Southend-on-Sea Borough Council and Rochford District Council

London Southend and Environs Joint Area Action Plan - Submission Version

Sustainability Appraisal

Project Ref: 27646/002

Doc Ref: Final Report

February 2013

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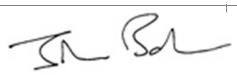
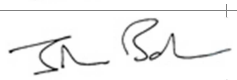
Reviewed by:	John Baker	Partner		12/02/13
Approved by:	John Baker	Partner		12/02/13
For and on behalf of Peter Brett Associates LLP				

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Appendices

1 Introduction

1.1 The Sustainability Appraisal

1.1.1 This is the sustainability appraisal (SA) incorporating strategic environmental assessment (SEA) of the London Southend Airport and Environs Joint Area Action Plan (JAAP) submission version.

1.1.2 The SA is being prepared on behalf of Southend-on-Sea Borough and Rochford District Councils, by consultants Peter Brett Associates LLP (formerly Baker Associates). The appraisal is a process used to assess and inform the preparation of the JAAP. It is an iterative process with successive appraisal stages providing feedback on the JAAP content.

1.1.3 This SA report provides an examination of the submission version of the JAAP (November 2012 version). The purpose is to review the JAAP to assess if it would have any significant impact on delivering sustainable development at the airport site and its environs. All iterations of the SA report also make recommendations possible changes to the JAAP or other measures that can be used to secure the delivery of sustainable development.

1.1.4 This SA looks at the coverage of issues in the JAAP related to sustainable development identifying matters that could be addressed in greater detail to improve performance. The SA also considers whether the approach taken in the JAAP is likely to be successfully implemented, and therefore actually achieve the anticipated benefits for sustainable development.

1.1.5 This SA Report follows earlier stages of SA reporting, including a scoping report, SA of the Issues and Options version and SA of the Preferred Options version. The reports, with the exception of the Preferred Options stage, were open to public consultation. SA reports have been made available to the Council in draft to allow comments to be taken into account in drafting the plan. The iterative way SA reports and the JAAP have been drafted has helped to inform the Council teams preparing the JAAP of the principles of sustainable development that should be taken into account, in order to create a more sustainable plan.

1.2 The Joint Area Action Plan

1.2.1 Plans have a positive role in making better places. Good planning can help make sure that growth and change are managed in a way to secure benefits for the environment and communities. It is not the role of the SA to make judgements about the suitability of development, but rather to set out in a clear way what the sustainability implications might be of pursuing the proposed development.

1.2.2 Airport expansion and the likely increase in air travel this would create are likely to have adverse impacts on sustainability. Perhaps the more significant of these relate the contribution aircraft emissions make to climate change from the release of greenhouse gases. These climate change impacts means that in general airport expansion is not compatible with environmental sustainability.

1.2.3 However, expansion is already underway at London Southend airport through a runway extension and improved terminal facilities. Therefore, growth is not being determined through the JAAP and the emissions from are aircraft not a consideration of this SA.

1.2.4 The JAAP can have a positive role in helping to manage the airport expansion to deliver benefits local economy, reduce as far as possible the local environmental impacts of development and co-ordinate access improvements to airport and business parks that reduces car reliance.

1.2.5 The JAAP also provides the opportunity to bring more stringent control measures into operation at the airport. This will help reduce the impact of aircraft movements and ground testing on the local population, including the potential to limit operational hours and reduce night flights and therefore noise disturbance.

1.2.6 The JAAP can help deliver benefits from airport and business expansion to Southend and Rochford and the wider south Essex area.

1.2.7 Therefore, this SA concentrates on these factors of the JAAP, whilst not forgetting that increasing air travel is unlikely to ever be compatible with sustainable development in its true sense.

1.3 Airport Expansion

1.3.1 The airport was identified as a location for expansion in the previous government's Future of Air Transport White Paper (2003). The Paper recognises the possible contribution of the airport for business aviation and to for sub-regional economic development. The Draft Aviation National Policy Framework (July 2012), does not specifically identify the airport for growth, but is supportive of growth at regional airports based on individual opportunities and merits. The Framework also refers to the current expansion underway at the airport. Airport expansion is also contained in the policies of the Core Strategies for Rochford and Southend Local Development Plans, setting the context for development.

1.3.2 With or without the JAAP, the number of passengers using the airport is expected to expand. A new railway station was recently opened by the airport. London Southend Airport received planning permission for expansion of the terminal buildings and extension to the runway of 300m prior to the JAAP preparation. These works are underway with Phase 1 expansion of the terminal buildings and the runway extension are complete, Phase 2 of terminal extension is underway. These schemes have helped speed up passenger waiting times and the extended runway making the airport more attractive to commercial passenger airlines offering scheduled flights.

1.3.3 To allow for the runway extension a new link road has had to be built between Nestuda Way and Eastwoodbury Lane. It is worth noting that even without the runway extension the increased terminal capacity means that the airport can now increase to 740,000 passengers a year by 2020. However, the new runway means more modern aircraft, favoured by airline operators, can use the airport. This allows from the expansion to 2 million passengers per annum by 2030 a realistic option.

2 Sustainability Appraisal Methods

2.1.1 Sustainability appraisal (SA) is required of the emerging London Southend Airport Joint Area Action Plan (JAAP) under the regulations of the Planning and Compulsory Purchase Act 2004. Strategic Environmental Assessment (SEA) of certain plans and programmes and also required by the European Directive EC/2001/42. The aim of this process of SA is to meet the SEA and SA requirements through a common process with common reporting – jointly known as an SA.

2.1.2 This pragmatic and combined approach does not mean that the SA and findings will be compromised. The appraisal remains thorough and robust, based on the particular needs and characteristics of the area and the JAAP.

2.1.3 This SA is being undertaken independently from the JAAP preparation by consultants. This provides a proper impartial test of the planning document. It is only through being removed from the process of preparation that it is possible to give a full critical analysis of the JAAP, and the identification of possible weakness or gaps. However, there have been discussions between those undertaking the SA and those preparing the JAAP to allow sustainability matters to be incorporated into the plan through more informal feedback of ideas.

2.1.4 Sustainability Appraisal is an integral part of good plan making and should not be seen as a separate activity. Its purpose is to promote sustainable development by integrating sustainability considerations into plans. By testing the emerging content of the JAAP it is possible to identify any likely significant effects of the plan, and give opportunities for improving the social, environmental and economic conditions by implementing the plan.

2.1.5 Sustainability Appraisal should provide:

- The long-term view of how the area covered by the plan is expected to develop;
- A mechanism for ensuring that sustainability objectives are translated into sustainable policies;
- A reflection of global, national, regional and local concerns;
- Form and integral part of all stages of plan preparation; and
- Incorporate the requirements of the sea directive.

2.1.6 The method of sustainability appraisal uses the framework of sustainability objectives (**Section 4**) as the basis for assessment of the JAAP. The SA uses these objectives, as a general description of sustainability considerations relevant to the airport and associated employment development. They provide the basis on which to assess whether the JAAP is helping to make a contribution to more sustainable development. The appraisal is based on an issue by issue appraisal of the submission document, considering the relevance of policies and possible scope for changes.

2.1.7 More detail on the derivation of these sustainability objectives is available in the SA scoping report and **Section 4** of this report and with the full SA framework shown in **Appendix 2**.

3 Stages of Sustainability Appraisal

3.1 Introduction

3.1.1 The sustainability appraisal (SA) is an iterative process between plan preparation and appraisal. However, Baker Associates (now Peter Brett Associates (PBA)) was only commissioned to complete the SA work at the Preferred Option SA stage. Work on the SA had been completed prior to this date by Halcrow consultants.

3.1.2 **Figure 3.1** shows the stages of SA and plan making. The figure also shows how the PBA SA fits with the other stages of the appraisal, to ensure a continuation of the processes through the transition from one team to the other.

3.1.3 The stages within the box at the top of the flowchart are those completed prior to PBA's involvement, although these were reviewed and updated where necessary at the start of PBA's involvement.

3.2 Scoping Report

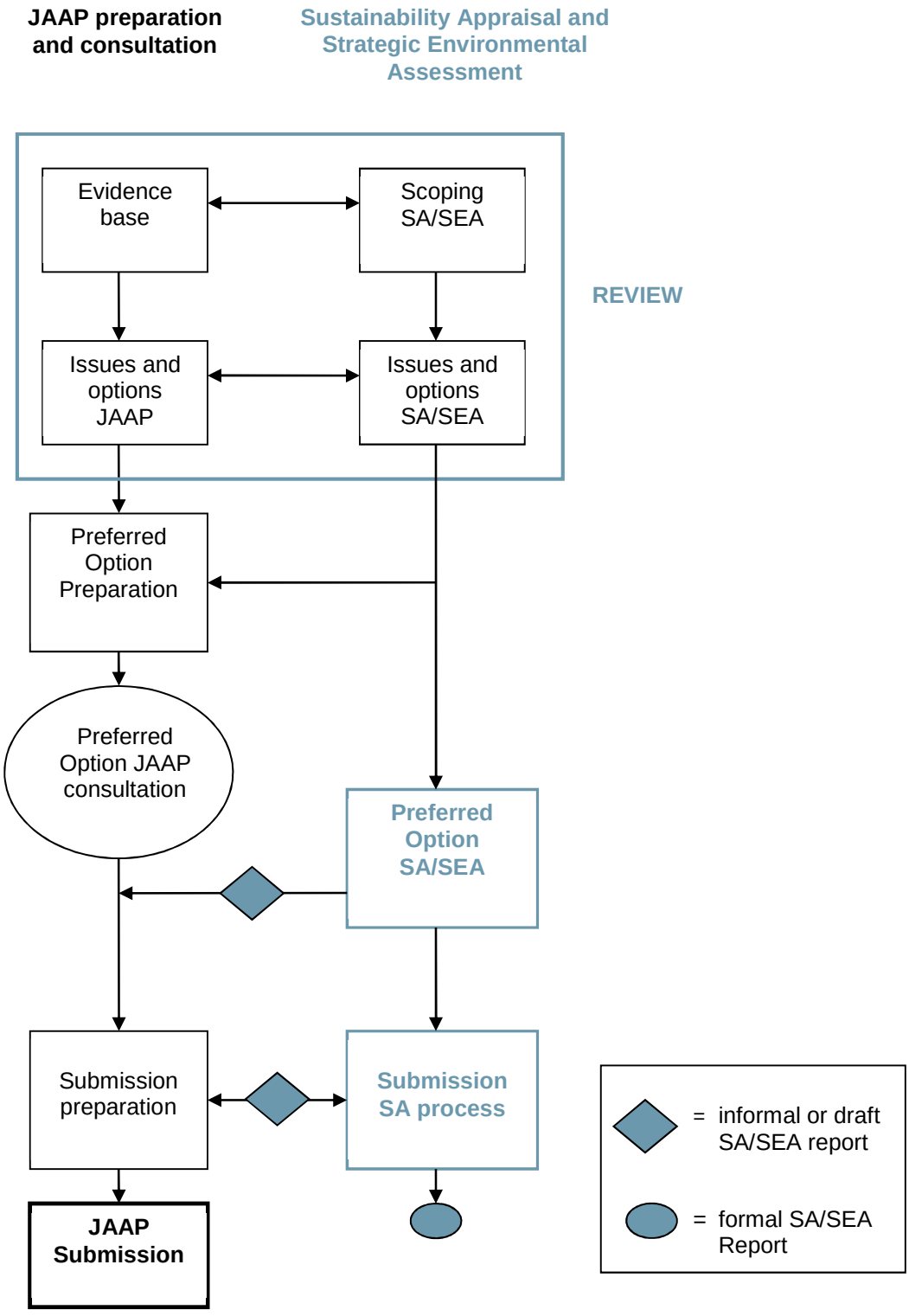
3.2.1 Prepared by Halcrow consultants in January 2008 this report sets out the background to the sustainability appraisal (SA) process. This the first stage of sustainability appraisal preparation. The report included:

- The policy context for the JAAP and the sustainability appraisal (SA);
- A characterisation of the baseline environment, economy and social issues in the wider JAAP area;
- Identification of the main sustainability issues in the area;
- Derivation of a sustainability framework containing objectives for use in the appraisal receipt; and
- Details of next steps.

3.2.2 The scoping report was consulted upon with the statutory consultees, Natural England, Environment Agency and English Heritage. Consultation was also widened to allow anyone to comment on the report, with the purpose of informing the following stages of appraisal. The scoping report provides a useful companion to this SA report and is available for download from the Southend JAAP website.

3.2.3 The issues of importance and sustainability framework are detailed in further depth in **Section 4** of this report. The scoping report is available online for further information.

Figure 3.1: The parallel stages of JAAP preparation and sustainability appraisal



3.3 Sustainability Appraisal – Issues and Options including consideration of alternatives

3.3.1 The purpose of this stage of the appraisal was to:

- To contribute to the development of a sustainable preferred option for the Airport and Joint Area regeneration;
- To identify key issues to be addressed at later stages of the Action Plan, including the preferred option stage; and
- To ensure compliance with procedures and practices for undertaking sustainability appraisal.

3.3.2 At this stage of the SA each of the options for proceeding with the JAAP was assessed using the sustainability objectives against a seven point scale. This scale ranged from having a Very Positive impact against sustainability objectives, through having a Neutral effect to having a Very Negative impact.

3.3.3 The appraisal was based around the five 'issues' from the JAAP report. These issues were:

- Issue 1 – The future development and role of London Southend Airport;
- Issue 2 – The future of the JAAP as an employment area;
- Issue 3 – Balancing development with environmental enhancement in the JAAP;
- Issue 4 – Transport and movement; and
- Issue 5 – JAAP 'Areas for Change'.

3.3.4 Each issue was considered as part of one of four scenarios set out in the issues report. The scenarios were:

- Scenario 1 – Low growth scenario (do minimum);
- Scenario 2 (a) – Medium growth;
- Scenario 2 (b) – Medium growth –aviation cluster; and
- Scenario 3 – High growth.

3.3.5 The findings of this earlier options appraisal are shown in **Section 5**.

3.4 Sustainability Appraisal of the Preferred Options JAAP

3.4.1 This stage was the first stage that Baker Associates/PBA was involved in. Prior to beginning the full SA the first task was a review of the stages completed so far. This review was

essential to make sure there was a continuation from work already completed. The review included:

- Familiarisation with the baseline evidence gathered at scoping; and
- Understanding the relative sustainability implications of pursuing the policy options, presented in the issues and options report.

3.4.2 The SA at this stage reviewed the February 2009 'Preferred Options' version of the JAAP. Due to the timing of the appraisal the SA report prepared was not a public consultation document. Instead this SA report was used as a tool to inform plan makers and ensure that sustainability considerations were full taken into account in the JAAP.

3.4.3 The appraisal at this stage appraised each policy area to identify the main sustainability impacts. The assessment identified the likely sustainability impacts of the policies for:

- Employment allocations;
- London Southend Airport;
- Transport within the JAAP area;
- Environment.

3.4.4 More information on the findings of the appraisal is shown in **Section 5**.

3.5 SA of the Submission Draft

3.5.1 This is the current stage of the SA, where the content of the proposed submission JAAP is the subject of sustainability appraisal. This stage has gone through several iterations of SA reporting and JAAP reporting. Three earlier drafts proposed submission versions of the JAAP have so far been reached and appraised. The first submission JAAP was prepared in September 2010, then October 2011, September 2012 and the most recent in November 2012. The timing of these reports meant that findings of the SA were taken into account as the JAAP was updated.

3.5.2 This SA report also considers the implementation and delivery plan for the airport as these are essential elements of the JAAP that will help of secure sustainability benefits and avoid impacts.

3.6 Other Appraisal and Assessment

3.6.1 The plans for London Southend Airport expansion have been subject to other environmental and sustainability appraisals in their evolution.

3.6.2 The airport has already received planning permission for the expansion of the terminal buildings. These were granted permission by Rochford District Council in 2004 and in 2012 and in 2010 Southend Borough Council granted permission for the runway extension.

3.6.3 These applications where subject to their own site specific assessments, including an Environmental Impact Statement submitted as part of the planning applications. These assessments looked in detail at impacts, including noise air quality and to the site ecology. However, these assessments were focused on assessment of the airport impacts and do not necessarily include consideration of the cumulative impacts from associated employment development.

3.6.4 The site has also been the subject of assessments into flooding, ecology and traffic and transport as part of the background evidence for the JAAP preparation. In addition, screening under the Habitats Directive was necessary to ensure that the development of the site would not have an adverse impact on nearby internationally designated nature conservation sites, leading to the need for more detailed appropriate assessment. This is reported in the *London Southend Airport and Environs Joint Area Action Plan: Habitats Regulations Assessment (HRA) Report (*Enfusion (January 2013)).

4 Sustainability Issues and Sustainability Objectives

4.1 Scoping

4.1.1 The scoping report looked at the baseline characteristics of the airport Joint Area Action Plan (JAAP) area and the two districts of Rochford and Southend. From this baseline the main sustainability issues facing the development of the JAAP area were identified.

4.1.2 At the scoping stage a sustainability framework was developed to identify the objectives for sustainable development in terms of delivering the JAAP.

4.1.3 All these stages were updated as part of the review of the sustainability appraisal (SA) for the preferred options appraisal report.

4.2 Baseline Information

4.2.1 For the identification of baseline character the quantity and detail of the information was kept suitable to the appraisal of the JAAP. It does not include any collection of new primary information and only seeks to compile the information that is already available. Detailed and site specific information is available as part of the Environment Impact Assessment for the planning application and background evidence reports for JAAP preparation.

4.2.2 The main baseline issues are detailed here. The issues have been identified from a combination of:

- The findings of the initial scoping report, available on the Southend JAAP website;
- The update at preferred options, shown in **Appendix 1**; and
- New matters that have come to light since the preparation of background and evidence reports as part of the on-going JAAP preparation.

4.2.3 The main issues related to *biodiversity* at the site are:

- The international protected Roach Estuary Special Protection Area is only 1km from the JAAP site. The birds that are the reason for site's designation must be protected from harm under European law.
- There are no designated nature conservation sites within the JAAP area.
- Eastwood Brook and Eastwoodbury are recognised to have local / district value for flora and fauna.
- Potential adverse impacts on the designated nature conservation site, including from noise and lighting.

- Existing valuable habitats like hedgerows, linear tree belts and ponds, may need to be integrated with the design of future development. If they are to be lost then further bat survey may be required.

- Species confirmed as present during background survey for the JAAP including water vole and nesting birds, there is the potential also that the site supports bats, dormice, great crested newts, reptiles and otters, and further survey may be necessary.

- The ecological survey identifies areas where habitats should be retained if possible and others were habitats should be enhanced.

- The site contains an active badger sett.

4.2.4 The main issues related to *noise* at the site are:

- The noise contours prepared of the baseline and future scenarios for airport expansion show planes that currently use the site may be noisier than the modern planes that require the longer runway.

- The extent of the noise contour of the airport may reduce if all planes using the new runway are newer and quieter models.

- There are sensitive noise receptors in proximity to the runway and within or adjacent to the noise corridor, including homes, a school and hospital.

- Despite quieter aircraft using the extended runway there will be an increase in the number of flights and therefore frequency of noise disturbance.

- Ground Maintenance, Repair and Overall (MRO) will expand and has noise impacts.

- It is anticipated that by 2020 there would be a total of 53,300 aircraft movements a year. This works out at about one movement at least every 7-9 minutes, given a 364 day operating year and about a 16 hour operating day, although flights may not be evenly distributed throughout the day.

4.2.5 The main issues related to *air* at the site are:

- No air quality management areas are designated in or near the JAAP site in Rochford, Southend or further west in Castle Point.

- Roads leading west from the JAAP area already suffer from high levels of congestion, which are likely to be causing local air quality deterioration.

4.2.6 The main issues related to *water* at the site are:

- The quality of surface waters in and around the site ranges from fair to poor with high levels of ammonia and nitrates recorded.

- Waters may be at risk from leachate of potential contaminants at site.

- Improving water quality is important due to the surface waters feeding internationally important nature conservation site at the Roach Estuary Special Protection Area.

4.2.7 The main issues related to *flooding* at the site are:

- Parts of the site are at risk from flooding.
- Areas near Eastwood and Rayleigh Brooks are in the highest risk Flood Zone (zone 3). Flood zone 3 indicating a greater than 1% annual probability of flood makes up approximately 9% of the site area.
- A further 10% is in Flood Zone 2, where the risk is between 0.1% and 1% annual probability.
- A sequential test for flood and a flood constraints report have been prepared.
- New impermeable surfaces that will be created by new development increase the risk of surface water flooding and will need to be managed.

4.2.8 The main issues related to *greenhouse gas emissions* are:

- The majority of flights from Southend are likely to be domestic and short-haul, Defra conversion statistics put CO_2 emissions at 175.3g CO_2 per person km for domestic flights, and 98.3g CO_2/pkm for short-haul flights.
- Increasing flights up to 2 million passengers would see a large increase in carbon emission from the airport.
- For all of the aircraft growth scenarios modelled by the IPPC the net warming factor by aircraft (excluding that from changes in cirrus clouds) is a factor of two to four times larger than simply from carbon dioxide emissions alone. This is quite a lot higher than the overall warming factor for the sum of all human activities, which is estimated to be at most a factor of 1.5 larger than that of carbon dioxide alone. This means aircraft may be contributing proportionally more to warming than equivalent carbon emission elsewhere, for example car travel

4.2.9 The main issues related to *employment* are:

- There is an intention for growth of 'aviation/airport and associated industries' in Southend, in line with the Regional Economic Strategy.
- The airport currently provides 1,000 jobs in aircraft Maintenance and Repair and MRO and these need to be retained as well-paid skilled jobs in the area.
- There is little vacant employment land in Rochford District.
- Other areas of Southend may provide competing (and possibly more sustainable) locations to employment development in the airport environs. This includes Southend

town centre, with its good bus and train links and potential to deliver regeneration benefits.

4.2.10 The main issues related to *deprivation* near the site are:

- Southend has pockets of social and economic deprivation and overall is significantly more deprived than Rochford (according to the Indices of Deprivation); and
- The main areas of deprivation of wards of Milton, Victoria and Kursaal. These are in the town centre not directly adjacent to the airport.

4.2.11 The main issues related to *landscape, recreation and leisure* in the area are:

- The site is within the Metropolitan Green Belt of Rochford District.
- Cherry Orchard Way is in the area locally designated as the Hockley Woods Special Landscape Area.
- The northern section of the site is close to the Rochford Conservation Area and the setting with the relationship between Rochford Hall, St Andrew's Church and a number of nearby buildings is highly sensitive to visual change.
- The site contains several public and private open spaces important for recreation. Areas include play area of Nestuda Way, adjacent to the Bank of Scotland building; school sport pitches to the west of Nestuda Way and north of Prices Avenue; allotment area of Rochford Road.
- Rochford Hundred Golf course dominates the northern quarter of the site; this is a publicly accessible golf course.
- Rights of Way cross the site, including the Roach Valley Way and Cherry Orchard Lane is a cycle way, although poorly used at present.

4.2.12 The main issues related to *soil and land resources* at the site are:

- In the southern portion of the site there land small holdings designated as having a High Agricultural Grade – it is Grade 2 quality
- The majority of land is leased to the airport and therefore not in agricultural use.
- There is the potential for contamination of the site from two graveyards, redundant brickworks, the airport operations, petrol filling stations. Run-off from the site during construction and operation may put watercourses at risk.

4.2.13 The main issues related to *transport* in the area are:

- By far the greatest proportion of people in Richford and Southend Borough choose to travel to work by car.

- The A127 suffers from high congestion levels.
- Local roads are vulnerable to increase in traffic causing congestion at junctions.
- A new rail station opened in July 2011 to serve the airport.
- A new Local Transport Plan for Essex was published in July 2011. This highlights the importance on improving access to Southend Airport, including reducing local congestion. Proposals such as the South Essex Rapid Transport will help provide public transport improvements in the area.
- Further public transport improvements are needed to reduce the impact of expected passenger growth coupled with the employment growth in the airport environs.

4.2.14 The main issues related to t*ownscape, archaeology and cultural heritage* at the site are:

- The site is close the Rochford Town Centre Conservation Area this borders on the JAAP.
- There are 81 listed buildings in the wider JAAP area, 3 within the JAAP boundaries, these are:
  - A milestone on the verge of Southend Road (Grade II);
  - 'Cherry Orchard' late 17th century timber-framed house (Grade II); and
  - The Church of St Laurence and All Saints on Eastwoodbury Lane (Grade I).
- 223 individual non-designated archaeological features have been identified in the JAAP area and wider buffer zone, 72 archaeological features are recorded as existing within the study area.
- The site appears to have seen a certain level of prehistoric activity, further assessment may be necessary
- The site also houses few WWII features such as the AA gun emplacements and Defence of Britain pill boxes, munitions stores and road blocks. These features will need to respected in new development.

4.3 Local Planning Policy

4.3.1 The East of England Plan identifies London Southend Airport as having an important role to play in the economic development of the area. London Southend Airport is split between Rochford and Southend. The majority of the airport buildings are located in Rochford. Given the importance of the airport to the two districts and the region, Rochford District and Southend on Sea Borough Councils decided to prepare this Joint Area Action Plan in order to identify how the airport's economic potential can be realised.

4.3.2 The principle of development for economic growth at the JAAP site are set through the policy and objectives of the two Core Strategies covering the area. These are the:

- Southend-on-Sea Core Strategy – adopted December 2007; and
- Rochford Core Strategy – Adopted December 2011.

4.3.3 The expansion of the airport and growth in employment development in its environs are an essential part of the Core Strategies for both local authority areas. In particular, new jobs delivered in and around the airport are anticipated to meet the majority of employment growth needs for Rochford District over the plan period. The issues and opportunity section of the Rochford Core Strategy identifies the importance of the airport:

"London Southend Airport is located within the District and has the potential to be a focus for economic growth, not simply in terms of aviation-related industries, but also as a catalyst for wider forms of employment which would benefit from being in proximity to a thriving airport."

4.3.4 The Vision for Rochford also identifies the role of the airport as a driver for the sub-regional economy, providing significant employment opportunities in aviation and non-aviation industries. The Core Strategy also seeks to secure new facilities for training within the vicinity of the airport, to teach aviation related skills to the local workforce.

4.3.5 The airport and its surroundings are identified in Rochford Core Strategy Policy ED1 Employment Growth as a location where economic growth will be supported in the district. However, it is policy ED2 'London Southend Airport' that sets detailed policy.

*"**Policy ED2 – London Southend Airport***

The Council will support the development potential of London Southend Airport as a catalyst for economic growth and employment generation.

The Council will work with Southend on Sea Borough Council to prepare a Joint Area Action Plan for London Southend Airport and environs and will work with partners to see the airport's economic potential realised, whilst having regard to local amenity and environmental issues. The Joint Area Action Plan will enable the Council to regulate the operation of the airport through balancing noise and environmental issues with residential amenity.

The Council will support the development of a skills training academy around the airport to provide training to increase and enhance aviation-related skills in the local area and to meet local employment needs.

Expansion of employment land to the north of the airport for the development of non-aviation related industries will be supported to increase local employment opportunities within the District."

4.3.6 Southend on Sea Borough's Core Strategy (December 2007) recognises the importance of London Southend Airport for the area. Strategic objective SO11 of this strategy is to:

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

4.3.7 Southend Core Strategy states that a key spatial strategy policy is the expansion of employment opportunities in and around the airport although the majority of jobs will actually be located in Rochford. The Core Strategy states:

"However, the new jobs will provide significant employment opportunities for Southend residents, as well as some jobs within the Borough itself, both within the Airport and on nearby employment areas."

4.3.8 Southend Core Strategy Policy CP1: Employment Generating Development includes the airport as a location for employment growth. The Southend Core Strategy policy CP6: Community Infrastructure also states the importance of providing "*an academy of educational/training skills in aviation at London Southend."*

4.3.9 Both Core Strategies also identify the importance of improving accessibility to the airport and business parks by non-car modes. This is to make travel more sustainable and also to help reduce the potential for additional road traffic causing congestions on the districts' roads. This includes integration of the airport into the SERT system.

4.3.10 The principle of economic in and around the airport to support the economic growth of South Essex is also part of the Integrated County Strategy (ICS). The ICS does not have the weight of policy but sets the shared vision for Essex, Southend and Thurrock.

4.4 Sustainability Framework

4.4.1 The scoping report developed a sustainability framework that will be used as the core the SA. During the PBA review of the SA stages completed prior to PBA's involvement the framework as revised slightly. Changes were necessary in some instances either to reflect the additional baseline information identified or to add clarity to the objectives and 'key questions'. Some amendments were made to make sure the framework is tailored to the needs of the JAAP SA, removing statements that are not relevant to the JAAP. These changes are mainly minor with the same topics remaining covered by the objectives. The full framework is shown in **Appendix 2.**

4.4.2 The indicators were also adjusted to reflect that these are examples only, and it may be that the final set established at later stages of SA are made to fit with the overall monitoring arrangements for the JAAP. There are now many fewer indicators than in previous versions, giving more certainty that monitoring will take place. More information on the framework is included in the scoping report.

4.4.3 The main changes to the framework from scoping to preferred options were:

- The way 'Population and Local Economy' is referred to has been changed, to simply refer to 'Local Economy'. This simplification relates to one of the main aims of the JAAP being economic growth and that it has little relevance to 'population', access and communities are covered elsewhere in the framework.

- The previous version of the SA framework had a single objective on 'climate change and flooding'. These were separated into the 'impacts of climate change' to cover resilience and resistance to a change climate and, separately, flooding. This is the raises the profile of flooding in the appraisal.

- The 'Energy' topic and elements of the former 'climate change' objective, which relates to climate change mitigation, have been combined. This reduced duplication and made the individual topics more clearly defined. Several additional indicators, and an addition key question, have been added in relation to aircraft greenhouse gas emissions.

- New objectives have been prepared for 'material assets' and 'waste' as the previous one was not very relevant to the topic and additional key questions have been added for 'material assets'.

- For 'air' and 'noise' topics wording changes to the objectives were made to reflect possible impacts on receptors other than 'residents and users' (for instance nature conservation).

- Several additional indicators have been added for noise.

- Safety/health and risk topic has been widened to more explicitly relate to health and wellbeing issues, and the importance of creating a healthy place.

4.4.4 A full version of the sustainability framework is available in **Appendix 2**.

Table 4.1: Sustainability objectives

Topic	Objective
Economic	
Local economy	To improve the vitality and viability of the airport, and to achieve sustainable levels of prosperity and economic growth
Employment and Wealth Creation	To maximise economic benefits of the thriving airport, enhance wealth creation factors and emphasise local strengths and qualities to attract investment.
Environment	
Biodiversity	To maintain and enhance areas of importance for wildlife and nature conservation including species diversity, as an integral part of economic and social development.
Water	To maintain and enhance the quality of ground water and sustain good quality water resources, wherever possible
Impacts of climate change	To reduce the effects of climate change
Flooding	To reduce the risk of flooding on and off-site

Topic	Objective
Material assets	To improve the quality of development through use of local sourced, recycled and efficient building materials
Soil	To protect greenfield land as well as enhance quality of soils, wherever possible.
Air	To ensure high quality environment for local communities and other sensitive receptors
Noise	
Waste	To reduce the use of primary resources and the quantity of waste going to final disposal
Energy and climate change mitigation	To increase opportunities for renewable energy generation.
Accessibility to key services	To enable people to have similar and sufficient levels of access to services and promote sustainable transport measures
Transport	
Landscape and Townscape	To maintain the quality and setting of landscapes and townscapes
Social	
Safety/ Health and Risk	To improve overall levels of health, create safe environments by creating healthy places to live and by reducing crime/fear of crime
Education and skills	To improve the education and to assist people to gain skills and fulfil their potential and increase their contribution to the community.
Community (cross cutting linked to accessibility of services)	To nurture a sense of belonging in a cohesive community where people live and work
Housing	To provide opportunity for people to meet their housing needs

5 Findings of the Sustainability Appraisal of the Issues and Options JAAP

5.1 Initial Sustainability Appraisal of Options

5.1.1 The *Draft Sustainability Appraisal of the London Southend Airport & Environs Study JAAP* was undertaken by Halcrow and consulted on in June 2008. This was the SA of the Issues and Options consultation stage of the JAAP. The SA report was based around the five growth scenarios set out in the Issues and Options consultation document. These alternatives were:

- Scenario 1: low growth scenario – maintaining the status quo;
- Scenario 2 (a): medium growth – incremental growth of the MRO, employment intensification in the airport, Aviation Way Business Park and Laurence Industrial Park and the retail park to the east, with limited expansion of Aviation Way for new employment;
- Scenario 2 (b): medium growth aviation cluster – to transform London Southend Airport as a key driver to the sub-regional economy and shaping the future focus of the JAAP; and
- Scenario 3: high growth – prepare a JAAP to take a positive role in both airport development and the wider need for employment land in the two local authority areas.

5.1.2 These scenarios represent lowest to highest levels of growth, and this was used as the basis of assessing the relative sustainability impacts of development.

5.1.3 The potential impacts identified were:

- On the water environment with the existing poor water quality in Rayleigh and Eastwood Brooks and lack of reference to surface water management there is a risk that new development could cause further deterioration in quality;
- Loss of greenfield land – although the quality of the land for biodiversity and landscape significance is unknown there will be a demand for more greenfield land with the potential for adverse impacts;
- Increasing surface transport to serve 2 million passengers per year and employees accessing new and more intensively used existing employment sites – with the potential for adverse congestion, air quality and carbon emissions;
- Inevitable noise and air impacts from HGV traffic travelling through Southend to the new employment sites;
- Positive benefits for the economy and access to local employment – although to maximise benefits there needs to be some mechanism for skills (training) as part of

development. In addition, under all options that do not include runway expansion, and therefore more modern planes, the long-term potential for economic growth is questioned;

- Improvements to leisure facilities through medium and above growth options;
- A need to protect topsoil as higher grade agricultural land is likely to be lost through development;
- Risk of overexpansion of employment growth having adverse impacts on economic growth in the remainder of Southend on Sea Borough, for instance diveriting development from the town centre; and
- Greatest opportunities for economic growth and the successful long-term operation of the airport will require the runway expansion to allow for more modern aircraft to use the airport.

5.1.4 The SA of Issues and Options identified a range of further studies that should be required of development prior to any permission being granted and therefore set out as policy in the JAAP. These include:

- Requirements for sustainable water management through attenuation, sustainable drainage and swales to avoid adverse pollution impacts on water courses;
- Helping to make sure new employment growth also delivers skills training;
- Detailed ecological impact and management studies to find ways for compensating for loss of greenfield land, and in particular the risk of impacts on the Roach Estuary Special Protection Area;
- Making sure high grade agricultural topsoils are not lost to development;
- More investigation of the landscape significance of the airport environs and how to protect the integrity of settlements, including preparation of a landscape plan and management strategy;
- Setting design guidance for the size, mass, height and building materials of all new buildings, in order to reduce the overall impact of new built development;
- Travel and transport management plans and strategies, these should look at the wider Essex Thames Gateway impacts;
- To avoid inequitable location of new businesses to the airport at the expense of other parts of the two districts, especially Southend town centre, the JAAP policies will need to be specific on the use class of business suitable at the airport and environs; and
- Other considerations include: designing out crime, renewable energy generation on-site, waste handling, setting policies for buildings to meet Code for Sustainable Homes or

BREEAM standards, distribution of warehouse and storage spaces to make sure HGV flow into the area is kept a minimum.

5.1.5 More information on these matters is provided in the Issues and Options SA report available on the Southend JAAP website.

5.1.6 In addition, the impacts of increasing the number of flights were not considered fully in the Issues and Options SA and JAAP. These impacts will be on the environment and amenity and include impacts on noise and air pollution, as well as increases in carbon emissions and climate change. The review at the start of the Preferred Options sustainability appraisal updated this.

5.1.7 The Preferred Options version showed that the chosen approach for the JAAP was to pursue the 'high growth' (option 3) providing for the highest amount of development, including an extension to the runway capable of providing for between 1 and 2 million people per annum by 2020 and 2 million by 2030. There will also be 109,000 square metres of employment land.

5.1.8 However, the timing of the JAAP preparation means that this growth decision is not something that this plan will have any influence on. The planning permissions for runway extension and terminal expansion have preceded publication of this document.

5.2 The SA of the Preferred Options JAAP

5.2.1 Following the SA of the Issues and Options JAAP, an SA of the Preferred Options version was completed by Baker Associates, now Peter Brett Associates. This stage of the SA was only completed following the finalisation of the Preferred Options JAAP and its public consultation. Therefore, the SA at this stage was intended to aid the plan makers in preparing the submission JAAP, feeding into plan preparation alongside the general consultation responses.

5.3 The SA of the Draft Submission JAAP

5.3.1 In September 2010 an SA report was prepared of a version of the Submission JAAP and again in October 2011. These versions of the JAAP were largely similar to the current version although the 2011 version added additional material on implementation and delivery. The sustainability appraisal findings are largely the same. However, due to the time that has lapsed between versions some issues that were referred to in the earlier SA are now resolved. For instance, the new road link between Nestuda Way and Eastwoodbury Lane has been completed as has the new rail station and also the airport terminal expansion has full planning permission and Phase 1 is complete. These have implications for sustainability, although the JAAP no longer has control of these issues.

5.3.2 The SA prepared for each version of the proposed submission documents has given the plan makers the opportunity to take the recommendations of the SA on board.

6 Sustainability Appraisal: General Matters

6.1 Assumptions for the Appraisal

6.1.1 To allow sustainability appraisal (SA) of the JAAP several assumptions have to be made on how the JAAP will influence development on the site and the environs.

6.1.2 Some of these assumptions relate to the operating capacity of the airport and the number of commercial passengers it will serve in the future, as well as the number and type of planes that use it.

6.1.3 Currently the owners of the airport want to increase its use and the number of passengers per annum, and have permission for expansion. There is a current planning permission to allow a runway extension of 300m to allow more modern medium sized passenger planes to use the airport. The runway extension allows the airport passenger numbers increase up to the target amount of 2 million passengers per annum in 2030, and a shorter term target of 1 million per annum in the next 10 years. However, for the transport assessment in 2009 the rise predicted is from 3,500 in 2010 to at least 740,000 by 2020.

6.1.4 It is not possible to predict precisely what type of planes would be using the airport in the future and information on this is not yet available. However, it is assumed that a longer runway would be able to accommodate more modern planes, these are increasingly likely to become quieter and more fuel efficient. New fleets operated by operators such as EasyJet and Aer Lingus already operation out of the airport.

6.1.5 The JAAP provides a framework to implement new controls on the use of the operation of airport, including night flight controls, operating hours, and surface access arrangements. Therefore, the JAAP has the potential to deliver more rigorous environmental standards for airport operation, despite the increase in passenger numbers.

6.1.6 It is also assumed that if passengers increased to 2 million per annum, then in the long-term a significant proportion of these trips would be from an increase in the overall air travel from UK airports, due to increased capacity, and not simply a redistribution of existing flights. Therefore, this increase in passenger numbers and flights will create impacts that are additional, not a displacement of impacts that area already experienced elsewhere. Additional impacts will have implications for climate change and surface travel.

6.1.7 A further assumption is that other policies of the Local Development Frameworks covering the two districts will be fully implemented. This SA does not review the coverage of topics in the Development Plan Documents already prepared, including the two Core Strategies as these have already been the subject of a separate SA. It is assumed there is a good coverage of protection and control policies, covering non-site specific matters such as:

- Flooding and sustainable drainage;
- Resource efficient design including energy and water use;

- Protection of biodiversity assets;
- Landscape protection;
- Protection of historic heritage;
- Efficient energy use and low carbon energy generation;
- High quality design; and
- Protection of employment land.

6.2 General Matters

6.2.1 The SA incorporates a systematic assessment of the four JAAP policy topics against the SA framework objectives (**Table 4.1**). The assessment is shown in full in **Appendix 4**. The appraisal of individual sites is shown in **Appendix 5**. **Sections 7** to **9** of this report provide a general comment on the findings, and **Section 11** shows how the impacts will be mitigated and identified residual impacts.

6.2.2 The appraisal matrices take each of the main themes of the JAAP and consider the impacts on sustainable development, using the sustainability objectives as a guide. The matrices contain comments and recommendations on enhancing sustainability performance of the JAAP, as well as identifying where the potential for significant impacts may arise.

6.2.3 The SA of the policy topics does identify that the expansion of the airport is in conflict with sustainability objectives relating to 'accessibility' and 'transport' that seek to *"promote more sustainable transport measures".* There is an inevitable adverse relationship between this objective and the purpose of the JAAP, as air travel is very unlikely ever to be a sustainable transport option. Therefore, the appraisal has to score the JAAP negatively in relation to these objectives.

6.2.4 The SA also identifies ways that the JAAP will help manage and mitigate local adverse sustainability impacts at the airport and its environs. This is essential in order to protect local residents and other environmental assets, and necessary given that the airport extension and terminal expansion are already going ahead.

6.2.5 Elements of the JAAP that relate to the expansion of the airport may have adverse impacts on sustainability objectives for energy and climate change related to aircraft emissions. These impacts may not be experienced in the short to medium term, as flights from Southend simply replace flights from other UK airports. However, in the longer term flight numbers are likely to increase from the UK as a whole as airport capacity increases.

6.2.6 For surface transport there may be benefits in terms of carbon emissions. The flights offered by the airport may mean some air travellers have to travel less far to get to the airport and the airport is well served by public transport. New bus links and train station associated with the airport can also have benefit in reducing car trips for Southend as a whole, for instance providing access to new employment areas. However, it is not clear the extent to which

these surface access improvements compensate for potential increases in aircraft movements.

6.2.7 Some clarification in the text of the JAAP to better understand potential impacts may be useful. An omission is the number of flights anticipated daily or in an hour, despite the yearly cap of flight being included of 53,300 flights per year. Based on these figures and assumptions on the number of days a year and length of operating days this may equate to one aircraft movement every seven to nine minutes. It is understood a Topic Paper on flight numbers is to be prepared that should provide some additional information.

6.3 Sustainability Appraisal of the JAAP Objectives

6.3.1 The JAAP contains a set of six objectives for delivering development at London Southend Airport and its environs. These objectives are:

- Creation of sustainable, high quality and high value employment and other land uses within the study area;
- Maximising the economic benefits of a thriving airport and related activity;
- Ensuring good connectivity to the development area by all modes of transport, with appropriate improvements to sustainable transport and the highway network;
- Ensuring a high quality public realm and environment for residents and workers;
- Maximum return on public investment through attracting inward investment; and
- Efficient use and upgrading of existing employment land resources.

6.3.2 The SA of these is made with the assumption that the policies will be in place to fully deliver the objectives.

6.3.3 The objectives are quite succinct and could be interpreted or implemented in different ways, so when in appraising their impacts it is not possible to draw any detailed conclusions. Therefore, the assessment simply reports on compatibility of the sustainability objective and the JAAP objective. The compatibility assessment is shown in **Appendix 3**.

6.3.4 Inevitably, the SA of the JAAP objectives finds that some sustainability objectives, such as those relating to economic growth, are better covered than others. However, this is expected to be the case as the JAAP is only intended to set specific policies covering the airport area. National planning policy and local planning policy from the Rochford and Southend Local Development Frameworks contains the wider policy context. For instance, theobjectives of the two Core Strategies set environmental protection and community enhancement policies that are also applicable to the JAAP.

6.3.5 The JAAP puts most emphasis on economic benefits of the airport and environs. The SA does note that the need to protect the natural and built environment could be given greater

emphasis, not only in terms of the benefit of environmental protection to 'residents and workers', but also covering issues such as biodiversity and water quality.

7 Sustainability Impacts: Economic

7.1.1 The document provides a positive outcome for economic growth compared against a do-nothing scenario. It brings immediate and long-term employment opportunities in airport related businesses and associated employment parks. The land made available for employment growth around the airport will help meet both Rochford's and Southend's employment land needs and economic growth.

7.1.2 New and improved business and industrial park development associated with the airport has the potential to attract new businesses to the area and provide space for existing business to growth; this will be to the benefit the local economy. The former East of England Regional Assembly did state in its response to the Issues and Options JAAP, that a third of business surveyed were deterred from locating in the area because of the proximity of the airport, which may have an impact on attracting certain types of employment. Other businesses especially those that are complimentary to the airport use, may be attracted to the location. Therefore, increased flights at the airport may result in a restructuring in some types of employment provision in local employment sites, with possible changes on the types of jobs available.

7.1.3 There is also the risk that the airport associated business parks could compete with other areas within Rochford and Southend. This could have adverse impacts on regeneration initiatives and sustainable location strategies for the two authorities. For example, if new employment growth results in the preferential development of more peripheral locations, such as near the airport, it could have adverse effects on regeneration objectives for central Southend. In addition, peripheral locations are less likely to be served by good quality public transport therefore possibly increasing car travel. It will be the role of other plans and strategies in the two districts to ensure that other business locations, especially in central Southend, are an attractive location for economic growth.

7.1.4 If the airport environs become the main focus of employment growth in Southend, there is the potential for this to have negative impacts related to accessibility to work. Figures in the JAAP show the total number of jobs supported by the submission plan is to be 5,380 prior to 2021 with a further 2,000 after this date. It is anticipated that around half of these would be provided in Rochford and half in Southend.. The Core Strategy for Rochford sets a target of 3,000 jobs to be created by 2021, therefore the JAAP growth target (around 2,700 jobs) accounts for most of this. The focus of the almost all jobs at the airport and environs in Rochford could possibly be to the detriment of other employment areas in the district, or to town centre regeneration. It is important that the JAAP makes sure new jobs provided near the airport can be accessed by all. This means ensuring these sites have good (regular and frequent) public transport connections to Rochford and Southend, which provide a real alternative to travelling by car for medium and longer trip distances.

7.1.5 The phasing of the release of some of the employment land through the JAAP (policy E1) for release after 2021 may help to prioritise town centre sites, which may otherwise be less favoured for development. Land phased for later release includes Nestuda Way business park and later phased release of some parts of the Saxon Business Park. This would also

have the benefit of making sure employment areas are developed in an order that allow for the best use of land and that helps delivery necessary infrastructure improvements.

7.1.6 Businesses that are reliant on airport growth could suffer if passenger numbers fall in the longer term, which is possible given the likely increase in air travel costs over time. Therefore, if the new business parks were to be highly dependent on the airport it would put local economic stability and jobs at risk. Hence, the importance of the policies in the JAAP that require that business parks in the airport environs are developed for a mix of uses and are not only aviation related. Planning policy should also seek to guide the development of employment units to cater to a range of needs, from start-up, expansion and inward investment premises. This will particularly be the case where the development of new business premises is speculative rather than for owner occupation.

7.1.7 Measures put in place to manage vehicles on the roads around the business parks to reduce congestion are included in the JAAP. For new improved business parks to be marketable there needs to be some certainty that congestion will not delay the movement of goods and services in and around the site. Therefore, successfully upgrading the network and getting more people to travel by public transport will be essential in avoiding potential congestions impacts of new development, particularly at peak times. This will be in addition to network management for freight and vehicles travelling to and from the new and expanded business parks.

7.1.8 Policies in the JAAP do not directly address objectives for getting local people into work. In order for the existing residents of the two local authorities to benefit from the new employment it will be necessary to implement policies of the Rochford and Southend-on-Sea Core Strategies that seek local skills training, especially relating to aviation businesses, as part of any new economic development. Therefore, although the need for skills training is covered by higher tier policy, the JAAP does have a role ensuring this is implemented and relevant business development contributes towards establishing and maintain training and improving local skills base.

8 Sustainability Impacts: Environment

8.1 General Comments

8.1.1 The Joint Area Action Plan (JAAP) identifies the need to balance development with local environmental enhancement, so includes policies related to the protection of the environment and local amenity. The policy controls the JAAP puts in place will be essential in managing development to reduce impacts locally and secure environmental benefits where possible.

8.1.2 The specific policies of the environment section of the JAAP mainly relate to open space and protection of community recreation facilities. However, policies of other sections of the JAAP also relate to environmental protection, such as flood risk and nature conservation, covering these in varying levels of detail.

8.1.3 The JAAP sets out the conditions that will be put in place to manage adverse impacts on the environment and on local communities. These include measures such as:

- Permitted operating hours and limits on aircraft movements outside these hours;
- Annual caps on number of aircraft movements;
- Limits on cargo flights;
- Preferential runway use to limit noise;
- Helping avoid congestion by improving public transport, cycling and walking route as well as freight and network management; and
- Limits on noisy aircraft using the airport.

8.1.4 These controls are backed up by monitoring, reporting requirements and compensation schemes where necessary to make sure that conditions are upheld. Having the mechanisms in place to managing adverse impacts is essential in avoiding adverse impacts.

8.1.5 There are some environmental matters related to protection of assets that are not addressed in detail in the JAAP. For the most part policies of the Core Strategies cover these matters in a general way, but not specific to development at the airport and its environs. The does JAAP presents an opportunity to set site specific controls for the action plan area where it can be shown that this could deliver specific benefits or mitigate potential impacts. Matters that could be addressed in more detail include:

- Cultural heritage;
- Climate change (CO_2 emissions); and
- Waste.

8.1.6 The SA recognises the importance of not duplicating national or local policy through the JAAP policy. However, JAAP policy can cover similar policy topics but tailors these to the specifics of the site. For example, the JAAP could make reference to protecting specific water bodies, buildings or set site specific setting targets for development. Also, the JAAP can help to fill gaps in local policy. For instance, the Core Strategy for Southend was adopted in 2007, so policies of the JAAP could update controls on development as a result of new evidence and policy understanding that has come to light since then.

8.1.7 Therefore, the SA includes recommendations for full policy coverage by the JAAP, even if these could also be covered in a generic way by a higher tier of policy.

8.2 Air Quality

8.2.1 Air pollution will increase from the rising number of flights and travel made to the airport and proposed new employment areas.

8.2.2 The impacts will be on the local population and sensitive receptors, including homes, schools, residential care homes and possibly some habitats. Issues relating to CO_2 emissions are outlined in **Section 8.9**.

8.2.3 Poor air quality will affect the health of local residents, leading to both acute and chronic health conditions. There is also the potential for air pollution to have adverse impacts on some types of natural habitat, such as broadleaved woodlands.

8.2.4 Policies that seek a modal shift away from car use may help reduce the overall impact air quality changes. Policies such as LS5 'Airport Surface Access Strategy' set out clearly that the airport operator must monitor implementation of the strategy to demonstrate if it is successfully reducing the proportion of employees and visitors who arrive by car. This is to be reported annually and trigger reviews. In pushing for more sustainable travel there are benefits of this policy that allow outside agencies to identify the need for a strategy review, and not only the airport operator. However, the JAAP is promoting expansion of the airport and of employment in this area that could mean a long-term deterioration in air quality relating to surface and air travel.

8.2.5 To monitor changes in air quality the airport operator is required to put in place an air quality monitoring system to monitor it from the time the runway extension becomes operational. Monitoring will be essential in identifying if air quality is breaching statutory air quality standards. Policy also requires the preparation of an Air Quality Monitoring Plan. However, it is not clear what action will be taken if air quality standards are shown to be failing.

8.3 Lighting

8.3.1 New development will require new lighting for safety and security and to allow night time operation of the airport and outdoor MRO. Lighting could have adverse impacts on nearby residents and wildlife. Therefore, the JAAP could minimise adverse impacts by setting standards for lighting levels, this could include:

- Low level lighting wherever possible and taking into account safety;

- Using lighting technology to minimise light spill, especially on industrial estates, car parks and access roads; and
- Lighting switch-off times so only essential lighting is kept on outside operating hours.

8.3.2 Lighting is not specifically addressed in the JAAP, but should be a consideration of all new applications in and around the airport and at protected habitats.

8.4 Noise

8.4.1 Air related and surface transport related noise is already a disturbance to the local community. Expansion at the airport will result in more flights and there will also be more traffic in the area related to airport and employment development. Therefore, it is likely to be noisier in the JAAP area in the future than it is now. There are a number of sensitive noise receptors in the area including residential areas, schools, a hospital and historic buildings. Areas identified as likely to suffer particular noise impacts as a result of the airport are:

- Homes in the south east of the study area;
- Homes along wells avenue to the south;
- Homes off Southend Road, Manners Way, Prince Avenue and Cherry Orchard Lane; and
- Properties in the north eastern corner of the site at the Ridings and Rochford Hall Close.

8.4.2 According to assessments carried out prior to the opening of the extended runway the noise of aircraft taking-off and landing at the airport is likely to increase in frequency to serve up to 1 mppa by 2012 and 2 mppa by 2031. It is true that the overall noise contours may shrink as a result of advances in aeroplane technology reducing their noise, but the increased frequency of flight will have an inevitable noise impact on identified residential areas.

8.4.3 The JAAP puts in place some conditions to manage noise as part of a Quiet Operations Policy. This policy includes limits on noise and will be achieved through controls such as limits on operating hours and the type of planes that can use the airport. Conditions include setting limits on night flights, as night time noise effects can be most detrimental with impacts on sleep. Therefore, reducing night flights should help in mitigating these effects, although some flights will be permitted, therefore mitigation will not avoid effects.

8.4.4 The noise surveys also indicate that a number of properties will experience increased noise levels that may be significantly harmful. For these properties a condition of airport operation, set through policy, is to provide a Noise Compensation and Purchase Scheme. Where noise cannot be satisfactorily mitigated the airport will offer to buy these homes to remove the receptor and impact on residents. Clearly, this will remove the receptors from the noise impact, although the impact will remain.

8.4.5 The JAAP and background studies also state that in other locations noise levels will be elevated but not enough to trigger house purchase under the scheme. In these location

impacts would be managed through noise insulation that will be provided through the compensation scheme. Policy LS4 covers the noise compensation and purchase scheme.

8.4.6 In both these circumstances there will be detrimental impacts on local residents. This will either be as a result of people having to move away from their homes, or by increased noise disturbance. Noise disturbance can only be partially mitigated and will only apply indoors, for instance through sound insulation and double glazing. Noise impacts will still be present in gardens on when windows are open. Noise disturbance has been shown to have adverse impacts on people's general wellbeing and reduce the environmental quality affected areas.

8.4.7 Other noisy impacts of the airport and associated employment could be controlled through JAAP policy. This includes the design of new employment development to limit HGV movements in residential streets, including no right turn from Saxon Business Park, and only granting permission for MRO operations in areas where noise will be baffled by buildings or other sound insulation, or away from sensitive receptors.

8.5 Water Quality and Quantity

8.5.1 Water resources and water quality are largely omitted from the JAAP, with no specific water protection criteria set in policy, relying instead on higher tier policy controls. However, policy ENV7 may have some influence as it requires new buildings to meet at least an 'excellent' standard for sustainable construction. Meeting this standard is likely to require implementation of efficient water use and sustainable drainage, although this may not necessarily be the case as it depends on how the developers wish to secure the credits necessary to meet these standards.

8.5.2 The growth promoted through the JAAP will place additional pressures upon potable water supplies, waste water treatment works and surface water drainage systems. There may also be a risk to the quality of surface waters from water draining from the site into the brooks that cross the site. These risks may come from existing ground contamination as well as potential contaminants associated with surface water run-off from the airport, MRO and employment development. Therefore, Core Strategy policy must be applied to manage this, as well as policy ENV7 that requires the use of sustainable drainage systems. These could make use of measures such as soakaways and swales to manage water run-off from all new areas of hardstanding, including new roads and employment development.

8.5.3 Large scale development offers opportunities for initiatives for water harvesting and water recycling systems which should be part of the overall drainage and water management strategy.

8.5.4 Water quality could also have an impact on environmental designated sites which are in close proximity of the JAAP area, as identified in the HRA Report (Enfusion, January 2013) for the JAAP. This is discussed more within the biodiversity section of this report. However, more emphasis should be put on putting in

8.6 Flood Risk

8.6.1 The Flood Consequence Assessment and Sequential Test completed as part of the evidence for the JAAP shows the areas at greatest risk of flood. The studies show that there are several proposed development sites in the preferred options JAAP in higher risk flood zones, see **Appendix 5**. However, due to the type of development proposed and limits on available land the JAAP maintains these as allocated sites.

8.6.2 Policies for specific sites, such as E2 (Aviation Way), MRO1 and MRO2 (Northern MRO), make clear that where development is proposed in flood risk areas there is the need to undertake site specific flood risk assessment and put in place to measures to manage risk, for example through resistant and resilient buildings as well as completing site specific flood assessments.

8.6.3 Use of sustainable drainage systems will also be essential to ensure development does not increase water run-off rates and increased risk of flood.

8.7 Cultural Heritage

8.7.1 The JAAP area contains several features listed for their historic importance. These include the listed grade I building, St Laurence and All Saints Church, Grade II listed Cherry Orchard house and a Grade II listed milestone just outside the JAAP boundary.

8.7.2 Development will not result in the loss of these features although development in their proximity would impact on their setting.

8.7.3 The planning permission for runway expansion sets out how the impacts to the listed church will be managed, and this includes relocating one of the graveyard walls and replacing it with a hedge.

8.7.4 The proposals map shows that the proposed Saxon Business Park Phase 2 must be developed to leave a buffer around the listed Cherry Orchard House. However, there may still be a residual impact as the character of the area will change from open land to built development. The policy for this area should also refer to the need to respect the historic character of the house.

8.7.5 There may also be impacts on the Rochford Conservation Area. The Evidence Report states, "*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 importance of protecting the character of the area is not addressed in the JAAP. However, the Conservation Area is some distance from any built-up areas proposed in the JAAP on the opposite side of the golf course.

8.7.6 As mentioned in the noise section above, there will also be an impact from noise. An assessment of noise impacts (ground and air noise) should be provided for the church and other heritage, including Rochford Conservation Area.

8.7.7 Design issues are poorly covered in the JAAP, only the policy for Nestuda Way specifically requires a high quality building. Policies should recognise the important of creating high quality new buildings at the airport and environs. The design of the new buildings in particular the new terminal should be of a high quality, incorporating sustainable construction, to create a landmark features for Southend/Rochford and a gateway to the area for domestic and international travellers.

8.7.8 Design issues could be addressed in JAAP policy or in a cohesive design strategy using design codes for the whole JAAP site. The Masterplan could help ensure the site is delivered in a coherent way to the same high quality design standards throughout.

8.8 Biodiversity / Green Infrastructure

8.8.1 As part of the evidence base for the JAAP an ecological assessment, including Phase 1 habitat survey, was completed for the whole area. This identified what the existing habitat characteristics of the area are, as well as the potential for habitat enhancement.

8.8.2 The ecological assessment did not identify that there were any areas of high ecological value. The majority of the undeveloped site is amenity grassland, arable or semi-improved grassland, with a few areas of dense shrub and areas of plantation and two brooks. However, the assessment did state that the site could support some species such as water voles and nesting birds, with the potential also for bats, otters, reptiles, dormice and great crested newts. Further survey work may be necessary as part of individual planning applications to determine if species are present and what mitigation may be necessary to protect them.

8.8.3 The JAAP plans include development on land that is currently greenfield. Larger development areas that would result in habitat loss include:

- Part of the Saxon Business Park where there is semi-improved grassland and scattered scrub; and
- The Northside MRO extension where there are areas of continuous scrub and semi-improved grassland.

8.8.4 The ecological assessment has also identified areas that could benefit from ecological enhancement associated with new development to help mitigate land loss. These enhancement areas include:

- The borders of the business parks, particularly at site 1A the proposed first phase of Saxon Business Park; and
- Along the Rayleigh and Eastwood Brook corridors.

8.8.5 The SA identifies that as well as direct land take development at the airport could have noise, water and air quality impacts on biodiversity in the JAAP area and environs. This includes impacts on designated sites: Benfleet and Southend Marshes Site (SSSI, SPA and Ramsar); Crouch and Roach Estuaries (SSSI, SPA and Ramsar); and Essex Estuaries SAC.

Noise and air pollution impacts on designated sites to the south-west also include Great Wood and Dodd's Grove SSSI and Hockley Woods SSSI.

8.8.6 A screening assessment and appropriate assessment has been completed under the Habitats Directive to identify if the JAAP proposals have the potential to adversely impact on an internationally designated nature conservation sites. The findings of the full screening assessment are available as a separate report alongside the JAAP submission, as referred to in **section 1**. The assessment finds that there is a risk of harm to two sites, these are the:

- Crouch and Roach Estuaries Special Protection Areas, and
- The Essex Estuaries Special Area of Conservation.

8.8.7 Impacts may arise in combination with other development such as the wider development proposed through the Southend Core Strategy. The greatest risk is from changes to water supply and water quality resulting from delivery of development in the JAAP area. Therefore, the HRA makes recommendations on to avoid and mitigate effects, including

- Monitoring water quality in nearby brooks to identify if adverse impacts are occurring and if quality is falling, work out a plan of action for improvement; and
- Require all new buildings to achieve a BREEAM 'Excellent' rating to ensure the more efficient use of water, although requiring water related credits should be stipulated in the policy.

8.8.8 Through consultation with Natural England the HRA authors have already discounted direct impacts of aircraft movements such as bird strike, so long as take-off and landing directions are maintained on current routes.

8.8.9 JAAP policies, or an area-wide Masterplan, could also set out how all new open space development that forms part of the JAAP should be managed as multi-functional Green Infrastructure resources. This not only includes their use as publicly accessible open space but also their value for biodiversity and landscape.

8.9 Climate Change (CO_2 Emissions)

8.9.1 Greenhouse gas carbon dioxide emissions from the airport will rise with the increase to 2 million passengers per annum at London Southend Airport. Carbon emissions may also increase with the increase in travel to and from the airport and to the proposed employment sites, as well as from MRO.

8.9.2 By permitting runway extension the JAAP does allow for more modern fuel efficient planes to use the airport. However, no obligations are proposed that would mitigate carbon emissions.

8.9.3 As stated earlier in this SA Report, it is not clear whether the expansion of London Southend Airport to 2 million passengers would be a total increase or include some redistribution of existing passenger levels from other London airports. However, it is probable that the

majority of growth would be new passengers and over the long-term any capacity freed at other airports by Southend expansion would eventually be filled.

8.9.4 Therefore, there are inevitable greenhouse gas and associated climate change impacts related to aircraft movements. These impacts will have global implications unlike many of the other impacts that may be more local in character. Despite more efficient aircraft using the airport, it is not possible to mitigate against atmospheric warming impacts from the quantity of aircraft movements that the JAAP allows for.

8.9.5 There is some potential to limit the overall impacts of greenhouse gas emissions from airport and employment development on the ground. This includes the policies supporting public transport improvements and those on better walking and cycling routes to achieve a mode shift away from car use.

8.9.6 Policies of the JAAP include specific airport access requirements and targets for a shift away from car travel as part of the Airport Surface Access Strategy. Policies also set out how employment development will need to fund and/or provide public transport, walking and cycling improvements. Also, planning the urban layout of the JAAP area through an up-to-date site-wide Masterplan also has the potential to reduce reliance on car travel. The Masterplan will allow for various parcels of land to be developed to a single vision, which can include permeability for pedestrians and cyclists, through a network of attractive and safe routes and links to public transport.

8.9.7 The JAAP could also address the need to reduce carbon emissions from energy use on the airport and new employment. The JAAP could set an area specific target for delivering a significant proportion of energy demands on site from lower carbon sources, including renewable energy and more efficient energy generation and use. For an area of this size, promoting the use of combined heat and power from an on-site plant could be an effective solution. This could include developing an energy from waste combined heat and power plant as part of economic development in the business parks.

8.9.8 Existing higher tier policies will help deliver this as will the requirement for new buildings to reach at least ‘excellent’ BREEAM standards for sustainable construction are met for all new buildings on site could help make sure the energy use and carbon emissions of buildings are taken into account, depending on how the credits are achieved.

8.10 Waste

8.10.1 The JAAP proposals relate to quite large-scale development and there is high likelihood that new and expanded businesses on the site will give rise to a large quantity of waste. Therefore, there should be a common approach to waste from aviation-related industries. There is also no clear steer on waste issues during and after construction, for example the use of recycled demolition materials, minimise construction waste at design stage. Local planning policy on waste management will need to be rigorously applied on site.

8.11 Transport Infrastructure

8.11.1 Airport expansion and employment growth will increase travel trips in and around the JAAP area. Without measures to manage traffic and get less people to travel by car there will be increased congestion.

8.11.2 Most of the proposal sites for economic growth currently have very poor access by public transport. Few bus services run on the Cherry Tree Way, the main access route to the proposed Saxon Way Business Parks, and there are no bus services on Aviation Way to provide access to industrial estate and proposed extension, the nearest being on Eastwoodbury Lane. Improvements to these services will be essential in preventing future employees being reliant on using their cars to access jobs at these sites, and hence leading to further congestion.

8.11.3 There is already a reasonable cycle way along Cherry Orchard Way. However, the attractiveness of this route for cyclists could be improved to help encourage more people to use it.

8.11.4 As recommended by the issues and options report a transport assessment for the JAAP site has been completed that includes details of mitigation to reduce transport impacts. This is reported in the *Southend Airport Joint Area Action Plan Transport Assessment* (December 2009). The assessment considers the impact from 124,000 sq m of new business park development and the expansion of the airport and MRO facilities. It concludes that there would be about 6,000 new trips a day generation by JAAP proposals. Vehicle generation would account for 66% of the total person trips to and from the JAAP site, with 11% by train, 4% by bus, 9% by bicycle and 3% on foot.

8.11.5 The assessment also notes the area already suffers from high levels of congestion. Therefore, there is a risk that growth at the JAAP site will make this worse, so development here must achieve a shift away from car use. This will be of benefit to the local economy though reducing congestion, as well as the environmental and societal benefits of less busy roads and reduce car use.

8.11.6 The benefits of a modal shift are recognised in the JAAP and the plan sets out ways to help secure a reduction in anticipated car travel generated by development in the JAAP area. This is in keeping with Local Transport Plans for Essex and Southend that include measures to implement a travel mode shift away from car use and to more sustainable modes, including buses, local trains and cycling and walking for many more journeys under 5km.

8.11.7 Rochford and Southend, Essex County Council and an Airport Transport Forum have been working to find solutions to the possible traffic issues. The JAAP recognises there needs to be a 'step-change' in provision of infrastructure to secure more sustainable transport choices. The JAAP makes clear that some funding for improvements in Southend as a whole has been secured from government's Local Sustainable Transport Fund and the Southend Better Bus Area fund. However, these are not specifically for the JAAP area and do cover access to Southend better than to towns and villages of Rochford.

8.11.8 The way that the JAAP hopes best to secure reduction in car travel at the airport site is through implementing the Airport Surface Access Strategy (ASAS). This sets targets for reducing car travel and will be monitoring and if found to be not operating as it should policy gives local highways authorities the power to require it be reviewed.

8.11.9 Other policies of the JAAP also support improvements to sustainable travel access. Policies not only cover bus improvements but also better walking and cycling routes, which are essential in reducing short car trips, especially as most of Southend, Rochford and Ashingdon are in 5km of the JAAP area.

8.11.10 Travel Plans will be required for all new development in the JAAP area. Furthermore, supporting text in JAAP makes reference to an area-wide travel plan. An integrated travel plan has the potential to provide greater benefits to sustainable travel than individual project based plans as well as a co-ordinated way of managing congestion. However, policy T2, which implements could be stronger in making this integrated approach a requirement, not only the preparation of site specific Travel Plans.

8.11.11 Developers will be expected to make contributions to public transport, cycling and walking improvements. Policies identify specific areas where improvements are needed as well as where particular developments must make a contribution. In addition, implementation of the planned freight and network management scheme (Policy T6) and the implementation of the 'no right-turn' form Saxon Business Park, could help reduce congestion at peak times, with local environmental benefits as well as benefits for the local economy.

8.11.12 It is also understood that more detailed transport modelling will be undertaken of the Masterplan to identify ways of avoiding and mitigation congestion, and taking into account improved non-car access.

9 Sustainability Impacts: Social

9.1 Introduction

9.1.1 There will be inevitable social impacts on local residents from the development proposed through the JAAP.

9.2 Access

9.2.1 New jobs will provide the opportunities for social benefits for people in Southend and Rochford. Policies propose improved access routes to the airport and associated employment areas by walking and cycling, rail and bus links. This will help ensure everyone has an equal opportunity to access employment areas and will not necessarily favour those who use a car. The appraisal of transport issues is covered in **Section 8.11**.

9.2.2 At the present time much of the transport focus is helping to create links between central Southend and the airport. The JAAP may need to make it more clear how public transport, walking and cycling links will be improved to Rochford.

9.3 Town Centres

9.3.1 Southend town centre is a focus for regeneration through the Core Strategy. Several sites in the town centre are dependent on securing new investment for business for employment growth for their delivery. Focus on the airport area for new employment may put this regeneration at risk. Therefore, control over the type and phasing of employment development at the airport may be necessary to avoid adverse impacts on the town centre.

9.3.2 Phasing of parts of the Saxon Business Park and the Nestuda Way development for the longer term (beyond 2021) may help in prioritising the town centre sites where regeneration and where development may be more compatible with achieving sustainable development.

9.3.3 Similarly, new development in the urban areas of Rochford may be put at risk from an airport focus, as the majority of anticipated employment growth for this district will be at the airport and Saxon Business Parks.

9.4 Open Space

9.4.1 The development proposals and policies include the creation of open space as part of the development, to compensate for the loss of greenfield land.

9.4.2 The role of open space in the South Essex Green Grid should be emphasised. Policies should make aim to create higher quality new open spaces and playing pitches than the ones lost, and to integrate these with other benefits for the environment, including biodiversity planting and landscaping to soften the urban fringe and provide wildlife refuges, foraging habitats and movement routes through the site.

9.4.3 There may need to be continued management of the public open space to the south of the airport to make sure the new road through the site does not harm the quality, safety or

attractiveness of the area to users. This is important as some of the park's quality may have been lost through the severance caused by the re-routed Eastwoodbury Lane, with unattractive fences and bunded edges. Consideration could be given to the long-term management of this route to include features that naturally reduce traffic speeds, and landscaping to integrate it into the park setting, with frequent and safe crossing places to encourage linkage of the whole park area.

9.4.4 Open space planning, including integration of biodiversity enhancement features, should be planned in a comprehensive way for the whole site in a JAAP Masterplan. Integrating development across the site in this way will help protect links for people and wildlife and can make use of strategic features, such as surface water management systems, as features in the landscape.

9.4.5 The new visitor centre for Cherry Orchard County Park may help improve people's enjoyment of this area and help in education people on the natural environment. However, the implementation plan does identify that there may be risks of delivery if the link between the business park and provision of a visitor centre cannot be justified and the centre does not appear as a policy requirement. The JAAP delivery should help to secure the implementation of the scheme to aid people's understanding and enjoyment of natural spaces.

9.4.6 The new 'Green Link' at the Aviation Way business park referred to in policy. However, the purpose and characteristics of this link is not clear, nor its role in open space provision. Further information should be provided in the JAAP to ensure that developers are clear on what is expected of this link and ensure the sustainability benefits it could provide are secured. Details of the 'Green Link' should appear in the Masterplan.

9.4.7 The other issue related to access to open space is the need to relocate the rugby club prior to the development of the phase 2 of Saxon Business Park. The development of the business park will have to fund this relocation. To protect people's access to open space and healthy lifestyle choices the new site should be accessible by a variety of modes of transport and provide facilities of at least equivalent quality.

9.5 Local Communities

9.5.1 There will be inevitable and unavoidable impacts from JAAP development to some of the local communities in Southend. This includes possible mental and physical health impacts from changes in air quality, noise, increased traffic and loss of open land. The JAAP plans to mitigate these impacts to as great as extent as possible. Ideally, any proposals should be accompanied by a Health Impact Assessment, considering not only the direct impacts related to changes in air quality but also seeking to protect and promote healthy lifestyle choices.

9.5.2 Care should also be taken in the design of new buildings and roads to improve safety and reduce opportunities for crime.

9.5.3 New and upgraded roads and junctions on principle routes should be designed with segregation of cyclists, pedestrians and cars for safety. This is addressed in several of the

JAAP policies. Roads should also be designed that natural manage speed through design, planting, choice of surfaces and other good practice methods, and on less busy roads this could include shared surface principles. Including these measures and road design codes in an area-wide Masterplan could aid in their delivery, and ensure features like cycle routes are built to the same quality along their whole length.

9.5.4 Local communities will also be affected through the construction of new employment and airport buildings close to where they live. To help reduce the adverse impacts this development may have on community character and local people's wellbeing it will be important to make sure they are involved in the future planning of their area. Development also needs to sensitively designed so not to cause large changes in the character of areas, such as avoiding community severance, reducing traffic speeds, valuing features of local importance and landscaping and screening new development. However, it is unlikely all adverse impacts can successfully be mitigated against.

9.6 Education and Training

9.6.1 Local policy identifies the importance of education and skills training to be part of proposals for development in the JAAP area. However, this is not addressed directly in the JAAP some cross-reference in policy text or supporting text has the potential to reiterate requirements set out in Core Strategy policy.

9.6.2 New employment in and around the airport has the potential to provide well paid skilled jobs. Securing better access to these jobs for local people, especially the young, through appropriate skills training would be of benefit to the local economy and society. Furthermore, more local people working in and around the airport will help reduce longer distance travel demands and support sustainable transport.

9.7 Airport Users

9.7.1 The plan also does not address the potential conflicts of different users of the airport (flying club, MRO and passengers) are not fully described in the options, as well as the potential negative impact of increased flights have on attracting certain types of employment.

10 Implementation and Delivery

10.1 Introduction

10.1.1 Securing any sustainability benefits from the JAAP will be reliant on its successful implementation and delivery. There would be little benefit in including proposals that could not be funded and no business or organisation had a desire to deliver.

10.1.2 The Implementation and Delivery Plan acts as a co-ordination document to join-up the schemes of various delivery partners, with the intention of creating delivering economic growth in Southend and Rochford.

10.1.3 Section 5 of the JAAP contains the 'Implementation and Delivery Plan' for specific parts of the JAAP area. This plan includes delivery mechanisms and delivery bodies for securing development and associated infrastructure, discussion of funding sources, as well as risk potential for delivery and how this can be mitigated. The value of this focus on an implementation and delivery strategy is set out in this section of the sustainability appraisal.

10.2 Implementation and Delivery for the Whole JAAP

10.2.1 **Identification of delivery bodies:** The JAAP identifies a number of bodies who will be responsible for implementing the plan. It will be essential that bodies work together in an effective way to implement development. The benefits will be delivery of the JAAP in the way it is intended, including maximising economic potential while at the same time making sure environmental and social impacts are managed.

10.2.2 The implementation and delivery plan suggests creating a Local Enterprise Partnership and a JAAP Implementation Steering Group to guide and secure delivery and funding. For the JAAP area putting these types of delivery groups in place is particularly important as they can oversee the co-ordinated development of a number of separate plots that are likely to be delivered by many different developers.

10.2.3 A steering group or similar will also have the potential to prepare an overall plan of action for delivering the JAAP. A proactive group will therefore be able to identify potential delivery difficulties in advance and find ways of mitigating them to avoid delivery stalling. This type of joint working has the potential to ensure a similarly high standard of sustainable development is achieved throughout the development site and help secure delivery of joint Travel Plans. A group should include representatives from environmental bodies and groups that seek community benefits.

10.2.4 Joint agreements could be an effective way of securing the best sustainability outcomes for local people. They could also help raise the profile of JAAP objectives both within the local Councils, gaining corporate commitment, as well as with other agencies helping to draw down funding.

10.2.5 The two local authorities should be satisfied that the delivery and implementation plan has sufficient detail on anticipated joint working. The plan needs to show clearly the joint bodies

that will be (or are) established to help ensure development is managed in a co-ordinated way.

10.2.6 **Planning and delivery:** Preparation of a cohesive Masterplan for the JAAP area is likely to be an effective way to achieve more sustainable development of the area. If developers develop individual parcels in isolation of one another this could lead to disjointed development, missing opportunities to make the most of sustainable development opportunities. The sustainability appraisal recommends that the Masterplan is developed using best practice in sustainable design and interdisciplinary working.

10.2.7 Other delivery schemes such as the use of Business Improvement Districts (BIDs) may all help in successfully implementing the project. BIDS in particular have an important role to play improving the quality of employment areas.

10.2.8 Developing ideally a JAAP-wide Masterplan, or a co-ordinated suite of site specific Masterplans and design briefs could also have particular benefits in delivering aspects of sustainable development. Elements relative to sustainability that a Masterplan could include are:

- Design codes for new buildings for a cohesive approach;
- Layout of development, including car parking and ancillary uses;
- Design of movement routes, with particular attention to safe and direct routes for cyclists and pedestrians;
- Integration of environmental features, such as habitat conservation, creation or enhancement;
- Guidance for sustainable drainage systems and other water management;
- Expectations for sustainable landmark buildings, incorporating effective sustainable and low carbon technologies; and
- Planning requirements, such as s106 or other conditions.

10.2.9 A joined-up approach to development from a Masterplan also has advantages over a piecemeal method to design. Benefits could include:

- A unified design approach for development, even if each area is given a distinctive character;
- Better movement routes through the different development sites;
- Opportunities for more sustainable construction;
- A cohesive approach to green infrastructure provision; and
- Attracting funding for development.

10.2.10 **Funding sources for development:** Key to delivery is ensuring that funding is in place to resource development. At a time of economic downturn and public funding cuts this is an issue of particular concern. To deliver sustainable development successfully it is essential that all elements of the JAAP are implemented. For instance the economic development must be delivered with the infrastructure that will support it. An example might be where airport and business park development must take place with associated improvements to non-car access modes, to ensure that further harm to residential amenity and public health is not caused by congestion on the A127.

10.2.11 This section of the JAAP identifies the main funding sources. Developers will be required to make substantial financial contributions through section 106 conditions and potentially some type of standard tariff. If additional funding is required for the JAAP area funding bids will need to be drawn together, assisted by gaining political and other support for the JAAP project in the sub-region.

10.3 Implementation and Delivery for Specific Sites

10.3.1 The JAAP also contains detailed plans for the delivery of individual sites within the JAAP area. This provides a summary of each area and a summary of the proposals, bodies and funding that will be required to deliver them. It also identifies the risks of delivery and how these can be mitigated. How the risks of delivery relate to the sustainability of sites is shown in **Appendix 5**.

10.3.2 Site specific delivery and implementation plans contain some additional material relevant to each area.

- **Identification of ownership for proposal sites:** the ownership of all sites is identified, with a mix of public and private ownerships. Several sites, including Aviation Way, are in multiple ownerships. Using the JAAP to co-ordinate work with the others should help development to be bought forward in a unified way. The particular complexities of sites in multiple ownerships are identified.

- **Details of proposals and site background:** this gives an insight into the current character of the site and its use and the future plans for the site.

- **Supporting infrastructure and contributions:** each site delivery table includes details of what section 106 contributions site development will have to make. In addition, the infrastructure site development will have to provide is listed under headings, of transport, green infrastructure, environment/flood risk and utilities. These sections help identify what needs to be delivered in conjunction to the main development to ensure the site is delivered in a sustainable way.

- **Risks and mitigation:** in order to find ways of overcoming potential difficulties in delivery the site forms include the identification of risks of delivery, allowing an opportunity to identify way these could be mitigated. Residual risks are identified that may need to be monitored to ensure development is not stalling or sustainability benefits are not being realised. Monitoring indicators are suggested for each site.

- **Delivery mechanism and bodies:** this is an essential inclusion on the site forms as it shows who will deliver the site and how this will be achieved. Delivery will often be through a mix of public and private input.

10.3.3 Other issues that it may be useful to consider in the delivery of sites are:

- **Timeframes and milestones:** including these would allow for monitoring on whether proposals are on-track. Where milestones or target dates are not met it may then be possible to put in place review procedures for delivery and identify any knock-on effects on other development.

- **Additional studies:** where there is a need for detailed investigation of the site prior to submission of any planning application this could be identified, including ecological assessment.

11 Mitigation and Residual Impacts

11.1 Introduction

11.1.1 The SEA Directive requires that consideration be given to how any significant impacts identified during the SA process could be mitigated.

11.1.2 Mitigation of the potential adverse impacts of the strategy can be achieved in a number of ways. Each matrix in the policy and proposals appraisal (**Appendix 4** and **5**) gives examples of how the potential adverse impacts of the policy could be mitigated against, these divided into a number of different categories, as set out in the following paragraphs.

11.1.3 **Appendix 6** is a full assessment of how mitigation will help address the sustainability impacts identified in the SA. The appendix shows potential impacts will be mitigated through the implementation of specific JAAP policies, control measures and through the provision of new infrastructure. Mitigation by other plans and strategies is also included. However, as the appendix shows there are some impacts that cannot be fully mitigated against. These are identified as residual impacts (**Section 11.3**).

11.2 Mitigation

11.2.1 **Implementing other higher tier policies** will provide the policy required to secure delivery of more sustainable development. This includes the two Core Strategies as well as national policy. Higher tier policies of particular importance include those on biodiversity, skills and training, design, energy, sustainable construction and flood control.

11.2.2 **Adjusting policy wording** to fine tune JAAP policy can help to implement successfully more sustainable development. This could include clarifying wording on some policies to help deliver the desired policy output.

11.2.3 **Setting requirements for developers** to show how they have addressed environmental and sustainability concerns through their development. This including the Noise Action Plan, Airport Surface Access Strategy, Green Travel Plan, Air Quality Monitoring Assessment, Noise Compensation and Purchase Scheme. There may also be site-by-site planning application requirements including further ecological assessment, flood risk assessment and travel planning.

11.2.4 The **phased release** of employment sites could help delivery of allocations to help secure sustainable development. The JAAP contains requirements that some phases of development do not take place until impacts have been mitigated, such as the relocation of Westcliff RFC facilities. With Nestuda Way and parts of Saxon Business Park phased after 2021 so as not to have an oversupply of employment land and support economic growth elsewhere in the two districts.

11.2.5 Joint working groups should help prepare a site **Masterplan**. This will help implement a cohesive development strategy for the whole JAAP area, which have greater potential than a piecemeal approach in securing sustainable development. It should cover issues such as:

- Design protocols and the layout of development;
- Biodiversity protection or enhancement measures;
- The sustainable construction standards that should be met;
- The proportion of energy used on site that should be generated by on or near site renewables; and
- Public transport, walking or cycling links between individual site elements.

11.2.6 The delivery of infrastructure improvements to mitigate some impacts, such as loss of public open space and public transport enhancement, will also be depended developer **contributions or obligations**. These will be used to deliver sustainability benefits associated with new development.

11.2.7 Implementation of **other strategies and plans** in the plan area, with will include measures such as the Local Transport Plan.

11.3 Residual Impacts

11.3.1 Following mitigation of the impacts through the JAAP policies and IDMP proposals there are likely to be some residual impacts. These identified as:

11.3.2 At this stage the residual impacts are:

- Traffic and transport;
- Noise;
- Air quality;
- Flood;
- Cabon dioxide emissions;
- Cultural heritage;
- Biodiversity;
- Loss of agricultural and other open land.

11.3.3 **Traffic and transport:** The lack of a strategic transport plan to support the JAAP implementation is a risk. Congestion levels are already high near the JAAP site and development without suitable mitigation will only make these worse. Adverse sustainability impacts will be on health, air quality and community wellbeing. Further modelling at Masterplan stage may help identify the extent of these impacts.

11.3.4 **Noise:** The implementation of noise controls and implementation of a Noise Action Plan will not be able to offset all impacts. Studies have shown that it is likely several properties will experience elevated noise levels that may make homes uninhabitable. In these situations the compensation will buy homes off residents. Where homeowners agree to purchase this will remove the noise impact on the receptor. However, it is not clear what will happen if residents refuse to sell for the proposed price and will therefore be subject to high levels of noise disruption.

11.3.5 Requiring residents to sell their homes to achieve a comfortable living environment may also put them at a disadvantage, especially where they have strong connections to local area.

11.3.6 Some homes will suffer from elevated noise levels but not at levels to qualify for the purchase scheme. These homes may be eligible for a grant scheme for additional sound insulation but access to this grant is not a certainty and some properties may continue to be affected by 63dBL_{Aeq}. There may also be noise impacts from the ground MRO operations, these do not appear to be addressed under other noise controls.

11.3.7 **Air quality:** Reducing car use may help mitigate against some air quality impacts, although there is likely to be an overall deterioration in air quality from JAAP development.

11.3.8 **Flood:** Flood impacts should be mitigated against through suitable design of new development and use of sustainable drainage systems. If control measures are fully implemented following Environment Agency advice, there may be no adverse impacts.

11.3.9 **Carbon dioxide emissions:** Despite mitigation the levels of carbon dioxide generated from aircraft movements using the airport will increase. Therefore, there is likely to be adverse impacts relating to climate change resulting from more flights from the airport and the increase in national capacity.

11.3.10 **Cultural heritage:** Development in the JAAP area is likely to result in a change to built environment character. Development near Cherry Orchard House and the listed church will also permanently change the historic setting of these two buildings. Lack of design policy will mean that new development harms the existing built and landscape character of the area and have an adverse impact on local communities.

11.3.11 **Biodiversity:** Not much detail is given on mitigation of biodiversity impacts and there remains a risk to biodiversity. Additional policies or policy criteria could be used to better manage impacts, including provision of habitat enhancement.

11.3.12 **Loss of agricultural and other open land:** Loss of greenfield land is unavoidable if JAAP proposals are implemented, this will include the loss of 'best and most versatile' arable soil.

11.3.13 Positive impacts from JAAP development will be for the economy of the two local authority areas. Growth at the airport may also have wider economic benefits for the South Essex Thames Gateway area. A strong economy will also have positive benefits for communities in Southend and Rochford. However, to maximise benefits it will be important to ensure new development contributes towards skills training in the area, so more people have the potential to access good quality well-paid jobs, especially in the aviation industry and MRO.

12 Conclusions

12.1.1 This SA has been undertaken under the expectation that the expansion of the airport operations will take place to accommodate 2 million passengers per annum by 2030, with numbers increasing annually to that date.

12.1.2 Expansion will take place as a result of the extended runway, allowing the use of more modern planes favoured by airline operators. Other development includes the expansion of the airport terminal, new business parks in Rochford and Southend and expanded mechanical, repair and overall (MRO) facilities at the airport, as well as relocated public open space and road improvements.

12.1.3 The Joint Area Action Plan (JAAP) has an important role to play in bringing development forward and setting out the criteria to control airport operations to reduce impacts. The JAAP objectives are to deliver planned development so as to minimise impacts on local communities and the environment.

12.1.4 Based on an assessment of the characteristics of the JAAP area the sustainability appraisal (SA) identifies a number of issues the plan should address. These are:

- Operational controls of the airport to reduce disturbance to local residents and other sensitive receptors;
- A strategy for delivering economic growth in the airport environs, meeting the needs of the resident and potential workforce;
- Delivering a strategy that minimises transport impacts on communities in Southend and achieves a mode shift away from car use;
- Set measures to ensure the natural environmental environment is protected and enhanced wherever possible, despite the loss of greenfield land; and
- Make sure new development makes more sustainable use of resources, including energy, water and materials.

12.1.5 The expansion of the airport will have inevitable adverse impacts on sustainable development through increasing the national airport capacity. Although the extended runway can accommodate more fuel efficient and quieter planes, the overall expansion will mean more flights and therefore a greater impact overall than at present. The JAAP also provides for growth of the employment areas around the airport and associated infrastructure enhancement.

12.1.6 The SA identifies a number of potential sustainability impacts from development proposed through the JAAP. These impacts are:

12.1.7 Environment:

- **Climate change** from the greenhouse gas emission from aircraft and their associated contribution to global warming; the impacts will result from increased UK airport capacity and therefore may not be solely from aircraft using London Southend;
- **Increased surface transport** from additional passengers and employees of the airport and associated business parks;
- Greater **noise** impacts on residents in Southend; even with quieter planes there will be an increase in the number of planes;
- Airport expansion and employment growth could increase congestion on already busy roads, leading to a deterioration in local **air quality** with adverse impacts on health, wellbeing and possibly economic growth and biodiversity;
- Loss of **greenfield** land could have adverse impacts for biodiversity. Several parts of the JAAP site have been identified as having the potential to support protected species.
- There will also be a loss of **arable land** and new built development will change the settlement character;
- Increased development increase surface water runoff that has the **potential to pollute** the water courses that cross the site;
- Several proposed development sites are at high risk of **flood**; and
- The JAAP is not specific on **design** requirements for new development, meaning there is a risk of development having adverse impacts on the built environment character.

12.1.8 Economic:

- Benefits for the Southend and Rochford economies from **employment growth**;
- Possible **risks to economic growth** in other parts of Rochford and Southend from employment focus at this location; and
- Opportunities for **skills training** as part of development, allowing local people access to skilled jobs in the aviation industry.

12.1.9 Social:

- Public transport, walking and cycling **access improvements** to the JAAP site, including existing business parks;
- Runway extension has resulted in the park south of the airport being bisected by a **new road**, this may have reduced the quality of the park for recreation;

- Impact on the **historic heritage** including the Grade I listed Church of St Laurence and All Saints and Grade II listed Cherry Orchard House;
- Impacts from the relocation of the **Westcliff Rugby Club** to an alternative site; and
- Impacts on local communities from a **change in character** as a result of a change in the character of the place where they live from urban fringe to more strongly urban.

12.1.10 The major positive impacts of the JAAP will be from securing economic growth with benefits for the economy of the wider South Essex area. Identifying land for employment in this area will help retain businesses in the area as they grow as well as providing attractive space for inward investment. The JAAP also allows control policies to be put in place that will help manage the effects of airport expansion and continued operation.

12.1.11 The SA identifies several ways in which the sustainability performance of airport expansion and employment development proposals could be enhanced and impacts mitigated against. Possible measures to mitigate impacts include:

- The airport meeting operational controls and conditions set through Section 106 Agreements;
- Additional site specific assessment, such as Flood Risk Assessment or ecological assessment where it is required;
- Measures to help reduce car use, including preparation of the Airport Surface Access Strategy, Travel Plans and improved walking and cycling connectivity;
- Freight and network management proposals will help reduce the impacts of congestion on the local environment, with benefits also for attracting businesses;
- Release of some of the employment proposals after 2021 could help control the supply of employment land and help deliver economic development elsewhere in the two districts;
- Use of developer obligations to fund infrastructure and other improvements;
- Preparation of developer guides, including a site-wide Masterplan and developer information pack; and
- Preparation and implementation other strategies and plans, such as the South Essex and Southend Local Transport Plan.

12.1.12 The SA recognises the importance of the JAAP not repeating higher tier policy, but the JAAP policies can a useful layer of site specific detail. JAAP policies can also be used to fill possible policy gaps in other tiers of policy and provide a coherent policy for area for the two local authorities. The SA suggests ways that additional JAAP policy or a site-wide Masterplan could help achieve sustainability benefits and mitigate adverse impacts. Further considerations for the JAAP and the preparation of the Masterplan could include:

- Details on how surface water drainage could be used to avoid increasing flood risk, as well as a way of managing pollution impacts of surface water run-off,
- Unified design codes for new buildings to fit the surroundings to benefit the urban fringe area;
- Measures for nature conservation protection and enhancement, such as protection of green linking features and habitat enhancement measures identified through the ecological assessment ;
- Implementation of measures to protect internationally designated wildlife sites, as recommended in the HRA report;
- Protection of heritage features and their settings wherever possible, including listed buildings;
- Setting an area-wide renewable or low carbon energy target, this could include requiring all new development to be built for future connectivity to a district combined heat and power system;
- Operational controls to manage noise from MRO activities and/or site specific noise mitigation measures;
- Links to South Essex green grid and creating new multifunctional green infrastructure, with benefits for biodiversity, access, healthy lifestyles and landscaping;
- Requirements for airport expansion proposals to undertake a health impact assessment, to look at the wider impacts on health from airport growth;
- Lighting, including requiring a lighting strategy for all new development and night time airport operation;
- Details of co-ordinated initiative for local skills training;
- Greater detail of joint working possibilities to co-ordinate development in the JAAP area to reduce impacts and maximise benefits;
- Road network management to avoid congestion; and
- Carefully designed new roads and routes, to include measures to naturally slow traffic and segregated safe routes for cyclists and pedestrians.

Appendix 1: Supplementary Information Prepared as Part of the Preferred Options Sustainability Appraisal to Supplement the Scoping Report of February 2009

Appendix 1

Supplementary information prepared as part of the preferred options sustainability appraisal to supplement the scoping report of February 2009

Section 3.3 – 'Noise'

Air related and surface transport related noise is found to be key sources to noise disturbance in the study area. In order to predict future baseline and other impacts with development in the future, data on the existing noise levels, and existing noise receptors at the airport site should be established. The Southend Airport Environs Study Report (2007) analyses qualitative and quantitative information as well as discussions with the Rochford District Council and Southend-on-Sea Borough Council. Although the councils could not recall any noise related complaints, the Southend Airport Masterplan lists 44 complaints from the residents in year 2004, from 44,000 aircraft movements.

Halcrow (2007) identified a number of on-site receptors across and around the site. Specific receptors include- the established residential developments in the south east of the study area, properties along Wells Avenue to the south, properties off Southend Road, Manners Way, Prince Avenue and Cherry Orchard Lane and properties in the north eastern corner of the site at The Ridings and Rochford Hall Close.

A Noise mapping exercise was carried out for the Airport area and is presented in the Southend Airport Strategic Noise Mapping (2006). Noise contour plans in this report do not attribute any specific predicted noise levels to individual properties, however it does identify that the highest aircraft noise levels are experienced in alignment with the main runway, extending to the southwest and northeast of the airport. Nevertheless, as discussed above, properties along the runway comprise major receptors to the noise pollution. In general many properties around the site are found to be subject to noise pollution from various sources in the current baseline conditions.

In 2007 Southend Airport had 39,881 aircraft movements and is licensed to operate 24 hours a day, although there are restrictions between midnight and 6am.

Bickerdike Allen Partners (BAP) were commissioned by London Southend Airport (LSA) to carry out a noise study to compare existing noise levels with the potential future scenarios, with and without an extended runway. The BAP study scenarios looked at future noise mapping of noise contours for 2007 and 2020, with the assessments for 2020 based on 2 million passengers per year and 2007 based on existing passenger numbers. The noise assessments are based on the assumption that more modern quieter aircraft will operate from the airport if an extension is built.

Noise maps were prepared for the BAP report, these are reproduced here as figures 3.1 to 3.4.

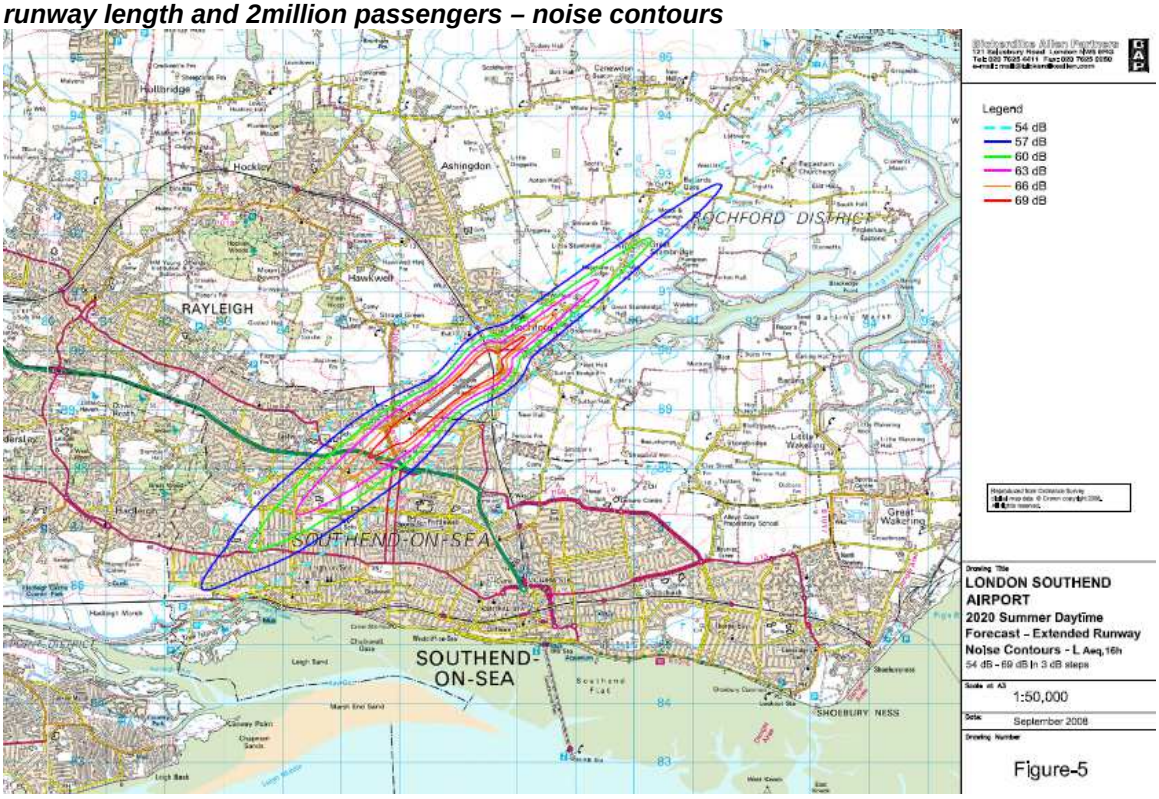
Figure 3.1 shows what the existing noise contours of the runway for a typical summer day. However, these can vary considerably depending on plane type, with occasional but very infrequent exceedingly noisy planes using the airport as part of maintenance and repair operations (MRO). A review of the BAP report by Hepworth Acoustics to inform the JAAP. This noted that some of the existing noisy operations

on the airport, which could continue, were not included in the BAP assessment. This includes ground operations that are part of the MRO with ground testing of planes.

Figure 3.1: London Southend Airport 2007 existing actual summer daytime – noise contours

Figure 3.2: London Southend Airport 2020 summer daytime forecast at current runway length and 2million passengers – noise contours

Figure 3.3: London Southend Airport 2020 summer daytime forecast at extended runway length and 2million passengers – noise contours



Figures 3.1 to 3.4 indicate that, as would be expected, with and without the runway extension there will be substantial noise impacts from an increase in flights to serve 2 million passengers. Although it is unclear whether the extra passengers to 2 million are possible without and extension to the runway and new airport terminal. A comparison between the noise contours in 2020 for a the current and extended runway lengths is shown in Figure 3.4. The Hepworth Report identifies that noise increases with and without the expansion could be at 7dB(A). There will also be a greater frequency of noise impacts with more aircraft movements.

Figure 3.4: London Southend Airport 2020 summer daytime noise contours at current and extended runway length

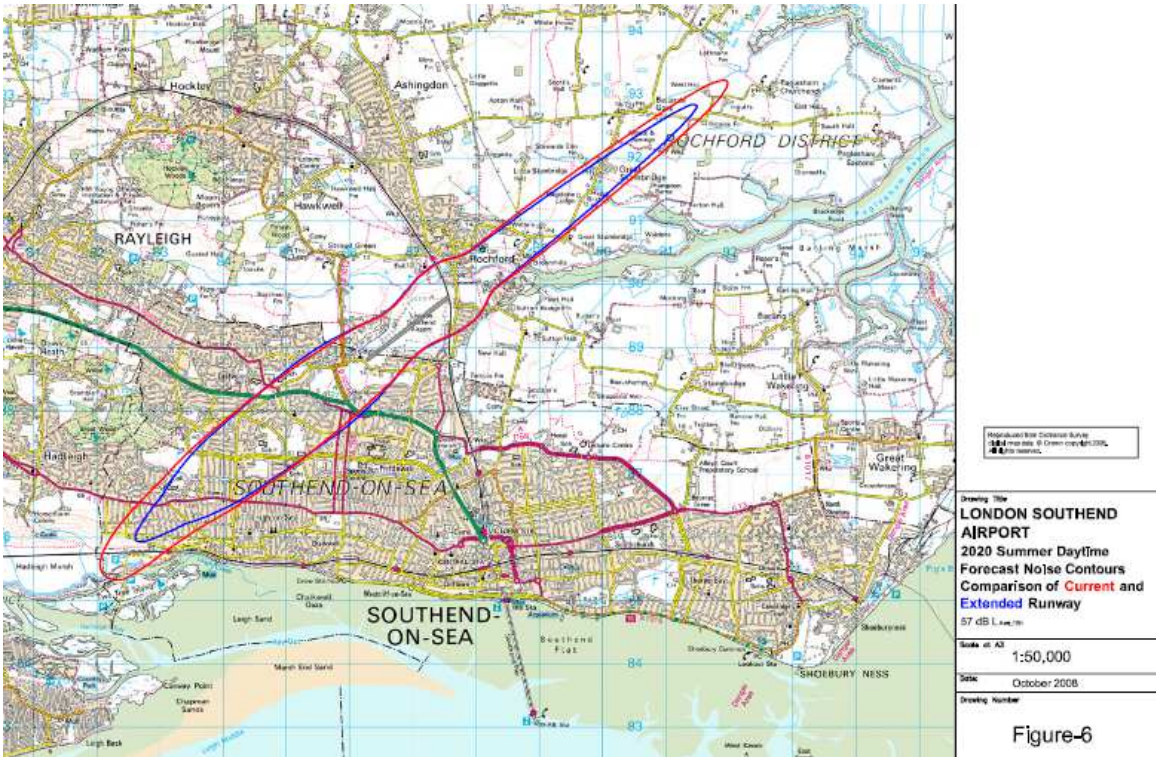


Figure 3.4 shows that the noise contour reduces in area if the runway is extended, due to the assumption that the aircraft mix changes to the Airbus A319 aircraft which is a quieter plane than the BAe RJ85, which is currently used. The Airbus is the preferred aircraft for cheap short-haul passenger airlines and can not use the shorter runway. Therefore, it is currently unclear if the airport would be attractive and used by these airlines if the runway was not extended.

This mapping does not present the impact on other sensitive receptors from the number of flights for all scenarios. It would be useful for the Council to set out all the sensitive receptors for each scenario, as well as identifying residential area. It will then be important to address noise mitigation measures in policies for the final option chosen in the JAAP.

Extra flights will also contribute towards more ground travel and therefore increase noise impacts from movements on the ground by private car, freight lorries and public transport.

Assuming the existing airport operations continue in the future, *and an expansion of employment activity, there will be an* increase in traffic, the noise pollution in the area with major impact on the surrounding area, although the level of increase unknown at this stage. However, with a change or expansion in the airport operations, noise and vibration levels will increase and its attenuation will be required (with associated costs).

Issues and opportunities

It is evident from the baseline that a number of receptors around the site are subject to noise and vibration related disturbance, *including residential areas, schools and a hospital. Preliminary studies show that extra flights, with or without the new runway, will have a major impact on noise levels and a negative impact on the surrounding residential areas and sensitive receptors. It* is likely *noise impacts will* continue or increase in the future, assuming that no attenuation measures are put in place. The location of future airport facilities in relation to its receptors in the vicinity, predicted cumulative noise levels, and prevailing local, regional and national development policies may pose constraints to future development in the study area. *However, current projects indicate that an extended runway may mean more modern quieter planes can use the airport.*

However, one of the core objectives of the JAAP is to ensure a high quality environment for the residents, including addressing noise pollution and the proposed development is considered to provide an opportunity to address this issue. In addition good layout design and positioning of some buildings as buffer between the origin and sensitive receptors, alignment of noise generating facilities against the wind direction with buffers, provision of low noise surfacing to all new highways, traffic calming measures for road traffic could be considered as opportunities and options to address the noise issue.

If the number of passengers is to increase to 2mppa by 2020 then giving permission for an extended runway would allow the Council's to set and enforce more stringent operational control measures to reduce noise impacts. The extended runway would also allow for quieter planes such as the Airbus A319 to operate from the airport. It will be important for the Council to gain an understanding, and if possible manage, the aircraft mix, number of night flights, noise controls, preferred routes and night flights to ensure the noise impacts of existing properties is minimised.

Insert new section 'employment land' before 3.7 'economic activity and unemployment' on page 19

The East of England Plan sets out sub-regional policy for the Essex Thames Gateway, with an indicative target of 55,000 net new jobs. An overall aim is to achieve a better alignment in the ratio of jobs to homes so that the proportion of people travelling to work outside the area is materially reduced. Policy ETG5 of the East of England Plan required the Southend Core Strategy to provide for at least 13,000 net new jobs and Rochford Core Strategy to provide for at least 3000 net new jobs between 2001 and 2021.

The draft Southend Employment Land Review (ELR) (May 2009) assesses both existing employment areas and identifies locations for possible new employment provision, for the plan period up to 2021. It identifies the airport area, town centre and A127 for the focus for employment locations. It states that there are insufficient employment opportunities to support the economically active population and that existing employment land should be protected.

The Economic Growth Aspirations for Southend on Sea (2006) identifies the 'aviation/airport and associate industries' as a growth area in Southend, which is in line with sectors identified in the Regional Economic Strategy. The Southend ELR goes on to confirm that the airport is responsible for over 1000 jobs are in aircraft Maintenance and Repair Operations (MRO) and it is vital that these jobs are retained, as many are highly skilled, well paid professions unique to the local area.

The ELR provides comments on the exact employment allocations proposed in the Joint Area Action Plan for the Airport. It proportions half the jobs to Southend and half to Rochford. The ELR states that the preferred option to pursue high employment growth will make a significant contribution to sub-regional aspirations, and this opportunity will give Southend the greatest chance of creating employment capacity. Basically the ELR fully supports the implementation of the JAAP proposals to support growth in the A127/Airport Corridor.

The Rochford Employment Land Study (October 2008) confirms that employment land supply is tight in Rochford District with very little available vacant land. The majority of the employment land supply results from sites with vacant buildings on them. The study recommends that the District adopts strong policies to protect existing employment land. There is a need for the allocation of additional 2 ha of employment land suitable for office use. On an overall strategic level we recommend that land to the West of the District is considered as viable to be developed as employment land. It is strategically best placed to house such uses due to its relatively good connectivity to Southend and London.

Issues and opportunities

There is a high demand for new employment land, but limited supply of land within Southend and Rochford. The airport is identified as a suitable location for a mix of employment uses. Therefore it will be important to protect existing employment land,

and also intensify existing employment locations, such as Aviation Way, to increase employment density.

Where new employment allocations are identified, it will be important that the proposals are complementary with objectives for other locations in both Southend and Rochford. For example, too much office development at the airport may detract from the employment objectives of the town centre, which is a prime location for the majority of Southend's office development. This does not preclude office development at the airport, but highlights the need to identify an appropriate mix of employment types at the airport and how phasing should also be implemented to ensure the sustainable development of both the JAAP area, but also of employment within both Council areas.

Page 16 – 'Climate change (energy)' – include new section under 'energy'

Greenhouse gas emissions

Aircraft emit gases and particles directly into the atmosphere and contribute to climate change. The principle emission of the greenhouse effect is carbon dioxide (CO_2).

Defra Company Reporting Guidelines (CRG), released in July 2007, reported CO_2 emission factors for estimating greenhouse gas emissions (the Defra HG Conversion Factors). These have been updated in 2008 to take into account other more detailed issues such as aircraft mix, increasing load capacity from 65% to 81% for short-haul flights and decreasing it for long-haul, and including freight which is carried on passenger flights. It is assumed that London Southend Airport will be predominantly used for domestic and short-haul flights, the revised conversion factors indicate that for domestic flights the average CO_2 emissions is 175.3 gCO_2/pkm and for short haul flights 98.3 gCO_2/pkm

At Southend Airport there is the potential for 2 million passengers per annum, with or without the runway. Assuming that the majority of these flights will be short-haul of an average of 400km, the total CO_2 emissions would be approximately 78,640 tonnes of CO_2 per annum for 2 million passengers. This is an indicative figure, and likely to be an underestimation, as at present information relating to the exact number of short haul or domestic flights, average flight lengths, aircraft movements, amount of freight on these flights etc are all unknown at the moment.

There will be other factors which will contribute to CO_2 emissions, and other air pollution, which can not be calculated at this scoping stage. These factors include emissions from travel to new employment area and extra air passengers travelling to the airport, as well as emissions from ground testing of aircraft during MRO.

The International Panel for Climate Change (IPCC) held a series of working groups looking the climate change related issues[1]. One of these groups considered in detail the implication on aviation on the global atmosphere. This considered how aircraft movements in the upper atmosphere and emission may be leading to climate change, and the relative warming factors these create.

The IPCC (2001) findings showed that in 1992 carbon emissions from aircraft made up 13% of the total global carbon dioxide emissions from all transportation sources. Testing a range of future growth scenarios this identified that carbon dioxide from aircraft could increase from 0.14 Gt C/year in 1992 to 0.23 to 1.45 Gt C/year by 2050. In the next 50 years the parts per million volume of carbon dioxide from aviation is protected to increase to form 4% of all carbon dioxide emissions from human activities, based on mid-range emissions scenarios from the IPCC.

Other than carbon dioxide emission aircraft can also contribute to climate change in other ways. This includes higher levels of NOx from aircraft emissions found at cruise altitudes in northern and mid-latitudes. NOx emitted by aircraft in the upper troposphere are more likely to create ozone that are more effective in increased global warming than ozone at the same levels but at lower altitudes, NOx levels are projected to rise by 13% at cruise altitudes by 2050. Other impacts on climate change caused by aircraft include water vapour emissions in the upper atmosphere, aircraft contrails and possibly increase in cirrus clouds.

Over the period from 1992 to 2050, the net warming factor by aircraft (excluding that from changes in cirrus clouds) for all of the aircraft growth scenarios modelled is a factor of 2 to 4 larger simply from carbon dioxide emissions. This is quite a lot higher than the overall warming factor for the sum of all human activities, which is estimated to be at most a factor of 1.5 larger than that of carbon dioxide alone.

Issues and opportunities

It is clear that the amount of greenhouse gas CO_2 emissions will rise significantly with the increase of 2 million passengers per annum at London Southend Airport. This has the potential to increase with or without the runway extension, although the shorter runway is unlikely to be able to successfully attract the right airlines to achieve an increase in passengers to 2 million people per annum. However, countering this is that an extended runway could operate more modern and fuel efficient planes.

It could be argued that the expansion of London Southend Airport to 2 million passengers would not necessarily be an total increase of 2 million (and associated aircraft movements), but instead a redistribution of passengers from other London airports. This redistribution therefore would not lead to increased carbon emissions.. However, this assumption should be treated with caution is redistribution of passengers may lead to valuable spaces opening up in other larger London airports that could be filled by larger planes, therefore, not achieving carbon savings.

[1] Penner, JE., Lister, DH., Griggs, DJ., Dokken, DJ., McFarland, M. (2001) International Panel for Climate Change Working Group Aviation and the Global Atmosphere, GRID-Arendal

Ground testing and extra travel by air passengers and travel to employment areas will also contribute to CO_2 emissions and climate change.

An air emissions management strategy is recommended to take into account the cumulative impact of the various development that are proposed within the AAP area. It will also be important to ensure emissions of CO_2 of limited wherever possible, but promoting a model shift from car to using public transport for both air passengers and local employees, using the most efficient aircraft, minimising ground testing and other controls. These controls should be set by the Council and supported by planning policies within the AAP, wherever possible.

Appendix 2: Sustainability Framework

Appendix 2

Sustainability framework

Sustainability framework – revised version

Topic	Objective	Key question	Example indicators
Economic			
Local economy	To improve the vitality and viability of the airport, and to achieve sustainable levels of prosperity and economic growth	• Does it promote mixed use and high density development? • Will it improve the vitality and viability of the study area?	• Take up of allocated land, by type • Number of jobs created, by type • Business start-ups and closures (VAT registrations) • Comparative office and employment land rentals • Business support price to income ratio • Average earnings • Indices of local deprivation • Economic activity rates by area, age group, gender and ethnicity • Rate of long term unemployment • Dependency of working – age people in workless households • % of children in households with below half average income • Sq metres of employment floorspace provided. • Number of months new units are on the market before take up (to assist with monitoring demand for new employment provision) • Number if jobs provided • Set up of Local Development Order • Establishment of a Business Improvement District • Sq m of additional MRO employment floorspace delivered
Employment and Wealth Creation	To maximise economic benefits of the thriving airport, enhance wealth creation factors and emphasise local strengths and qualities to attract investment.	• Does it promote inward investment and attract public investment? • Does it secure more opportunities for residents to work in the area?	

Environment			
Biodiversity	To maintain and enhance areas of importance for wildlife and nature conservation including species diversity, as an integral part of economic and social development.	• Will it support the local/regional Biodiversity Action Plans? • Will it conserve and enhance species diversity, and in particular avoid harm to protected species and priority species? • Will it maintain and enhance sites designated for their nature conservation importance? • Will it help protect habitat connectivity and avoid fragmentation? • Will it protect site of nature conservation importance from indirect pollution impacts?	• Area of semi-natural habitat lost to development • Area of new semi-natural habitat created • Loss/damage to designated wildlife site and protected species • Length of Hedgerows protected under the Hedgerow Regulation lost to development. • Preparation of Masterplan and Design Brief
Water	To maintain and enhance the quality of ground water and sustain good quality water resources, wherever possible	• Will the proposed plan maintain/enhance the quality of surface and ground water sources in the vicinity? • Will the proposed plan alter water quantity (surface and ground water) at the site? • Will the proposed plan encourage water efficiency and water conservation?	• Quality of waters at site and its vicinity • Number and severity of pollution incidents to ground and surface water • Average water consumption in existing and proposed development • Proportion of water needs met by on site water recycling • % if water lost to leakage • Proportion of development (existing and proposed development) which includes on-site provision for rainwater re-use • Margin between water supply and projected demand • Preparation of Masterplan and Design Brief
Impacts of climate change	To reduce the effects of climate change	• Will the plan help ensure new development that withstand the impacts of a changing climate, including extreme storms, prolonged hot periods, and drier summers?	• Design solutions which work with the environment, including: working with topography, wind direction and solar shade to reduce impacts of climate change & microclimatic impacts • Preparation of Masterplan and Design Brief

Flooding (separated out from climate change)	To reduce the risk of flooding on and off-site	• Is the plan area at a risk of flooding? • Will the plan increase risk of flooding on and off-site through the use of sustainable drainage techniques?	• Total extent/ capacity of flood storage area • Number of properties at risk from flooding • Number of planning applications approved against EA advice • Proportion of runoff from new • developments which is directed into SUDS • Performed a flood risk assessment? • Preparation of Masterplan and Design Brief
Material assets	To improve the quality of development through use of local sourced, recycled and efficient building materials	• Does the scheme promote use of locally sourced materials? • Does the scheme promote the use of recycled resources	• % of construction material locally sourced e.g. wood from Forest Stewardship Council and recycled aggregate from demolition • Average distance over which building material are transported • Proportion of materials specified which can be derived from local sources • Proportion of buildings materials used from sustainable sources
Soil	To protect greenfield land as well as enhance quality of soils, wherever possible.	• Will it maximise use of previously developed land? • Will it enhance quality of soil at the site? • Will it help make an efficient and effective use of the land? • Will it protect the continuation of agricultural businesses that currently use the site?	• Net loss of greenfield land to development • Net loss of undeveloped land and productive agricultural holdings to development • % new development on previously developed land • Area of contaminated land remediated through development. • Presence of remediation strategy, if required
Air	To ensure high quality environment for local communities and other sensitive receptors	• Will the plan improve the air quality in the area? • Where possible, will the plan minimise air pollution? • Will the plan limit vehicle emissions in absolute terms, by promoting	• Levels of key air pollutants within and around the JAAP area • Number of days when air pollution is reported as moderate or higher within and near the JAAP area • Air quality improvements measured against related illnesses

		public transport?	• Pollutant levels for Benzene, 1, 3-Butadiene, CO_2, Lead, NO_x, PM_{10}, SO_2 • Number of meters of footpath and cyclepaths • Number of employees travelling by means other than by car • Green Travel Plan(s) in place • Airport contribution to public transport
Noise	To ensure high quality environment for local communities and other sensitive receptors	• Will the plan minimise and where possible reduce noise pollution to ensure minimal disturbance to the residents and other sensitive receptors in the area	• Number of noise and odour complaints received • Annual noise contours of airport and sensitive receptors/number of people living within each contour • Number of flights per year / type of aircraft • Number of time night flight quotas are exceeded every period
Waste	To reduce the use of primary resources and the quantity of waste going to final disposal	• Does the plan seek to reduce the waste produced on site?	• % of the total tonnage of household and industrial/commercial waste that is recycled • Initiative to promote more sustainable waste management of waste arising on site • Proportion of development which incorporates design measures to facilitate sustainable waste management
Energy (to be viewed with climate change theme)	To increase opportunities for renewable energy generation	• Will the plan increase the proportion of energy generated from renewable sources? • Does the plan seek to increase energy efficiency in buildings? • Will the plan lead to reduction in GHG emissions, and incorporate energy efficiency in the development? • Does the plan encourage sustainable transport methods like cycling, public transport or reduce the number of private vehicles?	• Proportion of electricity generated from renewable sources • Installed electricity generating capacity using renewable energy • Energy use per business • Energy use in buildings exceeding Building Regulation requirements • Amount of annual CO_2 emissions generated by aircraft • Fuel efficiency of aircraft using London Southend Airport • Amount of annual CO_2 emissions generated by travel to the airport • Number of passengers flying per year (domestic and short haul flights)

		• Will the JAAP help reduce the greenhouse gas emissions from aircraft using London Southend Airport? • Will the plan increase the proportion of energy generated from renewable sources? • Does the plan seek to increase energy efficiency from buildings and future users?	
Accessibility and accessibility to key services	To enable people to have similar and sufficient levels of access to services and promote sustainable transport measures	• Will the plan seek to encourage people to use alternatives modes of transport other than a car? • Will the plan increase the availability of sustainable transport modes? • Will the plan ensure the residents and other users have easy access to amenities like health clinics, supermarkets, leisure facilities and community facilities? • Does the plan encourage cyclists and prioritise walkers by providing appropriate infrastructure? • Does the plan support access for less able people?	• Modal share of private car • Modal shift to cycling and walking • Proportion of trips made by public transport/foot/ cycle, including school trips • Time lost to congestion • Amount of traffic on strategic links • Proportion of essential trips possible by public transport • Lighting levels (in Lux) of footpaths and cycle ways and levels of exposure to vehicular traffic • Quality of strategic pedestrian routes including safety, interest and amenity • Investment in public transport as a proportion of total transport investment • Proportion of road network benefiting from public transport priority measures • Public transport choice (in terms of routes and modes) • Access to local green space • Number of green travel plans • Length of cycle / footpath network • Perceived safety of cycle ways/footpaths? • Number of meters of footpath and cyclepaths • Number of employees travelling by means other than by car
Transport		• Will the plan lead to improvements in sustainable transport like public transport? • Will the plan improve transport facilities leading to better accessibility? • Will the plan lead to maintain/improve traffic volumes to	

		the existing network? • Will the plan seek to encourage people to use alternative modes of transport other than a car? • Will the plan increase the availability of sustainable transport modes?	• Green Travel Plan(s) in place • Airport contribution to public transport
Landscape and Townscape	To maintain the quality and setting of landscapes and townscapes	• Will the proposed action plan conserve and/or enhance the landscape character of the area? • Will the plan provide appropriate types of open space? • Will the plan conserve and enhance high quality built environments, including protected buildings and areas?	• Number and amount of development which may affect designated sites and areas • Area of landscape or townscape affected by/lost to development • Preparation of Masterplan and Design Brief

Social			
Safety/ Health and Risk	To improve overall levels of health, create safe environments by creating healthy places to live and by reducing crime/fear of crime	• Will the plan ensure an intervention in the causes of criminal events; reducing risk and potential seriousness? • Will the plan adversely affect the health and wellbeing of residents/other users in the area? • Will new development protect existing residents from harmful pollution impacts that can adversely impact on physical health and mental wellbeing, including air quality, noise, light pollution and vibration impacts? • Will new development protected local	• Mortality rates (all causes/cancer/heart • diseases/respiratory diseases/road traffic • accidents) per 100,000 population • Proportion of public spaces and streets which are overlooked by development. • Proportion of public facilities which are multi-functional, catering for a range of uses over different periods of the day. • Proportion of development which is • dormant/ unused after office hours • % of public places that have security • lighting and cameras • Number of road accidents • Respiratory medication use (adults)

		parks and greenspaces important for informal and formal recreation?	• Respiratory medication use (children) • Respiratory hospital admissions • Noise complaints • Number of time night flight quotas are exceeded every period • Number of employees travelling by means other than by car
Education and skills	To improve the education and to assist people to gain skills and fulfil their potential and increase their contribution to the community.	• Will the plan help improve the skills of the workforce? • Will the plan help address local skills shortages?	• Participation in training
Community (cross cutting theme linked to accessibility to services)	To nurture a sense of belonging in a cohesive community where people live and work	• Will the plan create opportunity for enhancing community amenities and facilities? • Does the plan provide opportunity for enhancing community identity and community participation? • Will the plan reduce levels of social deprivation and address these issues?	• % of residents finding it easy to access key local services and community facilities • % of public and community buildings • accessible to disabled people • Public transport affordable by the poorest • Measures to ensure that public transport is accessible to the mobility impaired – including dropped kerbs, low floor busses, etc. • Change in provision of outdoor play space (youth and adult) and urban green space • Number of employees travelling by means other than by car
Housing	To provide opportunity for people to meet their housing needs	• Does the plan support housing needs of local residents	• Affordable housing completion figures • % of non-market housing provided of total (affordable and special needs) • % of housing units built to lifetime homes standards • Housing provided by dwelling type and size

Appendix 3: Sustainability Appraisal of the Joint Area Action Plan Objectives

Appendix 3

Sustainability appraisal of the Joint Area Action Plan Objectives

Sustainability appraisal of the JAAP objectives

London Southend Airport Joint Area Action Plan Objectives

- Creation of sustainable, high quality and high value employment and other land uses within the study area;
- Maximising the economic benefits of a thriving airport and related activity;
- Ensuring good connectivity to the development area by all modes of transport, with appropriate improvements to sustainable transport and the highways network;
- Ensuring a high quality public realm and environment for residents and workers;
- Maximum return on public investment through attracting inward investment; and
- Efficient use and upgrading of existing employment land resources.

The assessment is made with assumption that the policies will be in place to fully deliver the objectives. However, the objectives are quite succinct and therefore it is not possible to draw any detailed conclusions from the appraisal. The assessment simply reports on compatibility of the sustainability objective and the JAAP objective.

The SA of the JAAP objective finds that some sustainability objectives are less well covered than others. However, this is expected to be the case as the JAAP is only intended to set specific policy covering the airport area. National planning policy and Rochford and Southend district authorities will contain the wider policy context, protection and delivery policies. The JAAP puts most emphasis on economic benefits of the airport and environs. The SA does note that the need to protect the natural and built environment should be given greater emphasis, not only in terms of the benefit of environmental protection to ‘residents and workers’.

	Sustainable and high value employment	Thriving airport and related activity	Sustainable transport and highway network	High quality environment for residents and workers	Maximum return on public investment through inward investment	Efficient use of existing employment land resources
Economy						
Local economy	●	●	●	?	●	●
Employment and Wealth Creation	●	●	●	?	●	●
Environment						
Biodiversity	?	?	-	?	-	-
Water	?	-	-	?	-	-
Impacts of climate change	-	-	-	●	-	-
Flooding	-	-	-	?	-	-
Material assets	-	-	-	?	-	-
Soil	X	-	-	-	-	?
Air	?	X	?	?	-	-
Noise	?	X	-	●	-	-
Waste	?	?	-	-	-	-
Energy and climate change mitigation	-	X	?	?	-	-
Accessibility and accessibility to key services	●	?	●	-	?	-

Transport	-	X	●	-	?	-
Landscape and Townscape	?	?	-	●	-	?
Social						
Safety/ Health and Risk	-	?	-	-	-	-
Education and skills	?	-	-	-	?	-
Community (cross cutting theme linked to accessibility to services)	?	?	?	?	?	-
Housing	-	-	-	-	-	-

JAAP Objective	Comment
Sustainable and high value employment	This objective is compatible with a thriving Southend and Rochford economy. The airport has the potential to be a hub for business in the area. However, there is always the risk that new development could adversely impact on the natural environment. Proposed employment sites are also on greenfield land. Development to meet the objective will also need to ensure that it does not harm the rest of the two districts to attract economic growth.
Thriving airport and related activity	The expansion of the airport is not very compatible with achieving sustainable development. Increasing flights will have adverse impacts on the environment. Impacts include carbon emissions, noise impacts and a marginal increase in safety risk to residents. However, the significance of these impact will depend on implementation of the planning policy and operational controls. The expansion of the airport will be positive in terms of attracting economic growth to Southend and Rochford.
Sustainable transport and highway network	Having equitable access to jobs and services is an essential part of creating a sustainable place. Improving public transport, walking and cycling will all have benefits for reducing car use, that is likely to be associated with the level of growth and passenger numbers envisaged. This objective is an essential part of the strategy. There will be economic benefits from securing good access to the highway network for future freight movements.
High quality environment for residents and workers	This objective is quite non-specific in what a 'high-quality' environment is in terms of this type of development. It could cover quite a broad spectrum of matters, from protection of the landscape to preventing adverse noise impacts. The objective should be extended to cover natural environment protection for its own sake and not simply as a resource for 'residents and workers' and the public realm. This may help prevent unintended adverse impacts where the two are not compatible.
Maximum return on public investment through inward investment	The objective is not very specific about what investment it is referred to. This objective is positive for economic benefits, and may also have positive effects for the community.
Efficient use of existing employment land resources	This objective best relates to the more sustainable use of land. It should have a positive impact on economic growth.

Appendix 4: SA of the Four Policy Topics of the Submission Version JAAP

Appendix 4

SA of the four policy topics of the submission version JAAP

These matrices show an appraisal of the policy topic areas of the JAAP against the full set of sustainability objectives developed for the SA process.

The appraisal of topics shows a simple symbol summary of the each policy's performance against the sustainability objectives.

The main text of the report contains more detailed explanation of the sustainability objectives.

Key to appraisal symbols

Likely to contribute to the achievement of greater sustainability according to the identified objective	•
Likely to detract from the achievement of greater sustainability according to the identified objective	x
Likely effect but too unpredictable to specify, or multiple impacts potentially both positive and negative	?
No identifiable relationship between the topic covered in the policy and the sustainability concern	–

Employment allocations		
Issues	The policies of this section of the JAAP address matters associated with the allocation of employment land. This allocates land to accommodate up to 109,000 sq.m. of additional floorspace, including a major new business park, on greenfield Green Belt land.	
Policy coverage	E1: Sets policy to support growth of 5380 jobs to 2021 and then a further 2000 after this time (the majority in Rochford), including those associated with the airport and not. It gives a 50:50 split to jobs in Southend and jobs in Rochford E2: This sets the policy for intensification of Aviation Way Industrial Estate, including the type of employment use class and contributions towards transport and the need to take into account flood risk. E3: This policy set the floorspace and anticipated jobs on the new allocation, Saxon Business Park. The policy also sets out the specific contributions that will be sought for a new public open space. E4: Sets the phased delivery for employment development at Saxon Business Park. E5: The policy includes some detailed requirements for development at area 1A Saxon Business Park, including a landmark building and new road junction including details of initial funding from Southend Borough Council. E6: Extension of road access for new business parks. E7: Requirements for funding of relocation of rugby club from development of Area 2 of the Saxon Business Park, this includes ensuring the new facilities are at least as good as the existing ones. E8: Sets policy requirements for Nestuda Way Business Park including the quantity of floorspace and the need to deliver high quality buildings on the A127 and funding for walking and cycling improvements. Also: MRO1 and MRO2: Support the growth of maintenance, repair and overall functions on the northern site, including the improvement to access. MRO3: supports growth of airport related development in the Southern MRO.	
Local economy	?	These policies will help deliver economic growth in this area and new jobs. However, economic growth in this location should take place in a way that does not harm economic growth in other parts of Southend and Rochford and does not adversely impact on strategic planning objectives in Southend related to town centre focus and regeneration. To help local people access new jobs there may be a need for new employment to provide funding for skills training as

		addressed in the Core Strategy policies. .
Employment and wealth creation	•	These policies should help deliver new employment in the two local authority areas, directly supporting this sustainability objective.
Biodiversity	?/x	Employment land allocations are on greenfield land. Implementation of higher tier policies may help to protect biodiversity, although habitat loss will be inevitable. However, the JAAP contains few policies that specifically refer to nature conservation. Additional policies in the JAAP could help create new high quality habitats and maintenance of green connections through the site. This should also be a consideration of the site Masterplan to be drawn up for the site. Impacts on the nearby internationally designated nature conservation areas have been investigated as part of development proposals. The potential for adverse impacts has been identified in the Habitats Regulations Assessment (HRA) Report (Enfusion, January 2013). There are possible impacts on the Roach and Crouch Estuary SPA & Ramsar site and the Essex Estuaries Special Area of Conservation. The mechanisms for impact are from possible water contamination of surface water runoff from the site flowing directly into the Roach and possible issues with water supply. The findings of the HRA need to be taken into account, which includes ways of mitigating potential adverse impacts. The Habitats Surveys completed for the JAAP indicate that several of the borders of the proposed employment sites should be retained for nature conservation, although no areas of very high biodiversity importance were identified. The Habitat Survey also identifies some areas that could be enhanced to increase biodiversity value. Examples of these areas include the Rayleigh Brook Corridor along the northern edge of the proposed Saxon Business Park and new leisure and open space. The proposals plan for the airport could identify suitable areas for habitat enhancement. Lighting on new employment development can also adversely impact on wildlife, especially on species that are nocturnal, such as bats. Controls maybe necessary when implementing development to mitigate potential adverse impacts, including limiting lighting hours.
Water	?	New employment allocations have the risk of impacts on the water quality. The water bodies flowing through the site, Eastwood Brook, Prittle Brook and Rayleigh Brook, are tributaries to the River Roach, which is a protected nature conservation area. Water quality was shown to be fair to poor in these brooks. The JAAP will need to ensure good water management on site to avoid exacerbating water quality issues, including monitoring to identify changes in quality. Environmental policy in the JAAP requires use of sustainability drainage systems to manage water run-off and control flows into the tributaries, this could help maintain or improve water quality before it leaves the JAAP area. New buildings will also need to be designed to make efficient use of water. The use of BREEAM standards as required in policy could help to achieve this.

Impacts of climate change	?	New buildings will need to be designed to ensure they take into account the impacts of a changing climate. This will including helping adapt to hotter summers through natural ventilation and shading, make more efficient use of water and avoid 'heat island' impacts.
Flooding	?/x	Parts of several allocated sites are at flood risk, including the southern end of Aviation Way Business Park and large parts of the Northside MRO. To ensure that no future users of the site are put at unacceptable risk of flood policy E2, MRO1 and MRO2 makes it clear that flood risk assessment will be required. The strategic risk of flood has already been assessed as part of the background evidence for the JAAP. The strategic study is a useful basis for subsequent flood risk assessments. With the exception of specific sites highlighted in the JAAP other flood risks will be managed through higher tier policies of the two districts. New development will have to ensure that it does not increase the risk of flooding either on site or off-sites. This includes delivery of sustainable drainage systems and reduced run-off rates, the JAAP could contain more information on these techniques to reduce risks of surface water flooding.
Material assets	-	No direct relationship, it is assumed that design and sustainable construction policies of this and higher tier plans will be implemented to ensure new buildings make better use of resources.
Soil	?/x	The employment proposals anticipate development on existing Green Belt agricultural land north of the existing Aviation Way Business Park. Therefore, there will be an inevitable loss of this soil resource. It may be suitable for the policy to specify the need to preserve the topsoil for use elsewhere. Some of the proposed development sites are known to be contaminated (Saxon Business Park, Brickworks), in particular the renewal of existing sites. Where necessary, further investigation and remediation if applicable will be necessary prior to development and measures put in place to reduce the risk of hazard. It is assumed that these matters are covered through Core Strategy policies.
Air	?	New employment is likely to lead to large increases in traffic movements in the area with implications for air quality. New employment development will require preparation of Travel Plans as part of planning applications, in order to demonstrate how traffic impacts will be reduced. However, in locating new uses on sites there should be aim to locate warehousing and distribution in places where new HGV movements will cause least air quality impacts on nearby sensitive receptors. All new development will need to demonstrate how it will contribute to a mode shift from car use to more sustainable travel, especially walking and cycling. Several of the policies are clear in the need to ensure that walking and cycling links are part of development. This will be essential to help more people access the site by non-car modes that will require walking or cycling for at least part of the trip. In

		addition, policies require that new business park development makes a contribution to public transport.
Noise	?	Increased traffic movements from new development are likely to result in noise impacts. Also, some types of business such as aircraft maintenance and overhaul may create adverse noise impacts. Policies could help make sure new development is located so as to reduce the overall impacts of this. For instance, warehousing and distribution should only be permitted where it can otherwise be shown that HGV and other vehicle movements would not cause substantial adverse noise impacts on sensitive receptors. Similarly, noisy MRO uses should be directed away from residential areas.
Waste	?	It is assumed that higher tier and other policies will ensure the good management of waste on-site during construction and in operation stages. This includes the JAAP policy requirement for new development to meet BREEAM 'excellent' standard for new buildings.
Energy and climate mitigation	?	It is assumed that higher tier and other policies will mean that all new buildings will be delivered to high BREEAM standards that include the need to design to more carbon efficient standards, as well as addressing climate change. There are also Core Strategy policies on achieving lower carbon heat on new development sites. Despite this it may be suitable for the JAAP to have a specific policy on lower carbon energy covering the JAAP area. The large scale development proposed over the next 10-20 years may present an ideal opportunity to implement district heat and/or power supplies. Reducing dependence on car use for new employment is essential in reducing climate change impacts of this new development.
Accessibility/ transport	?	New employment is likely to lead to large increases in traffic movements in the area. New employment developments are likely to require traffic assessments and Travel Plans as part of planning applications. All new development will need to demonstrate how it will contribute to a mode shift from car use to more sustainable travel, especially walking and cycling and contributions towards this and public transport is set in policy. Material has been prepared on the walking and cycling route improvements needed in the JAAP area and surroundings, implementing these through developer funding could have significant benefits for the area and the attractiveness of walking or cycling. Policies setting financial contributions from new development need to be applied consistently to all new development; this is included in the preparation of implementation plan and policies for the JAAP. New development will help access to jobs for people in Southend and Rochford who live on main public transport routes to the airport. However, this focus on the airport does risk employment growth in other areas, such as the town centre that are inherently more accessible for employees.

		New links roads will help ensure road connectivity is maintained and improved to support business growth.
Landscape and townscape	?/x	New buildings should also be designed to reduce the overall impact on the landscape character, with buildings of a suitable massing, height and scale to fit with the surroundings, reducing adverse urban fringe impacts. New development may also result in the loss of historic heritage. Within the site there are three listed features, a Grade II listed milestone, 'Cherry Orchard' a Grade II listed house and the church of St Laurence All Saints Grade 1 listed. The 'Cherry Orchard' is surrounded by employment development zone 2 and it will be essential that protecting the house and its setting is part of design considerations of this phase of the employment park.
Safety and health	●	New employment development needs to be designed to avoid increasing opportunities for crime or fear of crime. The relocation of the rugby club also needs to be secured and delivered prior to development on Area 2 to ensure there is no loss of this community resource. The phasing of relocation and the need for the facilities to be at least as good as they are now is set out as policy. Provision of additional new public open space and better access to the Country Park will have potential benefits for the health of local communities. Greater access to good quality open space allows for more active lifestyle choices. Consideration could be given to allowing some new green space to be available for private or community food growing schemes.
Education and skills	?	Part of the financial contributions from new employment development should include skills training for local people. This will be to help them gain the training necessary to work in newly created jobs. This is required through Core Strategy policies, although it may be useful for the JAAP to reference this and secure its delivery.
Community	●/x	Large new employment development has the potential to cause changes in local communities. This will include changing the character of the area from open countryside to areas of built development and the need to demolish some homes, this could have impacts on local residents. Local communities need to be involved in new plans for the airport and the environs, allowing them to have an input into proposals. Traffic movements will also have impacts on communities, as increased traffic can have an adverse impact on local amenity and quality of life. However, improved public transport links partially funded by development could improve links between areas and accessibility of jobs and services. The relocation of the rugby club also needs to be secured and delivered prior to development on area 2 to ensure there is no loss of this community resource. Access to local employment can have a positive impact on local communities.
Housing	?	Employment proposals at Saxon Business Park area 1A will result in the loss of some housing, although this loss will not be

		significant on its own to effect housing availability in the area.
Other issues	**Contributions** The allocations policies also cover some matters that will be sought through planning contributions for site development. The JAAP implementation plan must be delivered to ensure that these are uniformly applied to all relevant policies. Care in the use of the word 'sustainable' in policy E3. The policy sets an expectation for 'sustainable and eco-friendly business start-up units'. Supporting businesses that help contribute create and provide services and products with reduced environmental impact is compatible with sustainable development as it is defined for the SA.	
Main impacts	The main impacts of the employment policies on achieving more sustainable development are identified as: • benefits for the Southend and Rochford economies; • access to local employment opportunities in this part of the two districts, although highlighting the need to delivery skills training as part of new development could be included; • loss of greenfield land with possible impacts on biodiversity, landscape character, historic environment and soils; • risk of focusing economic development on the airport location rather than other parts of the local authorities, in particular as part of Southend town centre, which may impact on achieving other regeneration schemes; • potential for deterioration of water quality impacts from new development if not fully controlled; • possible impacts on the habitat conservation objectives of the Roach Special Protection Area/Ramsar and Essex Estuaries SAC; • transport impacts, such as increased noise, air deterioration and the effects of traffic on communities, with a need to achieve a mode shift away from car use and ensure increased movements of HGV and other commercial vehicles do not adversely effect residential amenity; • flooding impacts are possible and there is a need to ensure Flood Risk Assessment is undertaken to avoid locating development in sensitive locations and to make sure suitable flood mitigation measures are in place; • inevitable change in the wider setting of the Cherry Orchard House listed building; • loss of public open space, although this is to be replaced; and • focus of jobs in this location may adversely impact on achieving economic growth in other parts of the two districts.	
Mitigation	• Habitat enhancement as identified in the ecology plan;	

	• Implementation of the walking and cycling improvements on existing routes, new junctions and new links; • Contributions to public transport improvements and links to the new rail station to ensure new employment is accessible to a wide area and to reduce the sustainability impacts of increased commuter movements; • Requirements for integrated Travel Plans for new development to co-ordinate impacts of increased traffic on the local road network, especially at peak times; • Site specific Flood Risk Assessment and management scheme to ensure that new buildings do not put residents at risk; • Protection of topsoil; • Managing the layout of development to reduce the noise impacts, particularly at the MRO sites; • Implementation of Core Strategy policies, including those on SUDS, design, sustainable design, low carbon energy, protection of the natural and built environment; • Implementation of the Environment and Transport policies of the JAAP to reduce impacts of development, including improvements to non-car access and buildings to 'Excellent' BREEAM standards; • Possible new policy requiring district heat and power connections and the possibility of a new district energy centre; • Ensuring the economic benefits are shared with local people through training schemes and local employment initiatives; • Specific biodiversity enhancement measures in Saxon Way Business Park and in Aviation Way Industrial Estate improvements; and • Preparation of an area wide Masterplan, covering design, movement routes, habitat enhancement, walking, cycling, parking, sustainable construction and including details of developer contributions.

London Southend Airport	
Issues	These policies cover four general topic areas. These are the general policies for the airport, a policy for the terminal; policies relating to the maintenance repair and overhaul (MRO) zones and the airport development zone A. The main theme of the policies is managing the impacts of the recent and future airport expansion to reduce adverse impacts on local people and the natural environment. This is within the context of a possible increase to 2 million passengers per annum use the airport by 2021 (1 million by 2012), with little increase in freight and expansion of MRO operations. NB The appraisal of these policies is based on the assumption that capacity will not increase to 2 mppa without airport expansion, including a new terminal and extended runway.
Policy coverage	LS1: This is the general policy setting the airport boundary and aims for passenger growth. LS2: Sets the parameters for airport development including restrictions on noise impacts and new transport infrastructure LS3: Sets the need for an annual Quiet Operations Policy to show how the airport is performing against limits and measures implemented to control noise. LS4: Sets out the details of a noise compensation and purchase scheme to compensate for noise impacts. LS5: Setting a requirement for a Surface Access Strategy to be submitted by operators, this includes the need to monitor its effectiveness with review triggered if necessary. LS6: Setting the policy for development in the Public Safety Zones in keeping with the government circular. LS7: Sets the conditions for operating of the new runway including restriction and noise quotas. LS8: A programme of air monitoring will be required to manage air quality impacts, including monitoring and preparation of an Air Quality Management Plan. TF1: This policy relates to future further terminal expansion that will be subject to the agreed environmental controls. MRO1: Sets general presumption in favour of use of MRO at the northern MRO site and necessary transport improvements a flood risk assessment will be required. MRO2: This sets the requirements for any expansion to the northern MRO site, including financial contributions for transport and public open space and the need for flood risk assessment. MRO3: The policy states that applications for MRO and other airport related uses on the southern site will be permitted. ADZ1: Allowing applications for development that will contribute to airport expansion to be located in the existing terminal area,

	specifying retail development is not supported.	
Local economy	•	The policies should benefit the local economy contributing to local employment at the airport in a range of airport related businesses. To help local employment there a reference could be included in the JAAP to skills training to help local people access the newly created jobs in the aviation industry.
Employment and wealth creation	•	The policies should benefit the local economy contributing to local employment at the airport in a range of airport related businesses. This includes high quality and skilled jobs in the MRO industry.
Biodiversity	x/?	Some airport expansion may result in loss of greenfield land, with the possible loss of habitats. There may also be biodiversity impacts from increased flights, which could include the possible safety concerns from birds in take-off and landing areas although the potential for this has been largely ruled out due to the orientation of the runways. Airport development may have an impact on nearby internationally designated nature conservation sites that are designated for their importance for bird breeding and foraging. However, the HRA Report (January 2013) has investigated the potential for impact and makes recommendation for avoiding and mitigating potential effects, which primarily relate to the water environment. It is important to demonstrate the airport is not having a significant adverse impact on the designated sites. The Phase 1 Habitat Plan for the site identifies that parts of the proposed MRO sites contain areas of scrub land and trees that could be potential bat roosts. These important areas to the north of the main runway are identified in the ecological assessment as areas with the potential for habitat enhancement. However, MRO is allocated in these locations and development is likely to result in their partial or total loss. Further survey work will be needed to evaluate the significant of these losses, particularly on protected species such as bat or badgers, and ways of mitigating this impact. Other parts of the proposed airport development site are of lesser biodiversity importance. Lighting on new airport development can also adversely impact on wildlife, especially on species that are nocturnal and feed at night, such as bats or birds. These matters will need to be addressed through specific development proposals.
Water	?	Water efficiency measures will need to be incorporated into new terminal buildings. The JAAP sets BREEAM standards that will have to be met for new development. This should help ensure new buildings are built to high sustainability standards and this may include water resource efficiency. Care will need to be taken to ensure surface water management systems are in place to avoid water runoff polluting the brooks that cross the site. Both these measures will be important in avoiding adverse impacts on internationally designated nature conservation sites in the area that are dependent on water supply and quality.

Impacts of climate change	?	New buildings will need to be designed to withstand the impacts of climate change, including natural ventilation to help cope with increased summer temperatures. This may be part of meeting BREEAM standards set in JAAP policy.
Flooding	?	New development will have to ensure that it does not increase the risk of flooding either on site or off-site. This should include delivery of sustainable drainage systems and reduced run-off rates. The Flood Constraint Report indicates that large parts of the proposed Northern MRO extension are in flood zones 2 and 3, putting it at significant risk of fluvial flooding from Eastwood Brook. In these locations policy requires additional flood risk assessment to demonstrate development will be safe and will not increase flood elsewhere. Mitigation may include setting development back from Eastwood Brook to reduce flood risk and loss of floodplain storage.
Material assets	?	For all new buildings the JAAP sets BREEAM standards that will have to be met. This may help ensure new buildings are built to high sustainability standards.
Soil	?	Development on greenfield land will need to avoid impacts on high grade agricultural soils. Where impacts are likely through being allocated every attempt needs to be made to preserve high quality topsoils. Some of the proposed development sites have the potential for contamination. Where necessary further investigation and remediation if applicable will be necessary prior to development.
Air	X	New aircraft movements will have impacts on air quality (for greenhouse gas impacts see climate change). New transport associated with the 2 mppa travelling to the airport could also have adverse air quality impacts. The surface transport air quality impacts can be managed to some extent through improvements to public transport access, including a new train station and bus links, set out in the Surface Access Strategy. The impacts on air quality from aircraft movement, related to carbon dioxide emissions, will be more difficult to manage and are overall effects are likely to remain a significant residual impact of airport expansion. Monitoring of air quality may help identify if there is deterioration as part of the runway extension and increased in aircraft movements. Where air quality is found to be breaching statutory air quality standards an effective strategy to bring emissions back into line will be necessary. It is not clear in the JAAP what type of measures this could include. Therefore, it is not clear what this would mean for airport operations and number of flights or type of plane that could fly from the airport. To protect health and achieve more sustainable development there should be provisions in place manage flights in these circumstances to reduce adverse effects.
Noise	X	Having the JAAP in place allows for new conditions to be put in place to manage the noise impacts of the airport. This includes restrictions for operation, including ground running and night flights. Despite an extended runway allowing quieter planes to operate and the overall noise contour being reduced, the number of

		flights will increase. Therefore, despite being quieter there will be greater noise disturbance due to more frequent flights, with take-off being the noisiest time. Sensitive receptors in the area such as the school and homes may be particularly affected. Noise impacts will be a residual significant impact of the extended airport, even with mitigation. MRO operations can also be very noisy, although more intermittent than flights. The JAAP should set parameters for reducing these impacts, such as suitable locations (perhaps favouring the northern site for ground testing) and using noise baffles. Specific operations policy for MRO may be suitable to manage these impacts. The annual Quiet Operations Policy will help to show compliance with noise conditions, although policy could be improved to clarify how enforcement will ensure any unexpected adverse noise impacts will be mitigated against. Figures indicate that when the airport is operating at full anticipated capacity, during operating hours there may be as many as one aircraft movement every seven minutes. About half of the movements would be associated with larger planes associated with commercial flights (including freight). Studies have indicated that a number of properties would experience significant noise impacts. A mitigation strategy is to be prepared to manage these impacts, including buying homes off the existing owners where noise increase is shown to be too great. This will remove the receptors to the impact, although the effect will remain. Noise insulation grants could be given to residential development in areas of elevated noise impact. However, this money is not yet confirmed and despite noise insulation some deterioration of residential amenity will remain. Policies LS2, LS3 and a new policy cover noise control.
Waste	?	It is assumed that higher tier policies will ensure the good management of waste on-site during construction and in operation stages. These policies are needed to ensure operational and construction waste is sustainably managed. The JAAP sets policy requirements for all new buildings to meet given BREEAM standards. This will mean that new buildings are built to sustainability standards, which could include the reduction of waste in construction and operation of development.
Energy and climate mitigation	x	The main impact on energy and climate change will be through flights to and from the airport. The new runway will allow more efficient medium sized planes to use the airport. However, the JAAP presumes in favour of airport expansion and will have inevitable adverse impacts on global air quality with adverse climate change impacts, which will be as a result of runway expansion. These impacts cannot be mitigated against and are likely to be long-term in their importance. Increased surface transport to bring 2 mppa and employees to the airport and associated business development may also result in increasing greenhouse gas emissions. Achieving a modal shift away from car use to more sustainable alternatives will help manage this, and the Surface Access Strategy will help reduce these impacts if successfully implemented. The operation of the airport building and associated new development will have an energy demand. JAAP policy requires that BREEAM standards are met in new built development and this could include more carbon efficient energy use. The JAAP

		could set specific carbon reduction or renewable energy policies for the airport buildings and environs, to help reduce the energy demand. Policy could include a requirement for combined heat and power generation on-site or in association with nearby employment expansion, including installation of new infrastructure for heat distribution.
Accessibility/ transport	?/x	Increased surface transport to bring 2 mppa and employees to the site may result an increase in greenhouse gas emissions. Achieving a modal shift away from car use to more sustainable alternatives will help manage this, and the Surface Access Strategy should help show how impacts can be mitigate against. The SA objective also relates to promotion of sustainable transport measures and this does not include air travel. The Surface Access Strategy will help give existing and future employees at the business parks associated with the airport the chance to travel to work by alternatives to the car, improve access.
Landscape and townscape	?	Core Strategy policies should help make sure new development is of a high quality and makes a positive contribution to the townscape of Southend. However, the JAAP could include more detail on the need for high quality buildings in and around the airport, creating landmark features in the Essex Thames Gateway and as a possible gateway to the UK. The development will result in further impacts on the listed Church that is located to the north of the runway extension. It is likely that there will need to be changes to the environs of the church to ensure it does not risk safety. The increased proximity of the runway to the church will have irreversible adverse impacts on the setting of this listed building.
Safety and health	?	Increasing flights at the airport does have an inherent safety risk. The policies include details of restrictions of development in the Public Safety Zones and this should help protect the population of direct adverse impacts of aircraft. However, there may be other mental and physical health impacts related to poor air quality and noise impacts. There are also more substantial, widespread and long-term risks related to climate change and air pollution.
Education and skills	?	Part of the financial contributions from airport expansion could include skills training for local people. This will be to help them gain the training necessary to work in newly created jobs. However, this is not referred to in the JAAP policy or text and cross reference to Core Strategy policy and implementation plans could help in securing this funding.. There is also the risk that increased noise levels could adversely impact on pupil's education in nearby schools.
Community	?	The airport expansion could have an impact on local communities due to the 2 mppa visiting the airport site with traffic impacts have an effect on local roads, with congestion having an adverse impact. Noise impacts could also have an adverse impact on communities. Access to new jobs could have a positive benefit for local people and a local airport served by a low cost airline will have positive benefits for wellbeing from access to more affordable holidays. Local communities need to be involved in new plans for the airport and the environs, allowing them to have an input into proposals.

		Local open space would be lost through the expansion plans, including the expansion of the Northern MRO extension. The JAAP proposed compensatory measures to make up for this loss, including provision of new space and relocation of existing sports fields and play areas. For the Northern MRO extension contributions will be required to make improvements to the adjacent open space.
Housing	?	There is the possibility that noise related impacts could result in adverse impacts on residential amenity in some areas and blighting some homes for future residential use if they are part of the compensatory purchase scheme.
Other issues	**Operating conditions** Several of the policies of this section set the operational controls for airport use, stipulating the monitoring arrangements that will be in place. These controls should help reduce the adverse effects of airport operation to some extent. However, their effectiveness and mitigation of impacts where adverse impacts and operation outside control limits be identified will be dependent on their full enforcement. This should include application of appropriate penalties and effective remedial measures. The way the policies are worded needs to be consistent, indicating what monitoring arrangements will be in place and the penalties for non-compliance or missing targets. Policies should make clear how the controls will be secured, for example conditions or Section 106 agreements. **Contributions** The allocations policies also cover some matters that will be sought through planning contributions for site development. The JAAP must ensure that these are uniformly applied, to all relevant policies. More detail on implementation and contributions is set in the implementation and delivery plan.	
Main impacts	Airport expansion including expansion of MRO is likely to have: • support the local economy and provide new jobs; • possible improvements to non-car access the JAAP site and its environs; • significant noise impacts on local communities, this is from an increased frequency of take-off and landings as well as ground testing from increased MRO operations, there are currently no controls in place to manage MRO noise impacts; • air quality impacts; • risks to water quality impacts from surface water run-off; • potential loss of important habitats that support protected species, further assessment will be necessary to determine the likelihood of impacts;	

	• significant increase in carbon dioxide emissions and therefore contribution to climate change; • there may also be impacts from increased surface traffic especially in combination with employment growth in the airport environs; • possible significant adverse impacts on the Church of St Laurence All Saints Grade I listed; • there are likely to be positive impacts on availability of local employment; • disruption of existing public open spaces and the need to relocate these uses; and • flood risk of users of the MRO sites which are located partially in high risk flood zones.
Mitigation	• Operation and enforcement of operating conditions are already included in the JAAP, including: o Quiet Operations Policy o Noise Compensation and Purchase Scheme o Surface Access Strategy o Public Safety Zones o Air quality monitoring. • Where relevant development proposals will need to have site specific flood risk assessment and sequential tests to ensure that new buildings do not put residents at risk, possibly following the advice of the Flood Risk Constraints Report. • Implementation of Core Strategy policies, including those on SUDS, design, sustainable design, low carbon energy, protection of the natural and built environment • The SA suggests a possible new policy requiring district heat and power connections and the possibility of a new district energy centre • Implementation of policies to help mitigate impacts on publicly accessible open space, including new open space to the north • Inclusion of the airport in a masterplan for the whole JAAP area would help promote cohesive design, movement, parking and sustainable construction approach to the whole area.

Transport within the JAAP	
Issues	The airport and businesses expansion in the area will create a large amount of extra traffic. The capacity of existing roads is already stretched and junction improvements and traffic management measures will need to be implemented to accommodate growth. Without these measures the adverse impacts of congestion will be exacerbated, for example from local air pollution, declining residential amenity and travel delay. However, more importantly there needs to be the infrastructure and provision in place to achieve a modal shift away form car use to more sustainable transport. For employees this can include improved cycling and walking routes to make commuting in these ways an attractive alternative to car use. Also, the new rail station and bus improvements will all play a role in reducing the impacts of car traffic and congestion. The Airport Surface Access Strategy will help to manage traffic for better non-car access to the airport by encouraging alternatives to driving for travellers and airport employees, Travel Plans will help manage access to new employment development.
Policy coverage	Policies cover the road improvements as well as public transport access improvements. T1: Junction improvements will be needed to access new development, including at Aviation Way / Eastwoodbury Lane to increase capacity and improve the public realm. Proposals include walking and cycling improvements. T2: Requirements for a new roundabout access to Saxon Business Park from Cherry Orchard way is set out in the policy, alongside how this will be controlled to reduce impacts on the network. T3: All applications will need a Travel Plan for managing staff journeys and delivery vehicle movements. Travel Plans for all developments should be compatible to reduce impacts at peak times. T4: Improvements to public transport will need to be delivered, including through contributions to establish better bus services and infrastructure to meet the needs of workers and visitors to the area, this is part of strategy to improve bus user satisfaction. T5: The policy gives specific locations where walking and cycling need to be improved, new development will need to be make a contribution towards this and cycle skills training. T6: This policy sets out the need for new development to contribute to a new network management system that will aim to reduce the impacts of freight movements by reducing potential for congestion. T7: The policy sets out the need to increase network capacity in some locations, with the Council actively pursuing funding opportunities.

Local economy	?	The impacts of this policy could be positive by helping new employment to be linked into the highway network. New roads and upgrades could have positive benefits for reducing congestion in the area, at least in the short to medium term. However, there may be impacts of congestion on the A127 in the wider Southend and Essex Thames gateway, especially in association with other planned housing and employment development in the area. Access to employment sites will be improved through upgrading of Aviation Way and the junction with Eastwoodbury Lane, and new access to Saxon Business Park, this will help secure economic growth. Managing commercial vehicles in the JAAP area to avoid peak congestion would help support the economy of the area. Policy provisions for freight and network management should help to achieve this, including intelligent signs, junction improvements and measure that will ensure commercial traffic is directed to the main highways.
Employment and wealth creation	□	The policy is likely to help in attracting businesses to the area. The new public transport, walking and cycling routes could also help local people access new jobs in the area, especially if public transport improvements are well integrated into development. In addition, the policy requiring network management could help reduce concerns some investors may have about congestion in the area adversely affecting their business, should they choose to locate in this area. Access to employment sites will be improved through upgrading of Aviation Way and the junction with Eastwoodbury Lane and a new access to Saxon Business Park, this will help secure economic growth.
Biodiversity	?	Road improvements, especially those that require new land may have an adverse impact on biodiversity. There may also be indirect impacts through run-off from new roads affecting the quality of surface water. Lighting on new routes can also adversely impact on wildlife, especially on nocturnal species such as bats and some birds. Care may need to be taken in designing lighting schemes to protect these species where necessary.
Water	?	Run-off from new roads will need to be carefully managed to avoid impacts on the water environment. This will include creating new pollution traps and swales as part of sustainable drainage systems. Brooks crossing part of the site already experience only fair to poor water quality and this will need to be improved.
Impacts of climate change	-	No direct relationship.
Flooding	?	Care needs to be taken in the design of hard infrastructure and impermeable surfaces to prevent an increase in flood risk off site. Therefore, new development needs to incorporate sustainable drainage systems to reduce water run-off rates.
Material assets	-	No direct relationship.
Soil	-	No direct relationship.

Air	?	Increased network capacity may result in an increase in road traffic, with adverse impacts on air quality on a large scale. However, increased capacity could have some local benefits from reducing local congestion and therefore the localised adverse air quality impacts. Increased space at road and junctions will also help improve safety and journey times for walking, cycling and public transport. Increase in the availability of alternative modes of transport to car use may help reduce the overall air quality impacts. Polices of the JAAP require that development plans demonstrate how they will achieve a mode shift from car use. This should ensure that there is a mode shift away from car use for future airport passengers and employees. Access by rail and bus will be favoured. To successfully achieve a mode shift away from car use there may need to be other controls put in place, such as managing car parking, and improve the attractiveness of non-car modes in comparison to car use.
Noise	?	New roads and increased traffic may have noise impacts, particularly related to increased HGV travel.
Waste	-	No direct relationship.
Energy and climate mitigation	x/?	Increased road capacity and additional trips will inevitably lead to more road traffic with adverse impacts on green house gas emissions. Increasing the availability of alternative modes of transport to the car may help reduce the overall emission impacts, but there is likely to be residual negative impact. Polices on improving mode shift from car use should ensure that airport expansion also has plans in place to achieve a mode shift of passengers as well as employees away from car use.
Accessibility/ transport	●/?	This policy is likely to help increase accessibility and walking and cycling improvements will help local people move around the area and access jobs and facilities. Other improvements will come from improvements to public transport and increased road capacity may help local access by car. Where new roads and junctions are proposed, for example the improvements at Aviation Way, policy stipulates that these must incorporate good quality provision for walking and cycling. Access to employment sites will be improved through network management and upgrading of Aviation Way and works at junctions including access onto Eastwoodbury Lane and improved access to Saxon Business Park; this will help secure economic growth. The re-routed Eastwoodbury Lane has increased the distance from the east of the airport and new rail station to proposed and existing employment sites at Saxon Way Business Park and Aviation Way industrial estate. This may have made walking and cycling a less attractive option and may require additional bus services to provide a link. To achieve the best public transport improvements it may be useful to set out in JAAP what the expectations are for improved

		infrastructure and the routes of new bus services. Evidence shows that main roads to the west of the JAAP site are already operating at high capacity. New development will inevitably lead to increased car use, despite a modal shift. Therefore, development at the JAAP site will increase congestion reducing accessibility. The implementation of sustainable transport schemes for the wider Southend and Rochford area will be necessary as well as further modelling of impacts. Policy T1 also identifies the need to deliver a Green Link through the Aviation Way business park. How this will be achieve or what this is not made clear in the policy, although it includes improved walking and cycling routes this could be of benefit for local peoples' access to the employment area.
Landscape and townscape	?	Changes to roads and junctions have the potential for landscape and townscape impacts, this could be positive or negative. To maximise the potential for improving the urban environment road and junction design will need to designed, incorporating new planting, attractive pavements and lighting to help create attractive places.
Safety and health	?	Road improvements could help improve road safety. However, noise, air quality and potential community severance could have adverse impacts on health and wellbeing. The severance of the park by the re-routed Eastwoodbury Lane may have had an adverse impact on the users of the park. However, the redistribution of existing uses all to the southside of the road may off-set the severity of these impacts. Helping provide alternatives to travelling by car, especially for everyday trips such as commuting to work, can support a healthier lifestyle and maintain individual fitness.
Education and skills	-	No direct relationship.
Community	?	New roads have the potential to adversely impact on communities, for instance through community severance and the impacts of congestion. Roads need to be carefully planned to ensure the communities who live near or along them are not adversely affected by traffic and transport, including careful design to encourage safety, prioritising cyclists and walkers, and incorporating features to slow traffic. The re-routed Eastwoodbury Lane divides the existing park. However, mitigation measures and redistribution of the existing play facilities may help reduce the impacts of this on park users. Management of the road network and in particular keeping freight on certain predetermined routes may help reduce the impact of HGV movements on communities. For instance, avoiding vehicles using smaller roads in Rochford when travelling to and from the Saxon Way Business Park.

Housing	-	No direct relationship.
Other issues	**Reducing car use** The level of development promoted through the JAAP will increase the amount of traffic on the roads around the site. This will have adverse impacts on air quality and emissions of carbon dioxide with climate change impacts. Poor air quality and busy roads can also cause mental and physical health impacts in local communities. Transport assessments have already shown that roads to the west of the JAAP area are reaching capacity and already suffering congestion. Therefore, it is imperative that a shift away from car use is achieved; even to maintain current levels of car use. In addition, it will be the role of other plans and strategies to work alongside implementation of the JAAP to reduce car use and improve road capacity where necessary to ensure it does not harm the economy. The JAAP should help achieve this modal shift but it is essential that this is monitored to ensure issues relating to congestion are not getting worse. **Aviation Way Business Park and access** Policy T1 sets out specific measures for improvements to the business park, including access and the public realm. The policy is not quite clear in several aspects, including the purpose and detail of what the Green Link and how this relates to transport improvements. The JAAP needs to ensure consistency between the various policies for this area.	
Main impacts	The greatest impacts of these polices are likely to be on: • public transport, walking and cycling improvements may help improve local accessibility and reduce the overall impacts of new development; • adverse impacts on local air quality resulting from increased road capacity and development growth in the area, inevitably leading to more car travel; • carbon dioxide emissions increasing from increased road capacity, inevitably leading to more car travel; • loss of land for widened roads or expanded junctions may have impacts on biodiversity, soils, historic features and landscape/townscape; • there may also be some impacts on water, flooding, lighting, which will all need to be managed through appropriate design of development; • disruption of the park as a result of the re-routed Eastwoodbury Lane there may be impacts on the quality of the park and its use for recreation, impacts will need to be managed and mitigated against; • benefits from network management and improvements reducing local congestion on the road network from freight and other	

	employment related traffic; and • the re-routed Eastwoodbury Lane lengths the distance from the area to the east of the airport and the new rail station to the new and expanded business parks, possibly reducing the attractiveness of walking and cycling.
Mitigation	• Additional traffic modelling of the Masterplan to identify likely impacts of development and devise specific solutions to manage effects; • Provision of new walking and cycling routes Aviation Way and at the junction improvements; • Implementation and enforcement of Travel Plans for all new employment development, businesses and the airport; • Implementation of the Airport Surface Access Strategy; • Implementation of the public transport, walking and cycling elements of the Local Transport Plan; • Management of commercial vehicles accessing business parks and the airport, including implementation of the Network Management Plans for freight movements; • Implementation of Core Strategy policies, including those on SUDS, design, sustainable design, low carbon energy, protection of the natural and built environment; • Transport Assessment and implementation of congestion mitigation through the South Essex and Southend Local Transport Strategy; • Junction and road improvements should aim to create improvements to the urban environment, making more attractive routes for walking and cycling and to the character of the area; and • Preparation of a co-ordinated set of masterplans or development briefs for the JAAP area or a site-wide masterplan, to include a strategic approach to transport provision, including public transport benefits, links to the rail station, walking/cycling and parking management.

Environment		
Issues	This section sets the policies related to the 'environment' for the JAAP area, they predominantly relate to open space. Green Belt land and sports fields and pitches will be lost under the proposed development plans and therefore these policies seek to compensate for these losses by creating new resources elsewhere. The policies do not address wider environmental issues, such as biodiversity, landscape, water quality, and natural resource use, which are covered by higher tier policies.	
Policy coverage	The polices of this section are: ENV1: The Green Belt boundary is being amended for airport and MRO expansion ENV2: New public open space north of the airport, including the relocation of the rugby club, funded through the development of the business park and northern MRO. ENV3: A new green buffer will be maintained on land south of the Eastwoodbury Lane ENV4: Access will be improved to the Cherry Orchard Jubilee Country Park. ENV5: The new access to the Saxon Business Park will be in a new green corridor, linking the rugby club and public open space. ENV6: A green buffer will be maintained on land east of the railway. ENV7: New buildings must at minimum meet the environmental sustainability BREEAM 'excellent' standard and include sustainable drainage measures.	
Local economy	-	No direct relationship.
Employment and wealth creation	-	No direct relationship.
Biodiversity	?	The new open space could have a benefit for biodiversity. However, the policies could more clearly show how these spaces should incorporate biodiversity enhancement and replacement for any loss elsewhere. Implementation of development and the JAAP need to ensure it takes into account the findings of the HRA Report (January 2013). This is to avoid or mitigate potential harm from development delivered through the JAAP on nearby internationally designed nature conservation sites, including at the Crouch and Roach Estuaries SPA and Ramsar, and Essex Estuaries SAC. Policy ENV7 sets the requirement for sustainable drainage in line with the HRA recommendations. The policy also requires development to meet BREEM 'excellent' standards, which has the potential to deliver more water efficient development. However, credits to achieve the BREEAM standard can be secured for many different sustainable construction practices, therefore the policy should stipulate that credits

		must be achieved for water efficiency – as this is what is important to protect the nature conservation sites.
Water	?	There is the potential for new development to have adverse impacts on water quality; supporting text of policy ENV7 could set out expectations for sustainable drainage, pollution control such as swales, as part of development. Ensuring new buildings meet the BREEAM 'excellent' standard may help to ensure water efficiency measures are incorporated into new development, which will also be important in protecting nature conservation sites.
Impacts of climate change	?	It may be suitable for the policies to include design criteria, including ensuring new development takes into account a changing climate, including more prolonged hot periods.
Flooding	?	New development has the potential to change the run-off rates from the site, with the potential to increase flood risk off site. Therefore, the JAAP includes a policy requirement to use sustainable drainage systems that could help reduce surface water run-off rates.
Material assets	•	There is a policy requirement for new buildings to meet at least BREEAM 'excellent' standards. This may help to make sure that the choice of materials for construction is considered and reused and reusable materials used where possible.
Soil	?	Soil protection policies are not directly covered in the JAAP. It may be suitable to have policy criteria on protecting high quality agricultural soils as under current proposals new development is anticipated in areas where high quality soils have been identified.
Air	-	No direct relationship.
Noise	•	Protecting the buffer between existing houses and the railway line should help maintain the noise protection this provides.
Waste	?	There is a policy requirement for new buildings to at least meet BREEAM 'excellent' standards for new buildings. This may help to make sure that the way materials are used on site during construction reduces waste creation. In the operation of development this standard could also help to ensure that waste facilities are provided on-site, for instance space for storing and sorting of waste arisings.
Energy and climate mitigation	?	As a large planned redevelopment and renewal area there could be potential to more fully address energy use on the site. This could include setting an area specific target for carbon reduction on-site through the use of renewable energy and more efficient energy use. The site is well suited to combined heat and power for the whole site. Meeting BREEAM 'excellent' standards will require quite high standards of energy efficiency and probably energy generation from low and zero carbon sources to be part of new development.
Accessibility/ transport	-	No direct relationship.

Landscape and townscape	?	JAAP policies could include more on the design of new buildings to help protect the landscape/townscape character of the area. This includes the design of any new buildings at the airport being of 'landmark' quality for Southend/Rochford and a gateway to the area. The design of new airport buildings could also be set out in policy, and should be part of the masterplan, to ensure that their scale, massing and height is suitable for the local area and design of the business parks contributes to the urban fringe area. The JAAP could also contain policies or policy criteria on protecting the historic environment.
Safety and health	-	No direct relationship.
Education and skills	-	No direct relationship.
Community	•	The policy includes the relocation of the rugby pitch. The new links to the site are also essential to ensure people have good access to the site, especially by walking or cycling. It may be preferable for a more direct link, such as footpath, to be created linking Cherry Orchard Way with the new site, as the new site is further form the main urban areas of Southend. The public open space to the south could be adversely affected by the possible new road that bisects it. The road does severe the two halves of the park with limited crossing points. Consideration could be given to how to reintegrate the road into the park, for instance natural traffic calming measures, with the aim of reducing this absolute severance.
Housing	-	No direct relationship.
Other issues	There are other environmental issues that the JAAP should aim to address as part of a comprehensive policy guide for delivering new development at the airport and in the environs. These issues include: • avoiding exacerbating flood risk through ensuring new development maintains greenfield run-off rates; • avoiding biodiversity impacts through suitable ecological surveying and protection and mitigation measures put in place where necessary; • • policies to ensure new lighting takes into account impacts on the environment, including wildlife and the night landscape; • policies on the design of new buildings in the area to provide high quality structures that are landmark features for Southend/Rochford and could have a role in acting as a gateway to the UK for air travellers; and • protection of the historic heritage, including built features, landscape features and buried archaeology. The policies could be wider in their scope to cover the multipurpose role of improved greenspace, including for landscaping, biodiversity	

	and as the urban fringe area separating Rochford from Southend. In addition, the policy should include more details about implementation of the new public open space features, funded through developer contributions. This should be as a separate policy and detailed implementation plan.
Main impacts	• Policies in higher tier plans must be implemented to secure environmental and natural resource protection; where there are gaps in policy coverage (due to age of plans or changes in national policy) it may be suitable for the JAAP to create area specific policy to ensure assets are protected. . • Many of the other impacts of the policy are likely to be positive in terms of provision of new public open space and relocation of the rugby club. • Requirements for new buildings to meet at a minimum the BREEAM standard of 'excellent' is likely to have benefits for sustainable construction, although it will be up to developers how they achieve the credits to reach the standard, for instance whether they consider water/energy efficiency, waste, use of materials or biodiversity. • Possible adverse impacts on existing biodiversity from land take and airport operations.
Mitigation	• Implementation of Core Strategy policies, including those on SUDS, design, sustainable design, low carbon energy, protection of the natural and built environment; • Development in accordance with any Habitats Regulations assessment mitigation measures; • Implementation of recommendations of the HRA Report (January 2013), including specifically requiring BREEAM standards for water efficiency are met in new development; • There could be scope for additional policies, or policy criteria, on enhancing the biodiversity assets where these have been identified in the ecological assessment; • Implementation of conditions and funding arrangements to ensure delivery of new open space for recreation and biodiversity; • Implementation of other policies requiring landmark buildings may help encourage higher architectural quality in some key locations; and • The preparation of a JAAP-wide Masterplan or co-ordinated to include details of how green infrastructure will be incorporated into development, including areas of habitat enhancement, and preservation of wildlife movement routes through the sites, could help achieve positive benefits. The plan should also include details of anticipated contributions towards biodiversity enhancement.

Appendix 5: Sustainability Appraisal of Sites

Appendix 5

Sustainability appraisal of sites

These matrices show an appraisal of the policy topic areas of the JAAP against the full set of sustainability objectives developed for the SA process.

The appraisal of topics shows a simple symbol summary of the each policy's performance against the sustainability objectives.

The main text of the report contains more detailed explanation of the sustainability objectives.

Key to appraisal symbols

Proposals for the site are likely to contribute to the achievement of greater sustainability according to the identified objective	•
Proposals for the site are likely to detract from the achievement of greater sustainability according to the identified objective	x
The proposal is likely to have some effect but too unpredictable to specify, could depend on implementation, or multiple impacts potentially both positive and negative	?
No identifiable relationship between the specific proposal and the sustainability objective.	–

Project 1a: Saxon Business Park – Brickworks site

Proposed employment development of over 20,000 sqm to be delivered b y 2021 on former brickworks site.

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibilty / transport	Landscape / townscape	Safety and health	Education	Community	Housing
●	●	?	?	?	●	●	?	●	-	-	?	●	●	?	●	?

Sustainability commentary

This site is to be redeveloped as a business park that will benefit the local economy and employment in Rochford and Southend.

Part of the site is at higher risk of flood within flood risk zones 2 and 3. Development in this location should be avoided or designed to ensure people on and off site are not put at risk of flood.

This is a previously developed site. Its former use was as brickworks, but the site is now redundant as all materials have been worked. Redevelopment for employment uses will bring this site back into effective use making best use of land. This will have benefits also by reducing the overall amount of green field land that is needed to deliver economic growth in the area. Redevelopment of this site may have positive benefits for the quality of the urban environment, subject to the site being of good design.

The site has known contamination issues and remediation will need to be part of future development at the site. This should help make the best use of land bringing the site back into use.

Development will result in the loss of the cottages on the site, with impacts to local character and existing residents.

There may be a need for additional evaluation of archaeological potential of the site to identify the need for further investigation to protect these assets.

The location of this site is a more distant from the urban area than other proposal sites. This can have the advantage of reducing noise impacts on local residents. It also may be less accessible by sustainable modes of transport. Currently walking, cycling and bus links to the site are extremely poor, not making the site well suited to office and high density types of employment. Without transport measures as outlined in the JAAP being provided prior to occupation development at this site may lead to an increase in traffic on the roads due to local commuting trips, which may not be the case for sites closer to the urban areas and other public transport.

Proposals to manage freight movements as part of a co-ordinated network management system may help reduce possible amenity and congestion impacts of employment development at this site. For instance, the no right turn onto Cherry Tree Lane for vehicles exiting the site will help avoid impacts on Rochford's roads and direct traffic to the main routes out of the area.

Development on this site should contribute to the new public open space, new access to Cherry Orchard Park and a new Environment and Visitor Centre with

benefits for the local community and contributing to healthy lifestyles and understanding of the natural environment.

The development of the site would not have an impact on the minerals reserve as brickwork owners confirm the reserve is fully exploited. Potential for contamination will have to be assessed prior to development with remediation as necessary.

The nature conservation value of the site should be assessed. Since the brickworks use ceased habitats will have re-colonised the area and it could be a valuable resource for these uses.

Main impacts / mitigation / recommendations

- Implementation of sustainable construction policies should help in the efficient use of water, materials and energy.
- It will be necessary to ensure flood risk on and off site is managed.
- Further evaluation of archaeological potential.
- Improved access by bike, on foot and by bus.
- Ecological assessment may be required.
- Loss of the row of cottages linking the site to its historic use
- A design brief or masterplan for the whole Saxon Business Park is required so that development can be delivered in a co-ordinated way.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- Ownership issues resulting in alternative type of development favoured;
- Lack of employment land demand could mean the site is not delivered, or that it competes with other sites in Rochford and Southend to the detriment of these areas. If this is identified as the case through monitoring release of land may need to be staggered a Marketing Strategy for the whole business park should be in place.
- The Environment Centre may be at risk of non-delivery if funds are not available or developer argues it is not necessary in delivering the site, this would be of detriment to the local community.

Project 1b: Saxon Business Park – Area 1b

Employment development of over 49,000 sqm on agricultural land to be delivered by 2021

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibilty / transport	Landscape / townscape	Safety and health	Education	Community	Housing
●	●	?	?	?	-	X	?	?	-	-	?	X	-	?	●	-

Sustainability commentary

The site is former agricultural fields; so development will result in the inevitable loss of the land and the soil resource. Development will also result in the loss of green belt land changing the character of the landscape. It is vital that new buildings and landscaping of the business park introduce high quality features into the landscape creating an improved urban edge to Southend.

The location of this site is a more distant from the urban area than other proposal sites. This can have the advantage of reducing noise impacts on local residents. It also may be less accessible by sustainable modes of transport. Currently walking, cycling and bus links to the site are extremely poor, not making the site well suited to office and high density types of employment. Without transport measures as outlined in the JAAP being provided prior to occupation development at this site may lead to an increase in traffic on the roads due to local commuting trips, which may not be the case for sites closer to the urban areas and other public transport.

Proposals to manage freight movements as part of a co-ordinated network management system may help reduce possible amenity and congestion impacts of employment development at this site. For instance, the no right turn onto Cherry Tree Lane for vehicles exiting the site will help avoid impacts on Rochford's roads and direct traffic to the main routes out of the area.

Development on this site should contribute to the new public open space, new access to Cherry Orchard Park and a new Environment and Visitor Centre with benefits for the local community and contributing to healthy lifestyles and understanding of the natural environment.

Main impacts / mitigation / recommendations

- Implementation of sustainable construction policies should help in the efficient use of water, materials and energy.
- It will be necessary to ensure flood risk on and off site is managed.
- Improved access by bike, on foot and by bus.
- Any agricultural topsoil removed as part of the development should be preserved for use elsewhere.
- A design brief or masterplan for the whole Saxon Business Park is required so that development can be delivered in a co-ordinated way.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- Ownership issues resulting in alternative type of development favoured;
- Lack of employment land demand could mean the site is not delivered, or that it competes with other sites in Rochford and Southend to the detriment of these areas. If this is identified as the case through monitoring release of land may need to be staggered a Marketing Strategy for the whole business park should be in place.
- Onerous section 106 conditions have the possibility of preventing the delivery of the site based on financial viability. However, to achieve sustainable development it will be important to make sure development does not proceed without the necessary infrastructure in place – this should include green infrastructure, public transport and environmental protection measures.

Project 1c: Saxon Business Park – land at Area 2 Westcliff Rugby Club

The development of 30,000 sqm off business space phased post-2021, the site is currently in use as a Rugby Club.

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibilty / transport	Landscape / townscape	Safety and health	Education	Community	Housing
●	●	-	?	-	-	?	-	-	-	-	?	?	-	?	?	-

Sustainability commentary

This site is to be redeveloped as a business park that will benefit the local economy and employment in Rochford and Southend. This site is phased after 2021 and therefore limiting the supply of employment land in the short to medium term. This will help the delivery of other employment sites in Rochford and Southend in this period. Managing development in this location could allow time for sites in central Southend to be developed for business, which have more sustainable access for a greater number of people and can aid in the regeneration of the town centre.

The site is currently in use as a rugby club and an alternative location and club facilities will have to be provided prior to development of this site for business uses. The new site should be at least as good quality as the present one, as well as accessible by various modes of transport.

The development of the site will result in the loss of open land. This may be the loss of soil suitable for agricultural purposes, although not currently in use as such. There will also be a change in the character of the site from open land to built development. However, the current use is unlikely to support a greater range of species than built development, especially if hedgerows are retained.

There is a listed building adjacent to the site and it is important that the setting is retained. There will be an inevitable change from open land to built development, but the existing use is already altered from the original setting.

It is vital that new buildings and landscaping of the business park introduce high quality features into the landscape creating an improved urban edge to Southend.

Development on this site should contribute to the new public open space, new access to Cherry Orchard Park and a new Environment and Visitor Centre with benefits for the local community and contributing to healthy lifestyles and understanding of the natural environment.

The biodiversity potential of the site should be assessed prior to development and the design of new development should incorporate element s of high ecological value.

The location of this site is a more distant from the urban area than other proposal sites. This can have the advantage of reducing noise and amenity impacts on local residents. It also may be less accessible by sustainable modes of transport. Currently walking, cycling and bus links to the site are extremely poor, not making the site well suited to office and high density types of employment. Without transport measures as outlined in the JAAP being provided prior to occupation development at this site may lead to an increase in traffic on the roads due to local commuting trips, which may not be the case for sites closer to the

urban areas and other public transport.

Proposals to manage freight movements as part of a co-ordinated network management system may help reduce possible amenity and congestion impacts of employment development at this site. For instance, the no right turn onto Cherry Tree Lane for vehicles exiting the site will help avoid impacts on Rochford's roads and direct traffic to the main routes out of the area.

Main impacts / mitigation / recommendations

- Implementation of sustainable construction policies should help in the efficient use of water, materials and energy.
- Improved access by bike, on foot and by bus, as required by policy.
- Protect any feature of biodiversity value.
- The rugby club must be relocated prior to development, the new site and facilities must be of at least the same quality and have good non-car access.
- Protect the setting of the Cherry Orchard House listed building.
- A design brief or masterplan for the whole Saxon Business Park is required so that development can be delivered in a co-ordinated way.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- Onerous section 106 conditions have the possibility of preventing the delivery of the site based on financial viability. However, to achieve sustainable development it will be important to make sure development does not proceed without the necessary infrastructure in place – this should include green infrastructure, public transport and environmental protection measures.
- Lack of employment land demand could mean the site is not delivered, or that it competes with other sites in Rochford and Southend to the detriment of these areas. If this is identified as the case through monitoring release of land may need to be staggered a Marketing Strategy for the whole business park should be in place.

Project 2: Nestuda Business Park

An area proposed for 10,000 sqm of business uses post-2021, the site is currently undeveloped agricultural land.

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibility/ transport	Landscape / townscape	Safety and health	Education	Community	Housing
•	•	?	?	-	-	X	-	-	-	-	?	?	-	-	-	?

Sustainability commentary

This site is to be redeveloped as a business park that will benefit the local economy and employment in Rochford and Southend. This site is phased after 2021 and therefore limiting the supply of employment land in the short to medium term. This will help the delivery of other employment sites in Rochford and Southend in this period. Managing development in this location could allow time for sites in central Southend to be developed for business, which have more sustainable access for a greater number of people and can aid in the regeneration of the town centre. The site is former agricultural fields; development will result in the inevitable loss of the land and the soil resource in this location. The ecological value of the site should also be protected from harm. It is vital that new buildings and landscaping of the business park introduce high quality features into the landscape creating an improved urban edge to Southend. The site is suitable for a building of landmark quality.

The site is well located on the edge of the urban area of Southend, with good bus links serving the site connect to central Southend and railway stations. Improvements to safety for cyclists and walkers on the A127 and B1013 and junctions will improve accessibility by these means, including links south to Southend urban area and north to Rochford.

The site could have housing potential.

Main impacts / mitigation / recommendations

- Implementation of sustainable construction policies should help in the efficient use of water, materials and energy.
- Improved access by bike, on foot and by bus, as required by policy.
- Delivery of a high quality distinctive landmark building for Southend.
- Proposals for development of the site should be co-ordinated with design proposals and briefs for other development in the JAAP area.
- Protect any features of biodiversity value.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- Onerous section 106 conditions have the possibility of preventing the delivery of the site based on financial viability. However, to achieve sustainable development it will be important to make sure development does not proceed without the necessary infrastructure in place – this should include green infrastructure, public transport and environmental protection measures.
- Lack of employment land demand could mean the site is not delivered, or that it competes with other sites in Rochford and Southend to the detriment of these areas. If this is identified as the case through monitoring release of land may need to be staggered a Marketing Strategy for the whole business park should be in place.

Project 3: Aviation Way

This industrial area is proposed for intensification of existing employment uses including as part of the northside MRO. There would also need to be new junctions on Aviation Way and at Eastwoodbury Lane.

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibility/ transport	Landscape / townscape	Safety and health	Education	Community	Housing
•	•	?	?	?	-	-	?	X	-	-	?	?	?	-	-	-

Sustainability commentary

The proposals are for intensification of use at the Aviation Way business park. This will be of benefit the local economy and employment in Rochford and Southend.

The site is already in employment use and this proposal presents the opportunity to improve this use on site. Physical improvements to the built environment will help improve the built character of the area. This will have benefits for workers and also may help encourage businesses to locate in the area. Intensification of use will also be of benefit by ensuring the more efficient use of land, reducing the overall land requirements to deliver the same number of jobs.

There are flood risks on the site, so these would need to be overcome through additional flood assessment and the design of new development to respond to this. For development to proceed in flood risk areas it would have to demonstrate that it meets the sequential test, showing that there are no sites that could accommodate the development outside areas at risk.

Junction improvements may help reduce congestion in the area. However, achieve more sustainable transport it is essential that this is in tandem with public transport, cycleway and footpath improvements. Junction improvements could also improve safety for all road uses. Policies for the site have identified the need to improve access to the site, both in terms of road traffic movements and specific improvements to pedestrian and cycle routes.

The site is currently not well served by public transport, with no buses on Aviation Way and limited bus access via Cherry Orchard Lane.

The site is not next to any residential area, therefore could accommodate new or relocated industrial uses that are not suited to a residential location.

Main impacts / mitigation / recommendations

- Implementation of sustainable construction policies should help in the efficient use of water, materials and energy.
- Improved access by bike, on foot and by bus.
- Development of the site should be part of a co-ordinated approach to development in this part of the JAAP area.
- If the Environment Agency does not agree that development here is justified following a sequential test this could stall development in the area.

- Protect any features of biodiversity value.
- To achieve improvements on existing employment schemes innovate solutions such as the identification of a Business Improvement District may be necessary, this will help raise funds for renewal.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- The site may be unattractive to investment and to overcome this and not stifle economic growth in the area a specific marketing strategy may be needed for Aviation Way.
- Section 106 contributions from development may be limited by the number of sites available for redevelopment. This may restrict the benefits that can be achieved from development. Alternative funds may need to be sought including the potential for a Business Improvement District.
- Flood risk on part of the site could hamper employment development coming forward; additional flood risk assessment would be needed. There is the potential that sensitivities could mean the site is not suitable for MRO expansion.

Project 4: Airport Development

This is the proposals for airport expansion to accommodate 2 million passengers per annum. This includes new terminal buildings and runway extension as well as expansion of MRO use.

Local economy	Employment and Wealth	Biodiversity	Water	Flooding Impacts CC	Material assets	Soil	Air	Noise	Waste	Energy and climate mitig	Accessibility/ transport	Landscape / townscape	Safety and health	Education	Community	Housing
●	●	?	?	?	?	-	?	X	-	X	●	?	?	-	?	?

Sustainability commentary

Many parts of this proposal have already been given planning permission and development has commenced or been completed. For example the rail station is open and Eastwoodbury Lane has been rerouted for runway extension, runway extension is complete and Phase 1 of terminal expansion has finished.

The benefits of this proposal will be to the local economy and airport operators. The proposal site also includes expansion of MRO operations to the north and the south of the runway.

This proposal is also associated with the increase in flights at the airport, with associated climate change, noise and disruption impacts. Policies of the JAAP are in place to help add controls to the operation of the airport, which may have some benefits in reducing the scale of the impact that this change will bring. However, some inevitable impacts will remain, for instance noise and climate change impact cannot be fully mitigated against.

There will also be a need to mitigate the impacts of MRO operations that could also be noisy. Southside MRO expansion is very near a large amount of homes and it will be essential to protect residential amenity.

The northern MRO site is at risk of flood and therefore would need additional flood risk assessment prior to be permitted for development. New development would have to ensure that flood risk is not exacerbated by development and that new development and the safety of the workforce is not put at risk. For development to proceed in flood risk areas it would have to demonstrate that it meets the sequential test, showing that there are no sites that could accommodate the development outside areas at risk.

The re-routed Eastwoodbury Lane has resulted in the severance of the park. Crossing points no the road will need to be safe for all users of the park, and park facilities must be retained and managed to at least as good quality. Ideally, the long-term design of the road should help reduce the severance

Main impacts / mitigation / recommendations

- Noise impacts from more flights and MRO operations.
- Climate change impacts from increased flights, with large scale impacts
- Impacts on listed church

- Impacts on residential amenity
- Improved surface access through development of new rail station.
- Re-routed Eastwoodbury Lane's impacts on the park.
- New business and employment opportunities created
- Improved operating conditions of the airport to help reduce potential scale of impacts.

Risks:

The delivery plan identifies some risks that could have an implication for sustainable delivery of development on and off site, these are:

- Flood risk on part of the northern MRO expansion site could hamper employment development coming forward, additional flood risk assessment would be needed. There is the potential that sensitivities could mean the site is not suitable for MRO expansion. If development does not come forward here it will harm the delivery of improvements to the Aviation Way junction improvements, with implications for access, congestion and safety of all road uses.

Appendix 6: Impact Identification, Mitigation and Residual Impacts

Appendix 6

Impact identification, mitigation and residual impacts

Traffic and transport
Impact:
The airport and the employment expansion will result in an increase in road transport and worsening congestion in Southend and Rochford.

Initial assessment of the highway capacity identifies that once all proposed development has been built, during peak times there could be up to 2850 additional vehicles (based on 2009 baseline) both morning and evening. It is predicted that the re-routed Eastwoodbury Lane will attract more trips than the current route. However, when the site Masterplan is prepared traffic modelling will be repeated to identify specific measures that may need to be put in place to manage flows.

There is already insufficient network capacity at The Bell, Cuckoo Corner and the A127/B1013 (Nestuda Way) Junctions.

Impacts will on air quality, the character of the built environment and health. In addition, congestion could discourage economic growth.

Mitigation:
The airport is required to prepare an Airport Surface Access Strategy (ASAS) outlining measures to promote public transport. This includes targets for mode shift to public transport. If the targets are not met the airport will have to make financial contributions to further public transport improvements annually until targets are met. This is addressed in policies LS2 and LS5 for the airport development. Policy T4 also sets a general need for all development to make a contribution to public transport improvements.

The ASAS will not only benefit air passengers, but employees of the existing and proposed employment areas seeking an enhanced public transport offer. JAAP policies also state that future employment applications will also need to make contributions to public transport and prepare Travel plans (Policy T3).

Improvements to cycling and walking routes are well recognised in the JAAP, with several policies addressing this issue. This includes the transport policies such as T1 on upgrading Aviation Way.

Policies on Aviation Way Industrial Estate require funding towards improvements to walking and cycling routes. In addition to specific walking and cycling, polices on proposal sites also include a requirement for funding improvements to non-car access, including at Saxon Business Park (E3, E5 and E6), and Nestuda Way Business Park (E8) and Aviation Way (E2).

The opening of the new airport train station will help improve public transport accessibility to the airport site. However, bus route changes will be needed to better link it to the new and expanded business parks, especially those access from Cherry Orchard Way that is poorly served by public transport.

There are also proposals for general improvement to the road network to manage the new traffic created by employment uses. New junctions will be built in the immediate vicinity of the airport and business parks to manage new road traffic and congestion, such as improvements at Aviation Way (E2) to get better access to the industrial estate and MRO. There are also the innovative schemes set out as part of the policy on Freight and Network Movement (T6) that will help manage freight movements in a co-ordinated way and may help reduce peak hour congestion. Other more physical network management will include new roundabouts and junction improvements (T7). As well as measures such as no right turn for those leaving Saxon Way Business Park to ensure traffic is directed onto the right parts of the network.

Residual
The lack of a strategic transport plan to support the JAAP implementation is a risk.

Congestion levels are already high near the JAAP site and development without suitable mitigation will only make these worse.

Adverse sustainability impacts will be on health, air quality and community wellbeing.

A step change is required in people who choose not to travel by car, ambitious targets are set.

Loss of public recreational space

Impact:
Several areas of public recreational will be lost as a result of proposed development. This includes Westcliff RFC Club, St Laurence play and youth facilities.

Mitigation:
As a result of Saxon Business Park development Westcliff RFC is to be relocated to a new site (policy ENV2), with the JAAP policy stipulating that the new facilities need to be of at least the same quality and management of the club remaining the same (Policy E7). Policy E4: Phasing of Saxon Business Park states that work on development on Area 2 until the Club in its new location is operational.

The play space at St Laurence Park has had to be relocated to be further from the re-routed Eastwoodbury Lane. Public open space has also been re-provided by south of the re-routed road. This mitigation was secured under a section 106 contribution as part of the planning permission for the runway extension.

Enhancements to access at Cherry Orchard Country Park (outside the JAAP area) will be included as part of access arrangements to the Saxon Business Park. Policy E3: Saxon Business Park, sets a requirement for all phases of development on the site to make a contribution towards development of the new public open space to the north and east of the business park. Policy ENV2 sets out how this will be funded and what the land will be used for.

Residual impacts:
The development has resulted in St Laurence Park being crossed by the new Eastwoodbury Lane route. This may have had an adverse impact on the quality of the park or some people's enjoyment of it. Part of the park is now separated from the main area, potentially reducing its attractiveness to users and its overall effective area.

Flooding

Impact:
Several proposed development sites in the JAAP are at risk of flood. These include areas adjacent to Rayleigh Brook and Eastwood Brook at Saxon Business Park and Northern MRO extension.

Existing surface water flood risk is identified as an issue that needs to be addressed in the design of new development.

Mitigation:
There are no alternative sites for development identified following a sequential test study at a planning policy level (Atkins December 2009). However, individual planning applications will need to undertake their own sequential test. Where development is permitted to mitigate the risk development will need to be designed to include management solutions to ensure the site remain safe during a flood event and provide compensatory floodplain storage. Flood Risk Assessments would need to be prepared as part of individual site development plans. This is stipulated in Policy E2 for the Aviation Way Industrial Estate as well as policy MRO1/2 on the Northern MRO and extension.

Measures will need to be incorporated into development to reduce the risk of pollution from surface water run-off. This will including the use of Sustainable Drainage Systems, to manage run-off and potentially create areas of new wetland habitat.

Any schemes for development in these areas should be designed following consultation with the Environment Agency.

New development will need to ensure that pollution control receptors are used to avoid contamination of surface waters from run-off. This may require surface water attenuation and/or connection to and enhancement of existing systems. There will also be the need to manage risks to avoid flood from surface water run-off.

Residual impact
If all flood control measures are implemented according to Environment Agency advice then there should be no residual impacts. However, there is the risk that development will change flood risks in the area.

Noise:

Impact
Despite the longer runway being able to accommodate quieter planes that climb and descend quicker there will be adverse noise impacts from the airport expansion development.

It is not clear noise controls will be put on noise from MRO ground operations, as this may require engine testing without take-off.

Mitigation
Policies in the JAAP required noise at the airport to be controlled. Policy LS2 contains the requirement for applications for planning permission to deal with noise issues as they are set out in the controls appendix.

Policy LS3 includes a policy to implement a Quiet Operations Policy, with an annual statement published to show how effective noise is being managed. A noise compensation and purchase is being set up to buy homes significantly adversely impacted by noise and providing insulation for others. This will help mitigate some of the impact, although the noise will remain.

The noise control policies do not mention the control of on ground noise from MRO operations.

Residual impact:
The implementation of noise controls and implementation of a Noise Action Plan will not be able to offset all impacts. Studies have shown that it is likely several properties will experience elevated noise levels that may make homes uninhabitable. In these situations the compensation will buy homes off residents. This removes the receptor to noise impacts although the impact remains.

Other properties affected by noise may be able to access grants for better noise insulation. However, this is not set in policy or as part of the funding schedules for specific sites, so there is a risk that this mitigation may not take place.

It is not clear what the penalty is for exceeding noise impacts, fines will not offset noise impacts.

The JAAP does not refer to the need to control noise from ground MRO operations, this may have an adverse impact.

Air quality

Impact
Additional traffic in and around the JAAP area may lead to deterioration in air quality. These air quality impacts will be made worse if development causes additional congestion.

The operation of the airport may also have adverse impacts on air quality relating to aircraft movements and potentially MRO operations.

Mitigation
Implementation of the Airport Surface Access Strategy (ASAS), network management and improvement to walking and cycling routes and opening of the airport rail station, may all help reduce car use with benefits for air quality (see traffic and transport section).

A new policy in the JAAP sets an air quality monitoring requirement. If necessary an Air Quality Management Plan will be implemented if air quality breaches statutory standards. However, it is not clear how this will impact on airport operations.

Residual impact
Reducing car use may help mitigate against some air quality impacts, especially locally, although there is likely to be an overall deterioration in air quality from JAAP development.

Carbon dioxide emissions

Impact
Airport proposals will result in additional aircraft movements at London Southend Airport. These movements will include the emissions of carbon dioxide into the atmosphere with adverse impacts related to climate change.

Mitigation
Some reductions in carbon dioxide from ground transport may be possible with implementation of new and improved public transport, walking and cycling routes.

It is also set as policy that new buildings should be built to at least BREEAM 'excellent' standards and this may help secure low and zero carbon emissions from new buildings, depending on the exact mix of credits that are selected to achieve the BREEAM standard.

Newer aeroplanes can use the extended runway and these may be more fuel efficient.

Residual impact:
Despite mitigation the levels of carbon dioxide generated from aircraft movements using the airport will increase. Therefore, there is likely to be adverse impacts relating to climate change resulting from airport capacity increase nationally.

Cultural heritage

Impacts:
Development at the JAAP site has the potential to have an impact on listed buildings. Listed buildings in or adjacent to the site are the Grade II listed church of St Laurence and All Saints next to the runway extension and Cherry Orchard House.

A row of cottages will also be lost as part of the Saxon Way Business Park proposals.

The large amount of development promoted through the JAAP will have an impact on the character of the area.

Mitigation
The current planning permission for the runway extension retains the church. However, the existing stone walls that face the runway extension are to be replaced by hedges and the walls relocated.

A buffer around Cherry Orchard House should help protect some of the setting of this listed building, although there will be a change from open land to built development.

Policy E5 on the development of area 1A in the Saxon Business Park highlights the need for a landmark building in this location. However, this is the only policy that specifically refers to the need to deliver high quality development. Instead the JAAP relies on the non-area specific Local Development Framework policies

Landscape buffers set out in policies EN3, ENV5 and ENV6 may help reduce some of the impact of new development on existing residential areas.

Residual impact
Development in the JAAP area is likely to result in a change to built environment character. Development near Cherry Orchard House and the listed church will also permanently change the historic setting of these two buildings.

Biodiversity:
Impact:
The development proposed in the JAAP will result in the loss of greenfield land. Ecological studies have shown that some part of the site have the potential to provide habitats for protected species.

A Habitats Regulations Assessment (HRA)under the Habitats Directive was carried out for the JAAP. The assessment identifies that the cumulative impacts of development promoted through the JAAP and other development planning in Southend could have an adverse impact on the nearby internationally designated nature conservation sites. The HRA makes recommendation to avoid and mitigate these impacts.

Mitigation
Several areas of nature conservation improvements are specifically referred to in JAAP policies. This includes the new area of public open space to the north to include an area identified for nature conservation. This will be funded by Phase 2 of the Saxon Business Park (Policy ENV2).

The ecological assessment indicated areas of the JAAP site that could benefit from habitat enhancement. However, the JAAP does not include these areas with the development proposals.

Site specific assessment of any development proposals will be necessary to identify impacts on a site by site basis, and implement mitigation measure if necessary.

Recommendations of the HRA Report should be implemented to avoid and mitigate potential risks to internationally designated nature conservation sites. This will include implementing sustainable drainage systems, requiring new buildings to achieve BREEAM 'excellent' standards (although this should specific water credits must be achieved) and monitoring water quality in the brooks in and near the site.

Residual
Not much detail is given on mitigation of biodiversity impacts; there remains a risk to biodiversity. Additional, policies or policy criteria could be used to better mange impacts.

Loss of greenfield land
Impact
Much of the proposed new employment development is on greenfield land, some of which has been used for agriculture. Development will result in the permanent loss of this land.

Mitigation
Where public open space is to be lost the JAAP sets out how new area of publicly accessible land will be provided. This is covered in the section on 'loss of public recreational space'. In addition, there will be improvement to access at the Cherry Orchard Country Park (policy ENV4).

A new public open space is to provided on land to the north of Saxon Business Park, to be funded from development. This includes the relocation of the rugby club as well as other open space.

Policy ENV3 requires a green buffer will be retained south of Eastwoodbury Lane to maintain the current gap between the town and the airport site. An area of land will also be retained as a buffer to the east of the rail line to protected residential properties on Southend Road.

A green corridor along the new access to Saxon Business Park will provide a landscape buffer to the north of the development (Policy ENV5).

Residual impact
Loss of greenfield land is unavoidable if JAAP proposals are implemented.