recreational and ecological protection.

The review builds on the earlier environmental site appraisal presented in Section 5 which reviewed the following environmental topics, detailing environmental baseline and potential constraints and opportunities related to future development:

- Noise and Vibration
- Air Quality
- Flora and Fauna
- Landscape
- Recreation
- Ground Conditions
- Archaeology and Cultural Heritage
- Water

11.5 Scenario Review

11.5.1 Scenario 1 – Low Growth (Do minimum)

Topics	Advantages	Disadvantages
Noise and Vibration		Increased industrial/commercial operations could negatively impact on noise and vibration levels. Impacts will occur both during construction and the subsequent operation phases. Receptors affected by these impacts would include occupants of the existing industrial/commercial areas.
Air Quality		An increase in industrial land use could negatively impact on air quality within the local area. A decrease in air quality could potentially affect the amenity value of the surrounding areas.
Flora and Fauna	The derelict and abandoned nature of the Brickworks' site may potentially provide an ecologically valuable area. This area may provide habitat for a number of protected and important species. Groups including amphibians, reptiles and bats may be using the site for feeding, breeding and/or hibernation.	The conversion of the agricultural land south of Eastwoodbury Lane could negatively impact on agricultural habitat. This habitat type could support such species as Skylark *Alauda arvensis*, which is a Biodiversity Action Plan species, targeted to either restore or protect the population of this species.
Landscape	None because development is concentrated on infill of existing development land	None because development is concentrated on infill of existing development land
Recreation	The development of both arable land to the south of Eastwoodbury Lane and the rough grazing land situated between the railway and Southend Road will have a positive impact on recreational facilities within the area, by providing extensive areas of green open spaces.	A number of public footpaths run within the study, certain footpaths running in close proximity and/or adjacent to the main employment area which incorporates Aviation Way Business Park. Intensification of the industrial area will negatively impact further on surrounding footpaths, affecting users of the footpaths, discouraging the use of these routes for recreation and/or as a form of sustainable travel. Development of the Brickworks' site could also negatively impact on adjacent footpaths.
Ground Conditions	None because development is concentrated on infill of existing development land	None because development is concentrated on infill of existing development land
Archaeology and Cultural Heritage		Land development could impact on/potentially damage unknown/buried features of interest.
Water		The current employment area within the study site are both within an area of medium flood risk (<1.3% but >0.5% chance of flooding each year), related to Eastwood, Rayleigh and Hawkwell Brook. Any future development would be

Topics	Advantages	Disadvantages
		constrained by Planning Policy Statement 25 – Development and Flood Risk, as development is likely to result in a number of new properties being at risk from flooding. Intensification of the employment areas could increases stresses on watercourses within the study area. There are several surface discharges relating to the airport and industrial areas, and further discharges related to industrial and residential expansion could cause degradation of the quality of water within the area.

11.5.2 Scenario 2(a) – Medium Growth

Topics	Advantages	Disadvantages
Noise and Vibration		Increased industrial/commercial operations and the development of the Brickworks' site could negatively impact on noise and vibration levels. Impacts could occur both during construction and the subsequent operation phases. Receptors affected by these impacts would include occupants of the existing industrial/commercial areas, and residents within the surrounding residential areas, especially along Cherry Orchard Lane and within the vicinity of Eastwoodbury Lane (east and west of Cherry Orchard Way).
Air Quality		Increase in residential and industrial land use could negatively impact on air quality within the local area. A decrease in air quality could potentially affect the amenity value of the surrounding areas.
Flora and Fauna		The derelict and abandoned nature of the Brickworks' site could potentially provide an ecologically valuable area. This area could provide habitat for a number of protected and important species. Groups including amphibians, reptiles and bats could use the site for feeding, breeding and/or hibernation. The development of this area could negatively impact on these habitats, directly affecting the species which use them. The conversion of the agricultural land north of the employment area will negatively impact on agricultural habitat. This habitat type could support such species as

Topics	Advantages	Disadvantages
		Skylark *Alauda arvensis*, a Biodiversity Action Plan species, targeted to restore and/or protect its population.
Landscape	Expansion of country park area will potentially protect the landscape character and visual amenity of the area. The development of the Brickworks' site could potentially enhance the visual quality of the derelict area. Local recreational and amenity improvements would support the overall landscape quality in the JAAP	Situated directly to the west of the Brickworks' site, lies the Cherry Orchard Jubilee Country Park, situated within a Special Landscape Area. This area is designated for its landscape and ecological quality. Development of the Brickworks' site could potentially negatively impact on the landscape character and visual amenity of the surrounding landscape. The negative impact of visual amenity would affect both recreational users of the Country Park and surrounding areas, and residents of Cherry Orchard Lane. Similarly expansion of the employment area would have similar negative impacts on the landscape character and visual amenity of the area.
Recreation	The improvement of both arable land to the south of Eastwoodbury Lane and the rough grazing land situated between the railway and Southend Road will have a positive impact on recreational facilities within the area, by providing extensive areas of green open spaces.	A number of public footpaths run within the study, certain footpaths running in close proximity and/or adjacent to the main employment area which incorporates Aviation Way Business Park. Expansion of the industrial area will negatively impact further on surrounding footpaths, affecting users of the footpaths, discouraging the use of these routes for recreation and/or as a form of sustainable travel. Development of the Brickworks' site could also impact on adjacent footpaths.
Ground Conditions	Past uses of the Brickworks', industrial and airport sites may have led to potentially harmful substances being released into the soil. Development of these sites could potentially enhance the area through remediation of any contaminated land, reducing the risk to potential receptors.	Past uses of the Brickworks', industrial and airport sites may have led to potentially harmful substances being released into the soil. Any development of these areas could negatively impact on contaminant pathways, bringing receptors such as human beings, water and biodiversity into contact with these potentially harmful substances, during both construction and operational phases.
Archaeology and Cultural Heritage		Land development could impact on/potentially damage unknown/buried features of interest.
Water		The current employment area and Brickworks' site within the study site are both within an area of medium flood risk (<1.3% but >0.5% chance of flooding each year), related to Eastwood, Rayleigh and Hawkwell Brook. Any future development would be constrained by Planning Policy

Topics	Advantages	Disadvantages
		Statement 25 – Development and Flood Risk, as development is likely to result in a number of new properties being at risk from flooding. Development of the Brickworks' area and intensification/expansion of the employment areas could increases stresses on watercourses within the study area. There are several surface discharges relating to the airport and industrial areas, and further discharges related to industrial and residential expansion could cause degradation of the quality of water within the area.

11.5.3 Scenario 2(b) – Medium Growth (Aviation Cluster)

Topics	Advantages	Disadvantages
Noise and Vibration		Development and expansion proposals including the development of the Brickworks' site, expansion of the airport and employment areas, are all likely to negatively impact on noise and vibration levels. Impacts will occur both during construction and the subsequent operational phases. Causes of operational impacts on noise and vibration include increased road and rail use, as well as industrial and airport activities. Receptors affected by these impacts would include occupants of the existing industrial/commercial areas, and residents within a wide surrounding residential area of Rochford and Southend-on-Sea. Increases in aircraft activity can have a negative impact on the health of a local population. Increased aircraft noise, sleep disturbance, kerosene odours and aircraft crash risk are specific factors which could impact on a population's health.
Air Quality		Cumulative impacts from increased residential, industrial and airport use could significantly affect air quality within the local area. A decrease in air quality could potentially affect the amenity value of the surrounding areas.
Flora and Fauna		The derelict and abandoned nature of the Brickworks' site may potentially provide an ecologically valuable area. This area may provide habitat for a number of protected and important species. Groups including amphibians, reptiles and bats could use the site for feeding, breeding and/or hibernation. The development of this area may impact on these habitats, directly affect the species which use them. The conversion of the agricultural land north of the employment area will impact on agricultural habitat. This habitat type could support such species as Skylark *Alauda arvensis*, Grey Partridge *Perdix perdix* and Brown Hare *Lepus Europaeus*, all of which are Biodiversity Action Plan species, targeted to restore and/or protect their populations. This option will also result in the loss of ruderal vegetation, grasslands and thick hedgerows which are important for a

Topics	Advantages	Disadvantages
		range of biodiversity, assessed as being sites of local ecological importance.
Landscape	Expansion of country park area will potentially protect the landscape character and visual amenity of the area. The development of the Brickworks' site could potentially enhance the visual quality of the derelict area. Local recreational and amenity improvements would support the overall landscape quality in the JAAP	Situated directly to the west of the Brickworks' site, lies the Cherry Orchard Jubilee Country Park, situated within a Special Landscape Area. This area is designated for its landscape and ecological quality. Development of the Brickworks' site could potentially impact on the landscape character and visual amenity of the surrounding landscape. The impact of visual amenity would affect both recreational users of the Country Park and surrounding areas, and residents of Cherry Orchard Lane. Similarly expansion of the employment area, and airport facilities would have considerable negative impact on the local landscape character and visual amenity of the area. Receptors along Eastwoodbury Lane, Southend Road and existing airport and employment sites will be affected.
Recreation	The development of both arable land to the south of Eastwoodbury Lane and the rough grazing land situated between the railway and Southend Road will have a positive impact on recreational facilities within the area, by providing extensive areas of green open spaces.	A number of public footpaths run within the study, certain footpaths running in close proximity and/or adjacent to the main employment area which incorporates Aviation Way Business Park. Expansion of the industrial area will impact further on surrounding footpaths, affecting users of the footpaths, discouraging the use of these routes for recreation and/or as a form of sustainable travel. Development of the Brickworks' site could also impact negatively on adjacent footpaths.
Ground Conditions	Past uses of the Brickworks', industrial and airport sites could have led to potentially harmful substances being released into the soil. Development of these sites could potentially enhance the area through remediation of any contaminated land. This would impact on any risk towards receptors coming in contact with harmful substances.	Past uses of the Brickworks', industrial and airport sites could have led to potentially harmful substances being released into the soil. Any development of these areas could impact on contaminant pathways, bringing receptors such as human beings, water and biodiversity into contact with these potentially harmful substances, during both construction and operational phases.
Archaeology and Cultural Heritage		Land development could impact on the setting of existing features of archaeological and cultural heritage interest e.g. Church of St Laurence and All Saints, and could also potential damage unknown/buried features of interest.
Water		The current employment area and Brickworks' site within the

Topics	Advantages	Disadvantages
		study site are both within an area of medium flood risk (<1.3% but >0.5% chance of flooding each year), related to Eastwood, Rayleigh and Hawkwell Brook. Any future development would be constrained by Planning Policy Statement 25 – Development and Flood Risk, as development is likely to result in a number of new properties being at risk from flooding. Development of the Brickworks' area and expansion of airport and employment areas could increases stresses on watercourses within the study area. There are several surface discharges relating to the airport and industrial areas, and further discharges related to industrial and residential expansion could cause degradation of the quality of water within the area.

11.5.4 Scenario 3 – High Growth

Topics	Advantages	Disadvantages
Noise and Vibration		Development and expansion proposals including the development of the Brickworks' site, expansion of airport and employment areas are all likely to negatively impact on noise and vibration levels. Impacts will occur both during construction and the subsequent operation phases. Causes of operational impacts on noise and vibration include increased road and rail use and industrial and airport activities. Receptors affected by these impacts would include occupants of the existing industrial/commercial areas, and residents within a wide surrounding residential area of Rochford and Southend of Sea. Increases in aircraft activity can have a negative impact on the health of a local population. Increased aircraft noise, sleep disturbance, kerosene odours and aircraft crash risk are specific factors which could impact on a populations health.
Air Quality		Cumulative impacts from increased residential, industrial and airport use could significantly affect air quality within the local area. A decrease in air quality could potentially affect the

Topics	Advantages	Disadvantages
		amenity value of the surrounding areas.
Flora and Fauna		The derelict and abandoned nature of the Brickworks' site could potentially provide an ecologically valuable area. This area could provide habitat for a number of protected and important species. Groups including amphibians, reptiles and bats could use the site for feeding, breeding and/or hibernation. The development of this area could negatively impact on these habitats, directly affect the species which use them. The conversion of the agricultural land south of Eastwoodbury Lane and north of the employment area will impact on agricultural habitat. This habitat type could support such species as Skylark *Alauda arvensis*, Grey Partridge *Perdix perdix* and Brown Hare *Lepus Europaeus*, all of which are Biodiversity Action Plan species, targeted to restore and/or protect their populations. This option will also result in the loss of ruderal vegetation, grasslands and thick hedgerows which are important for a range of biodiversity, assessed as being sites of local ecological importance.
Landscape	Expansion of country park area will potentially protect the landscape character and visual amenity of the area. The development of the Brickworks' site could potentially enhance the visual quality of the derelict area.	Situated directly to the west of the Brickworks' site, lies the Cherry Orchard Jubilee Country Park, situated within a Special Landscape Area. This area is designated for its landscape and ecological quality. Development of the Brickworks' site could potentially negatively impact on the landscape character and visual amenity of the surrounding landscape. The impact of visual amenity would affect both recreational users of the Country Park and surrounding areas, and residents of Cherry Orchard Lane. Similarly expansion of the employment area, and airport facilities would have considerable negative impact on the local landscape character and visual amenity of the area. Receptors along Eastwoodbury Lane, Southend Road and existing airport and employment sites will be affected.
Recreation	The development of both arable land to the south of Eastwoodbury Lane and the rough grazing land situated between the railway and	A number of public footpaths run within the study, certain footpaths running in close proximity and/or adjacent to the

Topics	Advantages	Disadvantages
	Southend Road will have a positive impact on recreational facilities within the area, by providing extensive areas of green open spaces.	main employment area which incorporates Aviation Way Business Park. Expansion of the industrial area will negatively impact further on surrounding footpaths, affecting users of the footpaths, discouraging the use of these routes for recreation and/or as a form of sustainable travel. Development of the Brickworks' site could also impact on adjacent footpaths.
Ground Conditions	Past uses of the Brickworks', industrial and airport sites could have led to potentially harmful substances being released into the soil. Development of these sites could potentially enhance the area through remediation of any contaminated land. This would impact on the any risk towards receptors becoming in contact with harmful substances.	Past uses of the Brickworks', industrial and airport sites could have led to potentially harmful substances being released into the soil. Any development of these areas could negatively impact on contaminant pathways, bringing receptors such as human beings, water and biodiversity into contact with these potentially harmful substances, during both construction and operational phases.
Archaeology and Cultural Heritage		Land development could impact on the setting of existing features of archaeological and cultural heritage interest e.g. Church of St Laurence and All Saints, and could also potential damage unknown/buried features of interest.
Water		The current employment area and Brickworks' site within the study site are both within an area of medium flood risk (<1.3% but >0.5% chance of flooding each year), related to Eastwood, Rayleigh and Hawkwell Brook. Any future development would be constrained by Planning Policy Statement 25 – Development and Flood Risk, as development is likely to result in a number of new properties being at risk from flooding. Development of the Brickworks' area and expansion of airport and employment areas could increases stresses on watercourses within the study area. There are several surface discharges relating to the airport and industrial areas, and further discharges related to industrial and residential expansion could cause degradation of the quality of water within the area.

APPENDICES

Appendix 1: Case Study

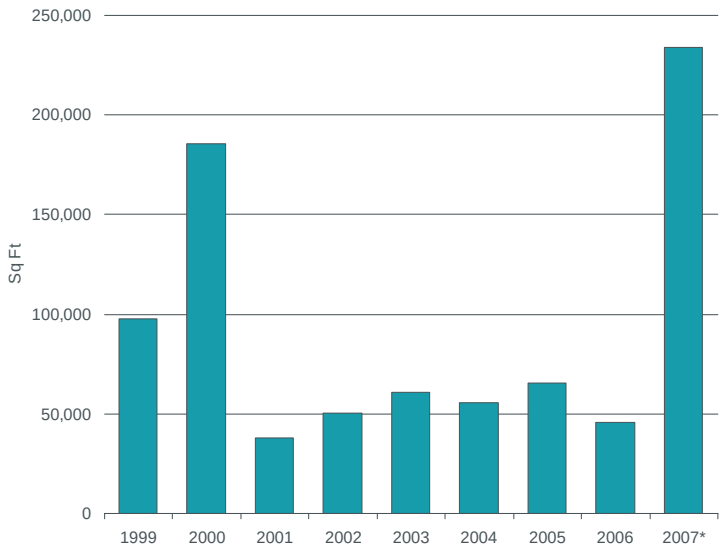
Farnborough Airport – Case Study

This section reviews the inward investment potential for the market area based upon improvements at the airport and surrounds. Considering the potential scale of operations at Southend in the future and the possibility of a Fixed Based Operation (FBO) for business aviation it is relevant to look at the operation at Farnborough Airport.

Savills has experience of Farnborough Airport specifically as well as the surrounding office markets and it is a good example of how an airport environment can attract office occupiers. As a background, Farnborough airport has been a hub for military and civil aviation research for over 100 years.

Take-up in Farnborough has grown significantly during 2007. Ten months into the year, take-up is 400% up on the previous year and 320% up on the 5-year average of 56,000 sq.ft. Putting this into a wider context we can see that Farnborough has out-grown most other locations in the M25 market area. This can be argued is due to its close proximity to an airport, but equally Farnborough is very well located just off the M3 and within easy reach of the M4 corridor and Heathrow. 2007 has seen two large deals, accounting for over 80% of the total space let. Zurich International Life took 99,999 sq.ft. at Farnborough Aerospace Centre and Phoenix IT took 94,000 sq.ft. at Southwood Business Park.

Figure A1 Office take-up in Farnborough (sq.ft.)

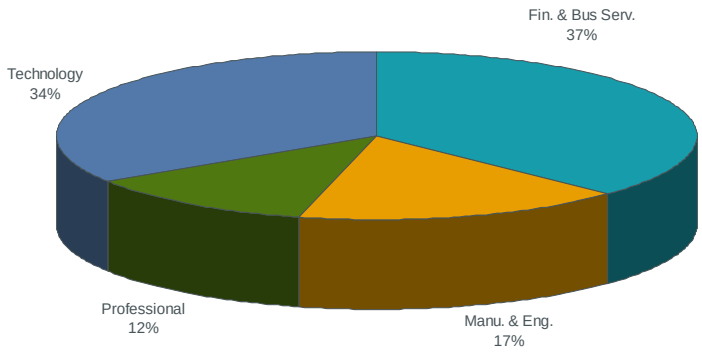


Source: Savills

Note: *as at end Oct

Looking at where demand has been coming from in the last five years, so comparisons can be made to London Southend Airport, we can see that technology and financial & business services sectors are representing over 70% of all take-up. Farnborough is well known for its airport and it has attracted a variety of companies over the years, but not necessarily airport related. Lockheed Martin, Augusta Westland and BAE Systems are major aviation-related companies currently located at the airport. But equally the recent letting to Zurich proves that the location is attracting companies from a variety of business sectors.

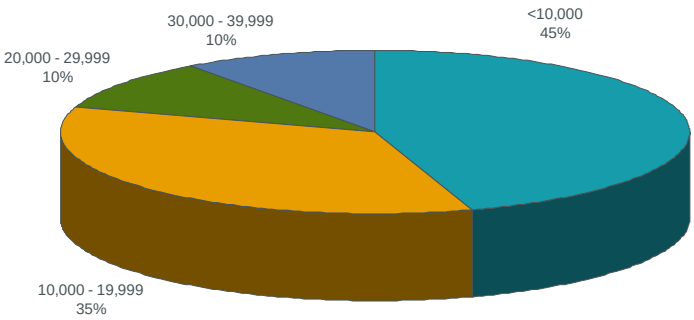
Figure A2 Take-up by business sector in Farnborough



Source: Savills

In the last five years (2002-2006) 45% of all deals in Farnborough were below 10,000 sq.ft. and 80% were below 20,000 sq.ft. Looking at just 2007 though, this shows a different picture with 40% of all take-up being over 40,000 sq.ft. The provision of quality office product by Slough Estates plc (now SEGRO plc) has enabled occupiers to have a significant choice of offices at a discount to the wider market. Rents around the £20 per sq.ft. per annum level is significantly lower than the £36 per sq.ft. per annum being achieved towards the west of London.

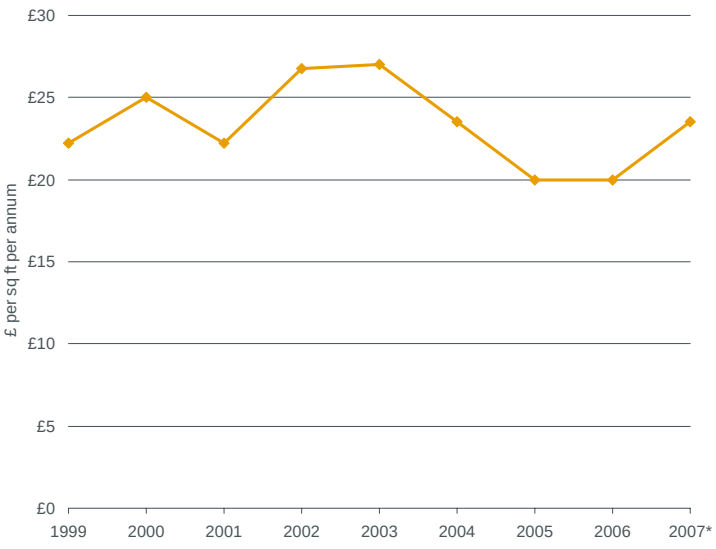
Figure A3 Take-up by size band in Farnborough



Source: Savills

As a result of the provision of new office stock, the rental levels have remained above £20 per sq.ft. per annum even during some of the 'quieter' letting periods in the last couple of years. The airport has had an impact of attracting some airport-related occupiers as with London Southend Airport, but there will remain a higher proportion that will not use the airport and have located in close proximity due to the provision of quality office product at the 'right' rent.

Figure A4 Top rents achieved for offices



Source: Savills

Overall, transportation will remain the key issue rather than the airport itself. The airport is an attractive factor for Farnborough, but accessibility to the M3 and rail connections in to London are equally important. This is coupled with the presence of other significant companies in the area and the availability of staff. The point is that for smaller airports, the airport itself is not a sole driver for economic growth, but one factor.

Appendix 2: Business Survey Questionnaire

Rochford District Council

Southend-on-Sea Borough Council

London Southend Airport Study – Business Survey

Name of Company.....

Address .....
.....
..... Post Code .....

Contact Name ..... Position in company.....

Telephone .....

Email Address.....

What is your company's core business? [.....]

Products made? e.g. vehicles [.....]

Services supplied e.g. finance [.....]

Q1. Total years trading? [.....]

Q2. Total years trading *in this area*? [.....]

Q3. Total years occupying your current land and premises? [.....]

Q4. Total employees currently employed? Full Time [.....] Part Time [.....]

Q5. How would you describe the average skill level of your employees?

High ☐ Medium ☐ Basic ☐

Q6. Please tick then describe if necessary, the age and type of your current land and premises (tick all that apply)

Pre war ☐ Post war ☐ 1980s ☐ 1990s ☐ 2000+ ☐

.....
.....

Modern, flexible modular unit	☐
Purpose built for own occupation	☐
Converted premises	☐
Older premises recycled/adapted	☐
Older purpose built premises	☐
Speculative development	☐

Q7a. Are your current premises meeting the needs of your business?

Yes ☐ No ☐ Partially ☐

Rochford District Council

Southend-on-Sea Borough Council

Q7b. If you answered "no" or "partially" to question 7a please give a brief explanation as to why? .....
.....

Q8. Which type of tenure was used to obtain your current land and premises?

Short term lease (1 - 5 years) □
Medium term lease (6 - 15 years) □
Long term lease (16 + years) □
Freehold □

Q9. Please rank the importance of the following factors in attracting or deterring businesses locating in the employment market area you operate in?

(1) definitely detracts (2) possibly detracts (3) no impact (4) possibly attracts (5) definitely attracts

	1	2	3	4	5
Quality of land and premises	□	□	□	□	□
Quality of the environment	□	□	□	□	□
Relative cost of land and premises	□	□	□	□	□
Type of Tenure	□	□	□	□	□
Proximity to clients and suppliers	□	□	□	□	□
Access to supporting research and development	□	□	□	□	□
Access to ICT [Information Comms Technology]	□	□	□	□	□
Quality of public transport	□	□	□	□	□
Ease of access to main road network	□	□	□	□	□
Ease of access to an airport	□	□	□	□	□
Community facilities e.g. shops, schools, hospitals	□	□	□	□	□
Availability of housing for labour	□	□	□	□	□
Quantity of parking	□	□	□	□	□
Access to skilled labour force	□	□	□	□	□
Relative cost of labour	□	□	□	□	□
Proximity to London Southend Airport	□	□	□	□	□

Other(s) which attract .....

Other(s) which deter .....

Q10. How do you see your business needs changing in the coming years?
.....

Q11. Can your future business needs be satisfied in the Rochford / Southend area?

Yes □ No □ Do not know □

Q12. How important is your proximity to London Southend Airport?

Important □ Some importance □ Not important □

Q13. Would you welcome the Airport's growth and expansion?

Yes □ No □ Do not know □

Q14a. Do you foresee a need to relocate out of the area in the future?

Yes □ No □ Do not know □

Q14b. If you foresee a need to relocate in the future, please explain why and where .....
.....
.....

Q14c. If you foresee a need to relocate in the future please tick the most likely timescale for relocating?

	Now	Before 2011	Before 2021	Before 2031
Tick				

Please return the questionnaire to the prepaid envelope provided by **16th November 2007**.

Please tick the box if you would **not** be willing for us to contact your organisation to develop our research further □

Please tick the box if you wish to be kept informed of the progress of this work □

Please note that Freedom of Information Act requires that this information be available to view if requested by the public. Please couch your answers in general terms if you do not wish to divulge anything that may be commercially sensitive.

Thank you for completing this questionnaire.
Please return it as soon as possible to:

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