



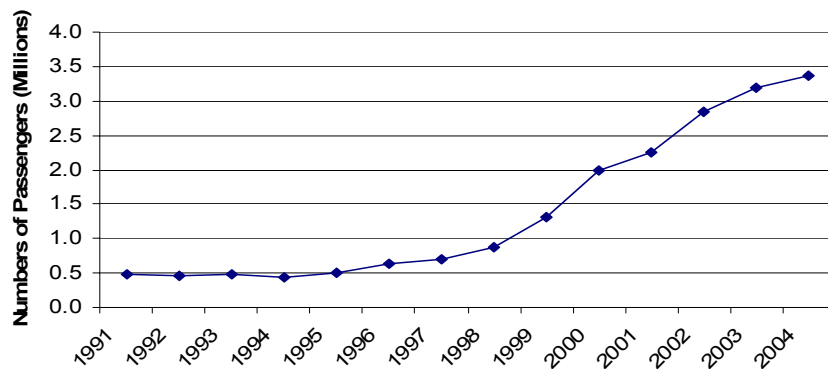
## Environmental Report 2005

## Introduction

This is the second Liverpool John Lennon Airport Environment Report and it aims to give a brief overview of the Airport Company and our environmental activity. There have been substantial achievements against environmental objectives in recent years which is encouraging for future progress.

The Airport has experienced significant growth in passenger throughput since 1997. Liverpool John Lennon Airport is now the leading low cost airport in the North of England. Passenger throughput has grown from 0.69 million in 1997 to the current level of 3.4 million passengers per annum in 2004 and it is forecast that the Airport will reach 4.5 million passengers per annum by the end of 2005.

**Growth in Passenger Numbers from 1991 to 2004**



The recent growth and associated developments at Liverpool John Lennon Airport have assisted in bringing direct economic and social benefits to the South Liverpool area and the Merseyside region. These economic benefits have to be balanced with the Airport's environmental impacts. In order to inform the preparation of future reports please forward all constructive comments on the style, format and content of the report to the Airport's Environment Team.



“The Airport Company recognises that in the operation of an airport there are environmental concerns that need addressing as well as positive economic benefits. I am proud of the physical improvements at the Airport, the growth in our business and to be a launch signatory of the UK Sustainable Aviation Strategy which is a comprehensive programme for long-term reductions in aviation's environmental impact. This report sets out our environmental impact mitigation and minimisation strategies” Neil Pakey, Managing Director of Liverpool Airport.

## Noise

*Our Promise - The Airport Company will seek to minimise noise disturbance whilst recognising the needs of our customers.*

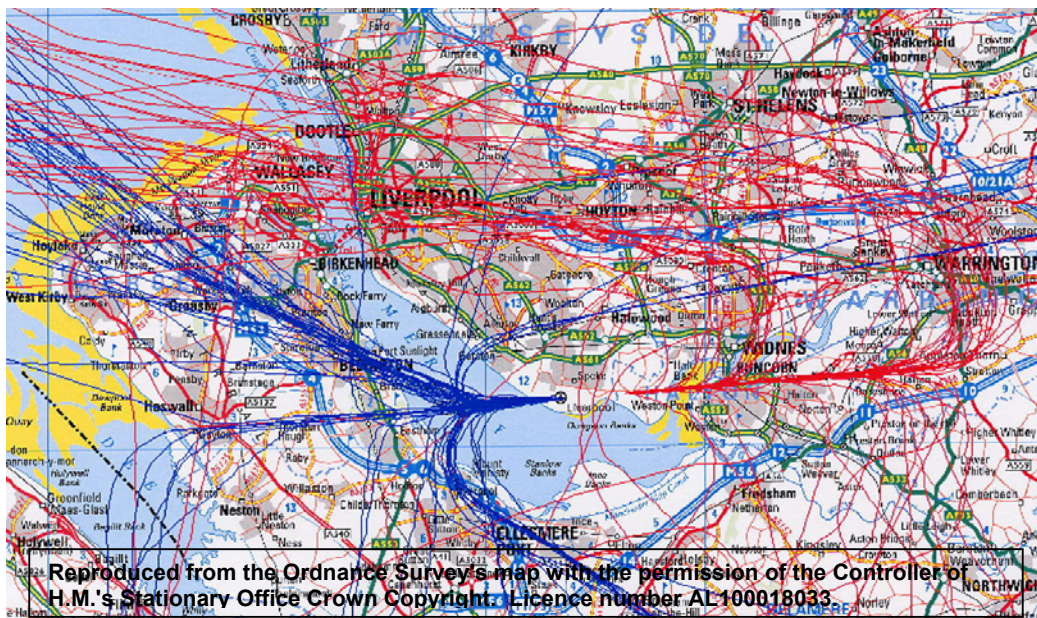
How will the airport work towards this promise?

- ① The Airport Company will lobby the European Union (EU) and International Civil Aviation Organisation (ICAO) for more stringent international aircraft noise standards in the future, through the Airport Operators Association (AOA).
- ① The Airport Company will operate a Quiet Operations Policy (which includes the Sound Insulation Grant Scheme (SIGS) and night flying restrictions) which will be communicated to the operators.

Modern aircraft make up the vast majority of passenger aircraft movements at Liverpool John Lennon Airport. Substantial improvements in aircraft design and technology means that aircraft are now 75% quieter during take-off and landing than they were 30 years ago, with a further 50% reduction expected by 2020 (source: Air Transport Action Group, 2005).

The Noise Monitoring and Track Keeping System (NM&TKS), installed in 2002, enables the Airport Company to report accurately the altitude, position, aircraft type and noise generated by individual aircraft movements. The NM&TKS is an extremely powerful analytical tool that enables the Airport Company to discuss with airlines improvements to flying techniques to reduce noise impacts based on objective detailed data. It also provides the information for the Airport Company to investigate noise complaints made by the public.

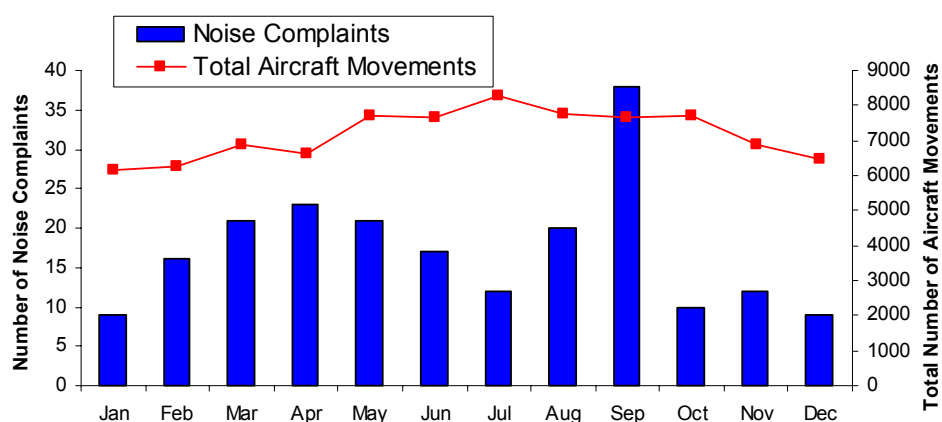
The map below gives an example of the arriving and departing passenger aircraft tracks using Liverpool John Lennon Airport. This example is a typical days operations when runway 27 is in operation – the red lines represent the arriving aircraft tracks and the blue lines the departing aircraft tracks.



The Airport received 208 noise complaints during 2004, which is a decrease from the 2003 figure of 231 complaints. In 2003, the summer months of June to August had the most complaints. In 2004, September was the month in which most complaints were received. This is in spite of aircraft movement figures being very similar in 2003 and 2004; during 2004 there was slightly less commercial aircraft movements due to the reduction in night time freight and mail activity.

Each noise complaint is taken seriously by the Airport Company. However, the number of complaints is but one factor in determining the mitigation action or operational restrictions undertaken. Indeed, the practicality of available measures and whether any regulations have been broken in the way in which the aircraft in question was flown are more important when dealing with complaints. The chart below shows the number of noise complaints received by the Airport Company and the number of aircraft movements during 2004.





### Comparison of the Noise Complaints and Aircraft Movements in 2004



### Night Flying Restrictions

The Night Time Flying Restrictions are a voluntary commitment on behalf of the Airport Company to minimise any potential disturbance to the local community during the night while recognising the importance of the night time freight and cargo business. Measures in place include:

- 🛩️ A ban on scheduled Chapter 2 aircraft movements
- 🛩️ Noise Quota System whereby aircraft are assigned a quota value ranging from 0 to 16, which is dependent on their noise classification. No aircraft with a quota value greater than 4 is permitted to be scheduled to use Liverpool John Lennon Airport during the night time period (with the exemption of ad-hoc football charter flights).
- 🛩️ Aircraft operators are required to ensure that their aircraft are operated in a manner calculated to cause the least disturbance practicable in the area surrounding the airport.

-  Flight crew are requested to avoid the use of reverse thrust after landing, consistent with the safe operation of the aircraft, especially between 23:00 and 06:00 hours.
-  Aircraft engine tests should only occur between 07:00 and 23:00 hours and will not be permitted outside these times except in the case of emergency or hardship.
-  Runway 27 is the preferred runway between 23:00 and 07:00 hours to maximise the aircraft taking off over the Mersey estuary.
-  The Airport Company is investigating the potential of introducing a surcharging scheme to encourage airlines to use quieter aircraft at night.

## Sound Insulation Grant Scheme

The Sound Insulation Grant Scheme (SIGs) forms an important part of the Airport Company's plans to minimise and mitigate the noise from airborne aircraft close to the airport. The SIGs is intended to offer sound insulation to the residential properties most affected by airborne aircraft noise. Separate criteria related to noise created by aircraft on the ground apply when ground noise regularly exceeds a trigger level.







The SIGs boundary is based upon the Airport's 62 dB(A)  $L_{Aeq}$ , 24 hour noise exposure contour. The contour has recently been remodelled for the number of aircraft movements expected in 2006, and those properties eligible to apply have been contacted. A grant towards the installation of acoustic glazing, ventilation and loft insulation is offered through the scheme.

Since the launch of the scheme, a small number of properties within the boundary have applied to participate, although eligible properties who have not so far applied can still apply in the future. Those properties that have applied have taken advantage of the secondary glazing and acoustic double glazing available. The Airport Company is expecting more properties to take up the offer of a grant towards sound insulation in the second phase of the scheme, which commences in June 2006.

## Air Quality

*Our Promise – The Airport Company will monitor and report air quality and seek to reduce airport related emissions where practical.*

How will the Airport Company work towards this promise?

-  Monitor Nitrogen Dioxide (NO<sub>2</sub>) around the Airport, in partnership with Liverpool City Council.
-  Publish the results of the NO<sub>2</sub> monitoring annually.
-  Introduce measures to improve local air quality where practical.
-  Ensure environmental impact is central in purchasing decision-making, incorporating life-cycle analysis
-  Establish a data base of emissions sources at the Airport.
-  Continue to explore the potential for using bio-fuel in airport vehicles.

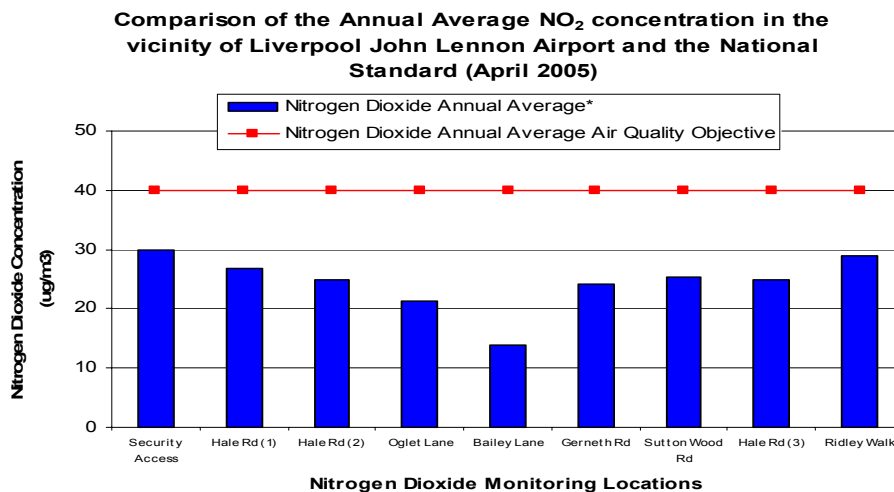
Liverpool City Council have undertaken a comprehensive review of local air quality under the Environment Act 1995 and only found two areas in Merseyside that breached air quality standards. However, these Air Quality Management Areas were in the city centre and at the end of the M62 motorway and were both predominantly associated with road traffic.

Aircraft fuel consumption has more than halved in the past 40 years, and ACARE (Advisory Council for Aeronautics Research in England) targets include another 50% reduction by 2020. This means that the average fuel consumption per passenger per 100km in an Airbus A330 aircraft is 3.4 litres, compared to 5.3 litres for a family car (source: Airbus).

The existing air quality in the vicinity of the Airport is generally good. Concentrations of nitrogen dioxide, sulphur dioxide and fine particles (PM<sub>10</sub>) are currently well within the air quality objectives set by the Government. The predictive modelling used to assess the airport development indicates that the above key pollutants will be lower in 2006 than in 2000 – this is largely due to expected reduction in background pollutant concentrations.

The predicted growth in demand for air travel is set to continue; even if the demand is not met by Liverpool John Lennon Airport it will be met elsewhere by other airports. Travel distance to those airports could be greater, and emissions from larger airports tend to be greater due to greater congestion in the air and on the ground. Therefore, on a national level the development of regional airports such as Liverpool John Lennon will have an overall positive effect on national air quality.

The chart below shows the measured annual NO<sub>2</sub> concentration at nine points around the airport boundary and the annual National Air Quality Standard (NAQS) for NO<sub>2</sub>. The NAQS are set by the Government for a given time period that are considered to be acceptable in the light of what is known about the effects of each pollutant on health and on the environment.



\*Laboratory bias applied using Speke AURN

The NO<sub>2</sub> monitoring results demonstrate that the measured levels of NO<sub>2</sub> are comfortably within the national guidelines.

### Air Pollution Complaints

The Airport Company received five complaints about the odour of aviation fuel from a limited number of people over the last three years. It is possible with unfavourable weather conditions or when older aircraft visit to experience the very occasional slight transitory odour next to an airport. In a mixed residential industrial area there are odours from other industry sources in the vicinity that may be contributing to the odours complained about.

Studies undertaken at other UK airports including Birmingham have shown that aviation fuel (kerosene) odours can come from a number of different sources but the most likely is from aircraft. The mixture of hydrocarbons from aircraft exhausts are very complex and the concentrations very low, often well below the limits of detection of the most sophisticated instrument. The human nose is very sensitive to smells and can detect these very low concentrations in the air at levels well below those known to cause harm.

Aircraft are not likely to emit significant quantities of odour during take-off and landing, the dominant source is likely to be aircraft taxiing, engine idling and the use of auxiliary power units. The ARIC (Manchester Metropolitan University, 1997) study for Birmingham International Airport, which currently carries two and a half times as many passengers as Liverpool, demonstrated that VOCs from airport sources were very unlikely to exceed the national or World Health Organisation health based standards and objectives.

### Carbon Sequestration Scheme



*The CarbonNeutral donation box situated in the departure lounge*

Liverpool John Lennon Airport is the first UK Airport to instigate a passenger CarbonNeutral<sup>®</sup> flight initiative. All contributions from this CarbonNeutral<sup>®</sup> scheme will go towards planting trees to absorb emissions of carbon dioxide (CO<sub>2</sub>), a recognised greenhouse gas, from a flight.

Passengers have the opportunity to make a donation that will be used to plant a tree on their behalf. On average, one tree will absorb the equivalent amount of CO<sub>2</sub> during its life time as was emitted to transport a passenger on a return flight to Europe. A donation of approximately £10 will provide a tree and the

land necessary for a CarbonNeutral<sup>®</sup> flight within Europe. Since the introduction of the Carbon Sequestration scheme, around £1080 has been donated by passengers into the CarbonNeutral box in the terminal building which the Airport Company will match fund. This has allowed trees to be planted that absorb around 216 tonnes of carbon dioxide from the

atmosphere each year, helping to reduce the environmental impact of flights operating out of Liverpool John Lennon Airport.

® Registered Trademark of Future Forest

## Surface Access & Public Transport

*Our Promise – The Airport Company will seek to increase the use of public transport to access the Airport and to reduce the level of single occupancy private car journeys by Airport staff.*

A key part of the Airport's ongoing commitment to minimise its impact on the environment and to seek sustainable growth, is to implement and further develop the Airport Surface Access Strategy (ASAS). This aims to achieve improvements in public transport access to and from the Airport and to reduce the reliance on the private motor vehicle for both airport passengers and employees.

The Airport's aim is:

“To ensure that the Airport maximises the opportunities for sustainable and inclusive transport access for passengers and staff”

Sustainable transport includes the use of public transport, walking, cycling, car sharing and other similar transport initiatives. In line with Government Policy the Airport has established an Airport Transport Forum made up from a wide cross section of transport related organisations. This group have agreed the content of the ASAS and continue to review the strategy. A copy of the full ASAS is available at the Airport's website,

Within the document there are six interrelated topics:

- Bus and Coach services
- Rail services
- Roads, Car Parking and Taxis
- Cyclists and Pedestrians
- Public Transport Awareness and Information
- Strategic targets, delivery and monitoring

Importantly information from the strategy forms part of the Merseytravel (the Merseyside Passenger Transport Authority and Executive) Local Transport Plan and their subsequent Annual Progress Reports. The Airport Company has been actively involved in the consultation process for the Merseytravel Local Transport Plan 2 covering the period 2006-2011, to ensure that transport links are planned to support any further growth of the airport.

The implementation of this strategy cannot be achieved alone - by working closely with public transport partners, local organisations, local authorities, employers, employees and others, future improved access using sustainable modes of transport can be a realistic and positive alternative for all Airport users.

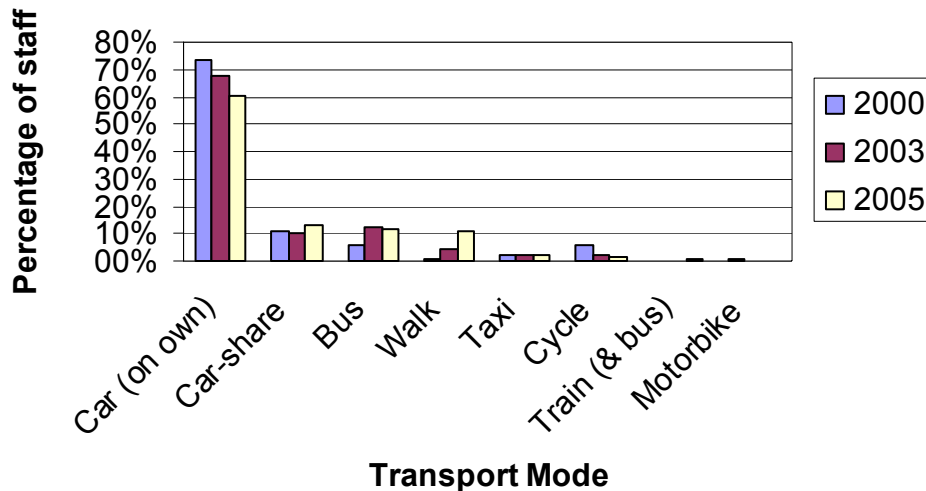
Positive shifts towards public transport are being achieved – the ASAS set a target of 9% public transport usage passengers by 2005. Some 10% of passengers were using public transport by 2003. Significant increases in bus services have been made and future projects such as Liverpool South Parkway (see below) promises further improvements in public transport provision to the airport from across the region.

### Employee Travel Methods



The Airport Company is actively involved in the Merseytravel 'Travelwise' initiative, which encourages businesses and organisations to adopt green transport plans and take active steps to promote public transport and greener transport methods to their employees. In direct response to this, the airport published its green transport plan, titled 'Greener Ticket To Ride', in 2004, which highlighted the results of the latest staff travel survey along with increasing awareness of new public transport routes and alternative methods of reaching the airport.

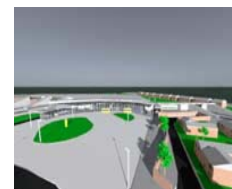
### Liverport Airport Staff Travel Methods 2000-2005



Monitoring of staff travel modes over the last five years has shown a steady decrease in single-occupant car journeys to the site, with increasing numbers of employees opting for more environmentally-friendly methods such as car-sharing, travelling by bus, walking, and cycling.

### Liverpool South Parkway

In June 2006, a new rail interchange, Liverpool South Parkway, will open in the Allerton area of Liverpool. This new £18 million facility will link local and regional rail services to the airport via a high-frequency shuttle bus link. The terminal will play a vital role in the airport's Surface



Access Strategy and help to increase the proportion of passengers and employees who travel to the airport using public transport.

## Bus Links

**AirLink** ← 500



Liverpool John Lennon Airport works closely with Merseytravel and other local transport operators to maintain and develop bus routes in and out of the airport, both for passengers and staff who work at the site. The airport currently has a high-frequency bus link with Liverpool city centre, while routes also operate to the airport from Bootle, Runcorn, Huyton, Halewood/Garston, and a new route operated by Arriva from St. Helens. The Airport Company was actively involved in the introduction of the 'Joblink' 883 service, which provides cheap travel for people working in the South Liverpool area and runs from 4am to 10pm, making it a viable alternative to car use for staff who work early or late shifts at the airport. The airport is also connected by bus to Garston and Hunts Cross rail stations, providing an integrated rail/bus transport link for passengers and staff living as far away as Southport, Ormskirk, Kirkby and Wigan.

## Waste Minimisation

*Our Promise – The Airport Company aims to minimise the amount of waste going to landfill.*

The Airport Company have recently introduced a Waste Minimisation and Management Strategy, the objective is to decouple the growth in the amount of waste generated from the growth in passenger numbers.

This is to be achieved by establishing good practice throughout the airport and establishing long term partnerships to guarantee stable waste streams and markets for recyclable materials, and safe final disposal where necessary. We encourage companies at the airport to reduce the amount of waste they generate and where practical to use products that can be reused or recycled.



*Cardboard bales awaiting collection*



*Glass bottle recycling in the eastern service yard*

The Airport Company has over the last 12 months introduced glass, cardboard and office paper recycling schemes, and will continue to explore new and alternative recycling pathways. Since the introduction of cardboard recycling in July 2004, the airport has sent 28 tonnes of cardboard to be

recycled through our specialist recycling contractor. Over the past year, 1.5 tonnes of office paper waste and 32 tonnes of glass have also been sent for recycling. Used light tubes and pallets are also sent for recycling and re-use, whilst waste oil from on-site vehicles is recycled for use as heating oil and engine oil. This has all helped to reduce the amount of waste from the airport being sent to landfill, and has therefore helped to reduce the environmental impact of the site.

## Conservation Management

*Our Promise – The Airport Company will seek to promote conservation on the airport site where there is no conflict with aviation safety and security.*

The Airport occupies a 180 hectare site, situated between the regenerating urban district of Speke and the north shore of the Mersey estuary.

Airport operations and potential future development has resulted in some changes to the landscape and possibly some small scale habitat loss.



*New trees planted on the newly-created earth bund between the airport and Speke Hall NT*

In response to this, the Airport Company prepared a Conservation Management and Monitoring Plan. The Plan ensures that following the Airport's further development there will not be any significant overall loss in biodiversity. Where possible it aims to enhance existing habitats and create new habitat (with careful management) that will contribute to increasing overall biodiversity both on the site and in its immediate vicinity, without any increased risk to aviation safety.

Strict guidelines however, govern the management of Airport land and particularly those areas adjacent to the runway and other operational areas and therefore opportunities for wildlife enhancement are limited. The safe operation of the Airport is the highest priority and this principle underpins the Conservation Management and Monitoring Plan.

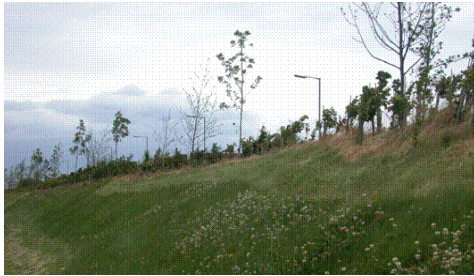
All the management objectives are intended to enhance the wildlife and conservation interest of the Airport site and its environs, but must in practice be carried out within the constraints and safety considerations applicable.

With continuing construction work taking place at the Airport, all necessary ecological site investigations are completed before construction can commence.

## Speke / Garston Coastal Reserve

As part of the ongoing construction work at the airport, a coastal reserve is being created near to the site of the old Liverpool airfield, to the north-west of the current airport. This reserve will comprise a mosaic of grasslands, marsh, reedbed, and willow intersected by hedgerows and drainage ditches. It will provide an ideal habitat for water vole and amphibians, as well as providing a valuable amenity and conservation resource for the local community. The creation of the reserve will offset any habitat loss resulting from construction work to create new aircraft stands in the 'Eastern Wedge' to the east of the terminal building.

### 'Bee Banks'



*Hale Road bund – the location for the 'bee banks'*

In order to attract invertebrate species which have a requirement for bare earth to burrow into to make breeding tunnels, a number of 'bee banks' have been created on the Hale Road earth bund on the northern boundary of the site. These 'bee banks' are south-facing areas of bare earth that are kept weed-free and protected from any chemical treatment. This enables solitary bee and wasp species to create tunnels for breeding in

the exposed earth. It is hoped that the 'bee banks' will benefit many breeds of wasp and bee, in particular the rare sand wasp *Oxybelus argentatus*.

### Habitat Piles

In order to attract other invertebrate species, a number of habitat piles have been created at the earth bund adjacent to Speke Hall National Trust. These were formed from woody material sourced from the Little Heath Wood SNCV area which was cleared to enable the safe operation of the airport. The habitat piles will attract invertebrate species which have a requirement for soft and decaying wood, and it is hoped that their location will attract species from woodland within the boundary of the nearby Speke Hall.



*A habitat pile created on the Speke Hall bund to the west of the site boundary*

## Sustainable Aviation



The Sustainable Aviation document, principles and commitments are the first step and recognition that Government and the Aviation Industry have a responsibility to work together towards environmental goals.

Sustainable Aviation was published in July 2005 and it has brought together the key UK players in the commercial aviation industry; airports, airlines, manufacturers and the air navigation service providers. These key players including Liverpool John Lennon Airport have the joint vision for 2020 and beyond of the UK aviation industry meeting the needs of society for air travel and transport, while removing or minimising any negative impacts on the local and global environment and maximising its contribution to the UK economy.

There is a set of 34 commitments which have been identified as common goals to which each endorsing company will contribute according to its own respective role. These commitments range from improvements in technology and air traffic management towards a 50% per seat kilometre reduction in CO<sub>2</sub> emissions in new aircraft by 2020 to the development and promotion of low noise flight procedures through evaluation of future operational methods. The commitments also include a requirement to formally report on progress towards sustainable aviation goals and commitments every two years. In future this Environmental Report will be the vehicle to report publicly on Liverpool John Lennon Airport's progress.

## Community Benefit & Employment

*Our Promise – The Airport Company will seek to promote recruitment from and investment in the local community for our mutual benefit.*

The development of the Airport with other key businesses in South Liverpool has been a key factor in the renaissance of the area giving new businesses the confidence to move into South Liverpool and helping the area regenerate both socially and economically.

### Employment

The Airport Company currently employs 450 staff out of a total of 2300 who work at the site. The airport has grown in importance as a local employer over the last eight years as the number and frequency of routes has increased. As the airport continues to expand, more employment opportunities for local people will be created (e.g. 135 Airport Company positions advertised in January 2005). Liverpool John Lennon Airport therefore looks set to strengthen its standing as a major local employer and the numbers of staff working for tenant companies based at the airport will also increase as the airport continues to grow.



The Airport Company works closely with JET South Liverpool to ensure where practical that staff will continue to be recruited from the local area. The Airport Company encourages the other companies based at the Airport to follow this practice and also recruit locally.

The Airport Company also sits on the board of SMART the local community-based economic development organisation which aims to improve the quality of life of the local community by facilitating people back into employment.

### **Education**

The Airport Company has a close working relationship with local schools through the Speke Garston Education Action Zone. Initiatives include school and pre-school visits and talks and events relating to numeracy and foreign languages. In addition the Airport Company is currently working with the Speke Garston Education Action Zone to develop a Liverpool John Lennon Airport educational information pack and tours specifically designed to support course syllabus requirements. This approach will enable the Airport to reach a greater number of schools and students.

### **Access**

As the Airport develops, more people have a need to access the airport for travel or work. The Airport Company is committed to ensuring access is open to all and that there are alternatives to the private car. The area around the airport has one of the lowest household to private car ownership ratios in the country. The new public transport routes into the airport therefore also benefit the local community.

## Glossary

ATC	Air Traffic Control – provide the aircraft traffic management service to aircraft arriving and departing Liverpool John Lennon Airport, and enroute air traffic in and around the Liverpool John Lennon Airport controlled airspace.
SID	Standard Instrument Departure Route for aircraft – a defined departure route for aircraft departing the airport.
NM & TKS	Noise Monitoring & Track Keeping System
NMSC	Noise Monitoring Sub-Committee - a technical sub-committee of the Airport Consultative Committee, comprising community and local council representatives.
SSR	Secondary Surveillance Radar - provides detailed information on aircraft movements.
ILS	Instrument Landing System – an electronic system used by aircraft to navigate to and land precisely on the runway.
Runway 09	Used for westerly aircraft arrivals and easterly departures. Arriving over the Wirral Peninsula and departing towards Hale Village.
Runway 27	Used for easterly aircraft arrivals and westerly departures. Arriving over Hale Village and departing towards the Wirral Peninsula.
$L_{Aeq,(t)}$	Equivalent continuous sound level. The steady dB(A) level which would produce the same A-weighted sound energy over the stated period of time (t) as measured time-varying sound.
MTOW	Maximum Take-Off Weight
SIGS	The Sound Insulation Grant Scheme which offers a contribution towards acoustic glazing, ventilation and loft insulation.
ICAO	International Civil Aviation Organisation
ACARE	Advisory Council for Aeronautical Research in Europe
VOCs	Volatile Organic Compounds
AURN	The Government's Automatic Air Quality Monitoring Network

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