Chris Lowe: interested Party, Registration Number: 20014275 Manston Airport DCO TR020002

WRITTEN RESPONSE

NOTE: Headings in **Bold** show issue to which a response is shown

References are given a number plus document title in brackets, with list of all References at the end, and a separate email attachment with the smaller documents.

Introduction

I have been concerned at the poor management of the former Manston airport ever since it became a purely civilian airport, and CPRE Kent's concern was sufficient for them to issue a Report in 2001: "Manston The Real impact' (**1 Manston Final.rtf)**, and Chapter 8. Conclusions and Recommendations included:

"**8.1 Seeking a balance**

CPRE Kent is not averse to the principle of some development at the airport. Indeed, it believes that appropriate and carefully planned development as a local airport could play a role in assisting the economy of Thanet and some of the surrounding regions. But there are important balances to be struck. As well as bringing opportunities for some jobs, airports bring noise, pollution and congestion, all of which lower the quality of life in the area affected. Without adequate planning and control then there is the risk that the airport would carry on developing inexorably. Any plans for the future of Manston must be carefully defined and take all factors into account so that overall there is a positive benefit to the area.

8.2 Concerns over the development of Manston Airport

With the above in mind, CPRE Kent has raised a number of very serious concerns over the way development is proceeding. These include: -

Lack of local democracy: development is proceeding with little meaningful consultation with local people and environmental groups. While it may be true that many local people are in favour of development, assuming that they understand the limited information provided by the developer and local authority, developing the airport will affect a much wider area than simply the residents of the Isle of Thanet.

Circumvention of the planning process: the Local Authority has successfully argued that a former military airfield with a Certificate of Lawful Authority requires no Planning Application. Nevertheless, the absence of a planning application means that the ability of other interests to comment or object to the development are effectively nil, and the ability of effective control measures to be placed on the airport's development and operation are drastically reduced.

Failure to address the local economic effects: no meaningful analysis of the full economic implications of developing the airport has been undertaken, or is planned. The figures for job creation are tenuous at best, being based on a ratio dependent on anticipated rapid growth in air travel. Researchers dispute the validity of this ratio and there is no mention of how many of the anticipated new jobs will be taken up by current Thanet residents, neither has any assessment of the negative effects on the local economy been undertaken.

Environmental implications have been virtually ignored. Aviation is the fastest growing contributor to global climate change, and a major polluter. But maintaining a high quality environment is not simply of importance for leisure or aesthetic value. It is of crucial economic significance, especially in Thanet, whose economy relies heavily on visitors enjoying the coast or making use of English language schools, for example. Developing the Airport could have drastic implications for quality of life in Ramsgate at least, and is likely to jeopardise plans for an urban renaissance in the town."

At the time of the report, 2001, there were fewer than a thousand Air Transport movements (ATMs) a year, and if managed properly, and without night flights, would have been acceptable. The problems related to the management of the airport itself, and I would comment that at least one of the people involved with RSP, Mr Tony Freudmann, was in a position to improve matters at that time, but did not do so.

This Examination has the potential to ameliorate some of those problems highlighted, but the proposed scale of development cannot overcome the enormous impacts of this Application.

In particular, the Air Quality, Climate Change and Noise have been known for a long time, but over the last twenty years the many reports on these issues have shown ever increasing damage caused by them, so all three aspects need much stronger controls than has been proposed so far.
In addition, this continuing evidence of a worsening situation means that the Precautionary and Preventative Principles also require these stronger controls.

Principal Issues as revised by the ExA 18/1/2019

A Air quality – to include:

1. Cumulative effects of road and air traffic, including ground based operations

Air pollution is already a serious problem and is under-recorded because of lack of sufficient continuous monitoring.
So the Precautionary Principle means that there should be no increase in air pollution, and it would foolhardy to even consider a new scheme such as Manston until there is effective monitoring and control is in place.

2. The effects on the Thanet Urban Air Quality Management Area (AQMA) and designated sites

B Climate change – to include:

1. **The mitigation of, and adaption to, climate change**

We welcome the inclusion of Climate Change being upgraded to a Principal Issue in the Examination.

Air transport is the most damaging transport mode in terms of Climate Change with the impact being more than double that of the carbon dioxide emitted by the aircraft.

It is also important to note that the mix of aviation pollutants includes some large non-CO_2, but shorter lived effects, and because the Paris Agreement requires more rapid de-carbonisation the shorter lived effects are very important to keep temperatures down while we deal with the longer term impacts **(2 Specific Climate Impact of Passenger and Freight Transport https://pubs.acs.org/doi/full/10.1021/es9039693#).**

The Proposal also involves night flights, which themselves have around double the effect of daytime flights **(3 importance of the diurnal and annual cycle of air traffic for contrail radiative forcing.pdf)**, so just the Climate Change impact of the aircraft is very large, without even considering the contribution from all the surface traffic, embedded energy of new buildings and loss of carbon absorption from the 70.6 Hectares of built over grass areas (See 'Other Environmental Issues, 7, Floods' below).

The government's view on the need to rapidly reduce climate emissions is provided by the Department for Business, Energy & Industrial Strategy (DBEIS) who explain the effects of rising temperatures on the UK (**4 Effect of rising temperatures on the UK DBEIS.tiff**) which says:
"Even if global temperature increases are limited to 2°C or less, there are projected to be impacts for the UK. Temperatures over land would be expected to increase by more than the 2°C global average. In a 2°C world in the UK there could be a 30% decrease in river flows during 'dry' periods, a 5-20% increase in river flows during 'wet' periods, and between 700 and 1,000 more heat-related deaths per year in South-East England compared to today."
CPRE Kent, in its work on water resources, has already highlighted the continuous decline over several decades of local river flows, such as in the River Stour, which flows to the south of the Proposal site, so that the water resource deficits will clearly increase as the DBEIS statement indicates greater reductions (up to 30%) than increases (5 to 20%) in river flows. The Water Framework Directive (WFD) already reduces abstractions, so

this is a very strong reason not to locate the Proposal in East Kent as it and its consequential impacts would greatly increase water demands in this water stressed area.
The DBEIS goes on to say (**5 Tackling Climate change DBEIS.tiff**): "Tackling climate change: If we take action to radically reduce greenhouse gas emissions now, there's a good chance that we can limit average global temperature rises to 2˚C above pre-industrial levels. This doesn't mean that there will be no more changes in the climate – warming is already happening – but we could limit, adapt to and manage these changes."
and: "It makes good economic sense to take action now to drastically cut greenhouse gas emissions. If we delay acting on emissions, it will only mean more radical intervention in the future at greater cost, and larger impacts on society.
Taking action now can also help to achieve long-term, sustainable economic growth from a low-carbon economy."

So the economic benefits claimed by the Applicant, which I dispute, would be lost by the widespread damage caused by the emissions.

Aviation emissions are not going down because the introduction of some slightly more efficient aircraft have been outweighed by the number of flights and the distances flown.

The particular problem with aviation is that its effects are in the sky and affect the atmosphere. For example, water vapour may come out of our car's exhaust, but it doesn't matter as it just makes the local area more humid. In contrast, the contrails formed by aircraft exhausts, make a nice warming blanket around the earth. In addition gases such as carbon dioxide stay in the atmosphere for hundreds of years, so if we add more than be taken out by plants or the oceans, then the effects are cumulative.
That is why aviation is such a problem.
So the effect of aviation emissions is much greater than that from surface transport, with rail being the least damaging, especially if renewably-sourced electricity is used.

Hence the non-CO2 emissions need to be included as the Government's Aviation Strategy requires that: " planning applications for capacity growth to provide a full assessment of emissions, drawing on all feasible, cost-effective measures to limit their climate impact, and demonstrating that their project will not have a material impact on the government's ability to meet its carbon reduction targets" (6 **Paragraph 3.96, aviation-2050-print.pdf**).

Many alternatives to aviation fuel have been suggested but none are yet capable of replacing aviation fuel for commercial flights, and are unlikely to be so for some time, especially as aircraft last for 30 years, so these cannot be considered realistic alternatives for this Examination.
Electric 'planes with batteries are possible, but again impractical, especially for freight aircraft, and for longer flights aviation fuel has the advantage that the 'plane becomes lighter as it goes further.

The Government accepts the Committee on Climate Change's recommendation that emissions from UK-departing flights should be at or below 2005 levels in 2050, and this means staying within the maximum emissions limit of 37.5 Mt, but this needs reducing further, in view of the DBEIS view above.

Evidence published alongside the Green Paper says "for 1.5°C global scenarios, *any* continued emissions of CO2 from aviation using fossil fuels beyond around 2050 will be inconsistent with the Paris Agreement goals in the absence of extra measures, or alternatively, correspondingly increased negative emissions."

Realistically there is zero potential for "negative emissions" being available for Manston, and because the 37.5 Mt limit is already taken by existing airports and their flights, there is no capacity within that limit for the emissions from this proposal.

In order to meet the targets, the number of flights need to be constrained, not increased.

[redacted] has emphasised that : "As our report noted, the more that the 'carbon budget' for aviation shrinks, the more important it becomes for that budget to be used as efficiently as possible, making it all the more vital for capacity to be available where it is most needed." (**7 Top of page five 180607-Joint-letter-from-Sir-Howard-Davies-and-Sir-John-Armitt-to-Members-of-Parliament-regarding-the-Airports-National-Policy-Statement.pdf**).

So to keep within the limits of existing emissions, the choice of expansion at Heathrow and not elsewhere means it is reducing flights elsewhere in the UK while it increases London capacity.

This is because: "The Government have assessed the compatibility of its support for expansion of existing runways with the UK's climate change commitments on the basis that the additional capacity will contribute no more than 3,000 ATMs by year 2040 for all UK airports. *Making Best Use of Existing Runways, June 2018, paras 1.11-13 and Table 1".*
So allowing Manston with 10,000 (or more) ATMs would conflict with this commitment.

In addition, the Committee on Climate Change **(8 Letter CCC to Secretary of State, 12/2/2019)** have written to the current Secretary of State for Transport with requirements to actually limit demand and not use 'offset' nor convert to large scale biofuels etc., so there is no room for manoeuvre on this.

This is especially relevant as neither UK air transport nor surface transport emissions have decreased, unlike other sectors, such as cleaner electricity and lower fuel use by business and industry which have provided two thirds of the emission reductions so far, and there is no immediate opportunity of using new technology to reduce emissions, and freight aircraft are usually old inefficient models which have even higher emissions than the latest passenger aircraft.

The Government's 2005 Sustainable Development Strategy requires the Precautionary Principle to be applied to all Government decisions, and indeed the Parliamentary Office for Science and Technology emphasises the need to meet the EU's four Environmental Principles: the Precautionary, Prevention, Rectification at source, and Polluter pays principles (**9 Environmental Principles in EU POST-PN-0590.pdf**).
As the Applicant cannot prevent these emissions, nor rectify, nor pay, for them, Manston cannot proceed.

The Committee on Climate Change is due to produce two significant Reports early this year, 'Advice on the long-term strategy for UK aviation emissions' which will provide advice to the Government on the long-term strategy for the UK's aviation emissions. In-turn, this advice will inform the Government's forthcoming Aviation Strategy, as will the Report: 'Advice on the UK's long-term climate change targets', so the total Climate Change impacts need to be considered with regard to these two reports in the Examination.
See: www.theccc.org.uk/coming-up

The current limits are in themselves inadequate to meet the targets to which the UK is committed, not to mention the more stringent targets needed to actually achieve the proposed more limited temperature increases as shown by the Chief Executive of the Committee on Climate Change, Chris Stark, in his new year message who said (**10 CCC newsletter 11/1/2019.rtf**)

"A trio of reports in the latter half of 2018 brought home the dangers of inaction:
The Intergovernmental Panel on Climate Change's 1.5°C special report brought clarity to the scientific evidence of the impacts of global warming, including a summary of the evidence of impacts at 1.5°C
The UN's Emissions Gap report, reminded us that global efforts to meet the temperature goals of the Paris Agreement are now *substantially off-track*
The Met Office's UK Climate Prediction 2018 report (UKCP2018) provided the clearest assessment yet of what the UK will experience from the changing climate, summarised by Michael Gove at its launch:
"We are now very clear on the global position: the world has already reached around 1°C of post-industrial warming; we are on course for an alarming 3°C; yet, *current national pledges are not sufficient* to keep temperature increases to the Paris goal of 1.5°C.

Last year, we gave a cautious welcome to the UK Government's Clean Growth Strategy: a plan is now in place

(a notable achievement amidst the political turmoil on Brexit) but the *policies do not yet match the ambition.* Our June Progress Report informed Parliament that the UK is off track to meet the fourth and fifth carbon budgets. And our early assessment of the UK's National Adaptation Programme revealed a plan that fails to match the scale of challenge the UK faces in adapting to the changing climate.
We offered deeper commentary on crucial policy issues:
Our letter to Chris Grayling on transport decarbonisation, and major reports on the role of hydrogen and biomass in a low-carbon economy, contributed to the body of evidence *supporting much greater ambition by government to reduce UK emissions*

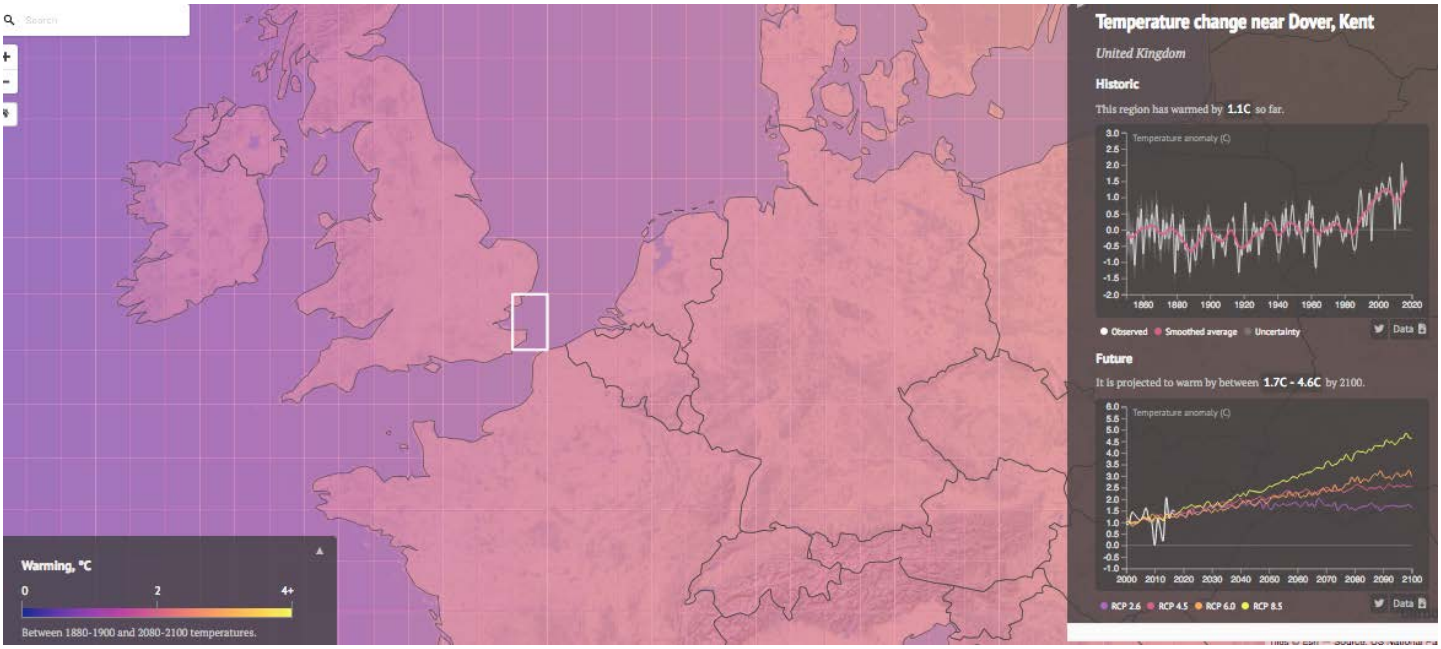
Our aim with the 2019 programme is to inform policy across the *whole* of government. We'll publish new advice on aviation, as DfT finalise their aviation strategy.

Which brings us to our principal challenge in 2019: responding to the request from Ministers to consider 'net-zero'. Ten years ago, in our first act as the newly-independent Committee on Climate Change, we advised that an 80% cut in greenhouse gas emissions was the appropriate 2050 target. In the decade that has followed, a great deal has changed. This is the right time to reappraise the long-term target. We intend to offer a thorough and rigorous assessment of where we stand in light of the UK's commitments under the Paris Agreement.
Of course, the hardest challenge is not setting new long-term targets; it is acting now. The lesson from last year's IPCC report is not – as some have said – that we have 12 years to respond to climate change, it's that we must act *immediately.*
In 2019, expect the CCC to return regularly to the need to implement the simple, effective steps that we know will cut emissions and prepare us for the unavoidable changes in the UK's climate. That's our most important New Year's message."

The most 'simple, effective step' for aviation is to refuse this Application.

Finally the impact on Thanet of climate change – which is not identical to other areas in the UK, has been shown by Carbon Brief, September 26. 2018 that this area has already been warmed by 1.1C, and that it is projected to warm by between 1.7C - 4.6C by 2100, the lowest rise is for RCP 2.6, while highest rise is for RCP 8.5.

The map overlay on the interactive below shows the amount of warming to expect in each grid cell based on future Representative Concentration Pathway (RCP) scenarios developed by climate scientists. These four scenarios represent different possible future emission trajectories. They range from the low-warming RCP2.6 scenario, which keeps global warming from the pre-industrial era to below 2C, up to a high-warming RCP8.5 scenario that would likely see global temperatures rise to above 4C.



(www.carbonbrief.org/mapped-how-every-part-of-the-world-has-warmed-and-could-continue-to-warm?utm_source=NEW+Weekly+Briefing&utm_campaign=69a69e2c56-Carbon_Brief_Weekly_28_09_2018&utm_medium=email&utm_term=0_b6e0a2d2ef-69a69e2c56-303552117&ct=t(Carbon_Brief_Weekly_28_09_2018)&goal=0_b6e0a2d2ef-69a69e2c56-303552117)

I also note that Climate Change affects people's Human Rights and their Equalities because poor people are more affected than the better off.

C Compulsory Acquisition – to include:

1. Whether all of the land which the Applicant wishes to acquire compulsorily has been shown to be necessary for the purposes of the Proposed Development
2. The compelling case in the public interest for Compulsory Acquisition
3. Alternatives to Compulsory Acquisition, modifications to the Proposed Development and including attempts to acquire by agreement
4. The management of potential risks or impediments to implementation including the need to obtain other permits
5. Crown Land
6. Special Category Land
7. The position of Statutory Undertakers

D **Funding** – to include:

1. Sources and availability of funding and the degree to which bodies have agreed to make financial contributions or to underwrite the Proposed Development, and on what basis such contributions or underwriting are to be made
2. Further details of responsible bodies, including details of relevant Company assets, structures, ownership, Directors, proofs of willingness to invest and track record of developing and operating nationally significant infrastructure projects, notably airports
3. The bases for the estimates of costs
4. **Funding for the scheme as a whole**

I am uncertain to what extent the Applicant has allowed for funding transport improvements which are consequential to the airport's development, but the 2013 Aviation Policy Framework **(11 aviation-policy-framework.pdf**), says: "Paragraph: 5.12 The general position for existing airports is that developers should pay the costs of upgrading or enhancing road, rail or other transport networks or services where there is a need to cope with additional passengers travelling to and from expanded or growing airports."
For example Network Rail has clearly identified need for station changes, but as far as I could see, not extra

carriages or trains, so this is an extra cost for the Proposal.

5. Funding for Compulsory Acquisition if authorised, including for blight
6. Funding for the Noise Mitigation Plan
7. Provisions in the draft Development Consent Order (dDCO) for guarantees in respect of payment of compensation
8. The soundness of the business case and the viability of the business model
9. Whether there is a realistic prospect of the Proposed Development proceeding should it be consented

E **Habitat Regulations Assessment and effects on biodiversity** – to include:

1. Likely significant effects on European protected sites and species, including conclusions regarding effects on integrity
2. **Effects on other habitats and species, including bird scaring techniques and habituation**

For both of these headings I have significant concerns over the potential loss of biodiversity and habitats through breaches of the regulations on Conservation of Habitats and Species and Directives on Habitats and Wild Birds, particularly in the light of the recent 'POW' judgment on the Habitats Directive (CJEU's People Over Wind decision, published 12 April 2018, Case C-323/17).
That decision also affects the EIA, inasmuch the EIA should assess the damage expected from the airport without mitigation .

F Landscape, design, archaeology and heritage – to include:

1. The effect on Conservation Areas
2. The Effect on Ramsgate Heritage Action Zone
3. The effects on Scheduled Monuments
4. The effects on Listed Buildings
5. The effects on heritage assets within the airport site
6. Management and mitigation of impacts on archaeological features
7. The design approach taken, including the parameters based approach and justification for the sought provisions in Article 6 of the dDCO regarding limits of deviation
8. Masterplanning
9. Landscaping and planting schemes including any proposals for off-site mitigation schemes

G Planning policy – to include:

1. The status of, and policy framework provided by, the Saved Policies from the 2006 Thanet Local Plan and the Draft Thanet Local Plan – 2031
2 History of relevant planning policies and proposals on the site

H **Need** – to include:

1. **National and regional airports and air transport policy and guidance**

The National Policy Statement for Airports says nothing about 'new' airports.
Wikipedia (en.wikipedia.org/wiki/Manston_Airport) says:"Manston Airport is a closed British airport", so this Application is for a 'new' airport. RPS evidence shows no existing capability at Manston, and their proposal, being so much larger than any previous activity, is effectively a new airport.

National and Local Policies and Plans do not propose new airports. The Airports National Planning Statement offers support for increasing use of existing operational airports but not new airports - Manston is not existing airport. The NPS allows Heathrow developments, but the only other expansion would be increasing use of "Existing airports" only.
Hence there is insufficient policy evidence for qualification as DCO or Compulsory Purchase processes.

2. UK airport air cargo capacity and forecasts, including locational demands and cargo types/ markets

3 Need for any airport development to take place at Manston

The total of UK Reporting all Air Transport Movements (**12 CAA Table_04_2_Trans_Move_by_Type**) were highest in 2007, with 2,379,000 ATMs, with 2017 achieving 2260000 ATMs and 2018 only achieving 2,210,000 movements (unaudited figure). Hence there is plenty of ATM capacity at other airports.

Scheduled traffic every day can be seen on an airport's information webpages , so it is possible to look at the number of planes at each airport, at each time of day to see where there are gaps where more cargo flights could be fitted in, and apart from Heathrow and Gatwick, airports are not "full" all day. All other airports are seeking more traffic to make more income, so Manston has no chance

The report "Air Freight: The Facts, Rose Bridger, Airport Watch 2009" (**13 Air+Freight+Report+Airport+by+Airport+final**) gives the freight tonnage was 2,158,571 tonnes in 2007. Using published data in the relevant airport Master Plans for freight at those airports in 2015 and 2030, showed a planned increase of 2,231,197 tonnes by 2015 so total would then be 4,389,768 tonnes. For 2030, a planned 4,470,362 tonnes increases total to 6,628,933 tonnes. Heathrow anticipated belly hold growth, but did not quantify the amount, so the increases excluded growth at Heathrow, which to 2015 was 185,620 tonnes.The actual result for 2015 achieved all of 2,299,328 tonnes and this includes all UK airports, some of which were not included in the Report's data, for reasons such as lack of published growth data.

As is usual for aviation, the expectations exceed reality, with 2015 actually achieving 2,299,328 tonnes, a growth of 140,757 tonnes, a fraction of the 'planned' growth of 2,231,197.

So existing airports have capacity planned in their Master Plans, greatly in excess of National forecasts for air transport and freight movements, so there is no evidence for RSP's proposals.

As might be expected from the London-centric growth promoted by Government, the 'London airports' total freight has grown over the period 2007 – 2017, but the tonnage at 'Other UK airports', which includes Manston, has declined over the decade, with Manston having a maximum of 31,078 in 2012.

The long debate over a new runway at existing London airports has meant that Heathrow and Gatwick, for example, have steadily increased passenger and freight capacity within the restricted runways, due to more efficient use of each plane, that is a higher load factors, and also, where appropriate larger aircraft. These actions have the benefit of reduced emissions per tonne.

Heathrow Runway 3 is backed by Government, so is more likely than Manston to go ahead, and this would increase that capacity further, totally negating any need for new capacity at Manston.

The National forecasts for Air Freight Movements show no demand for proposals, and previous operators' forecasts never approached achievement, so current forecasts are not convincing.

An industry expert estimates that 15-20 tonnes of air cargo is worth 30-40 economy passenger seats, when both are on passenger planes.(**14 Value of cargo.pdf**)
Using belly hold for cargo means that if fewer passengers are paying for a flight the difference can be made up by cargo, thus it increases the total load factor per aircraft, making it more economic and this reduces risk.
In contrast, pure cargo aircraft have no other options to increase load factors and load factors for cargo aircraft, at around 50%, are much lower than the 80% for passenger aircraft (**15 IATA Europe-Jan19.pdf**), thus increasing the cost per tonne.

It also means that cargo aircraft are unlikely to provide regular scheduled services except for large integrators, but even then the range of destinations are unlikely to match those of passenger aircraft.

Unfortunately for RSP, Manston's location at the most north-easterly tip of Kent means it is further away from

London than the 'London' airports, and it is poorly located to serve the logistics hubs of the midlands which serve the wider UK, and it also suffers from a relatively small flying population locally that might make it viable.

This also means that there are few local suppliers requiring significant amounts of outward-bound freight.

So the north-east tip of Kent is wrong place for strong passenger or freight base, with few potential passengers nearby, and too far from London for freight distribution and on wrong side of it for areas north of London.

I can find no compelling reasons why a freight forwarder or carrier would favour Manston over other airports.

By implication RSP makes wholly implausible and exaggerated claims of marketshare when in operation and I consider that RSP has presented forecasts in an attempt to meet the NSIP criteria, but has failed to do so.

4 **Competition with, and possible displacement from, other UK airports**

Manston would be in competition with existing airports, which would fight hard to retain existing customers so it would be extremely difficult for a new startup.

Gatwick could suffer from Manston's competition if its charges were comparable or lower than Gatwick's, and so there might also be domino effects on Heathrow and elsewhere.

The net effect in that scenario is that fewer flights and destinations could be offered at these other airports.

Alternative modes of transport are not mentioned as a Principal Issue, but East Kent is in the unique position of also having high speed rail under the Channel which connects us to many parts of Europe. It also has the benefit that cargo trains from as far away as China come to the UK. Their travel time of one week may seem long in aviation terms, but if the total journey time from origin to final destination is considered then for many things the time is acceptable and is considerably quicker than by sea and easier than by road. Rail also has the lowest emissions, especially as the parts powered by electricity often use renewables.

Eurotunnel reports that it carries £12 bn of fresh fruit and vegetables per year, 1 million express delivery parcels a day, and has carried 380 million tonnes of freight and le Shuttle has carried 80 million vehicles since opening.

There is also the facility for road transport to use the tunnel and also the ferries, and again for many European destinations the total time is comparable to that for aviation, but with far lower emissions.

So Manston has this competition right on its doorstep, which will make it harder for Manston to develop as it proposes.

CPRE Kent and others have for long campaigned to reduce the risks of the UK's dependence on Dover for cross channel transport because in the twelve months ending September 2018, more vehicles left Great Britain via the Dover Strait port group (56%) than all of the other port groups combined. (**16 roro-october-2017-to-september-2018.pdf**)

This means that it is essential that additional traffic is not generated in East Kent because it would not only add to the damage from existing HGV traffic, but would also greatly increase the risk of congestion on the routes from East Kent.

I **Noise** – to include:

1. **The assessment of effects on humans and faunal species**

Sound is vibrations in the air which the ear can hear. Noise is unwanted, unpleasant or disturbing sound, and relates to how the Sound is perceived by the individual hearing that sound.

Unless you are in a plane, or involved with the air transport industry, aircraft sounds are unwanted.

Compared to road or rail sounds, aircraft noise is more intrusive and disturbing and so objectionable, as shown by the World health Organisation (WHO) "Environmental Noise Guidelines for the European Region 2018" **(17 WHO noise-guidelines 2018.pdf**) , which provides separate maximum noise levels for road, rail and air transport, with air transport having the lowest maximum levels. Hence communities object to aircraft noise, especially if they feel that the airport does not take their concerns seriously.

Sound and its measurement has unusual characteristics, which make it harder to explain and understand. The sound levels are measured in decibels (dB), which is not an absolute measurement but is a ratio of between two sound levels expressed using logarithms. This means that for two sounds each of 30 dB, the result of the two together is 33 dB. Hence the difficulty of using phrases such as "twice as loud" which is meaningless unless qualified, with actual numbers and units.

In order to allow for ear characteristics sound levels can be "A-weighted" so that low frequency sounds are reduced and higher frequencies are increased by levels that correspond to an 'average' human ear, and this is called A-weighting, and became the commonest measure because early sound level meters could not offer different weightings. However use of this metric has also encouraged aircraft makers to shift sound levels to lower frequencies. The C-weighting applies a correction for loud sounds and is used for loud sounds in industry (eg such as Noise at Work Regulations) – and aircraft. Unfortunately the aviation industry has persuaded governments to just use A-weighting, and have ignored tonality, hence adding to the disjoint between measured levels and communities' perception of aircraft noise.

There is no better example of the disconnect between technical measurements and people's perceptions than "The Quiet Con" **(18 the_quiet_con hacan.pdf)** with Heathrow Terminal 5 Inspector saying:
"21.3.29 I accept the Department's (DfT) view that any noise index must be reliable, robust, realistic and sensitive. I am not convinced that the LAeq 16hour index used by the Department meets all of those criteria. It was criticized by all the main parties opposing Terminal 5 as failing to reflect the actual experience of those living around Heathrow.
21.3.31 Equally LAeq 16hour does not indicate the maximum noise of individual events so that it cannot indicate how many times conversation is interrupted in a particular location whether it be a school, a major public space such as Kew Gardens or a private house or garden. Since these are the very factors which cause annoyance, I can understand why many argued that LAeq 16hour failed to reflect the concerns felt by local residents.
21.3.33 The greatest single criticism of the LAeq approach was that it failed to give adequate weight to the number of aircraft movements. As the Department accepted, the addition of a further 400 movements by light Chapter 3 aircraft would increase the LAeq 16hour by only 1dB. As the Department acknowledged even a difference of half a decibel could be significant and the area enclosed by a contour would increase by 15-20% for each 1dB increase in the LAeq level. To this extent the LAeq is influenced by the number of events. The issue is whether that influence is sufficient to reflect the experience of those affected. In this context I am concerned by the evidence that for departures, Concorde's contribution to the LAeq 16hour was almost equivalent to that of the rest of the fleet put together. This reflects the claim that Concorde produces as much noise energy as 120 Boeing 757's or 35 Boeing 747-400's. "
The Report also has lot more information, including the A and C weightings and examples of real life measurements.

The Government's consultation: "Night Flying Restrictions at Heathrow, Gatwick and Stansted, Stage 1", Department for transport, July 2004, in Paragraph 3.12, commenting on the World Health Organisation's then current*Guidelines for Community Noise, 1999 (*WHO 1999*),* said: "The recommendation was that the *Guidelines for Community Noise* should be adopted as the long term targets for improving human health. The UK Government is committed to take account this"

At that time, the the WHO values for Night noise were: Outside bedrooms 45 dB Leq (8 hr) and 60 dB LAmax with window open.

Now in the latest "Environmental Noise Guidelines for the European Region 2018" **(17 WHO noise-guidelines 2018.pdf)** WHO's recommendations are 5 dB lower at night, together with 45 dB Lden, and they say:
"3.3 Aircraft noise Recommendations
For average noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft below 45 dB *L*den, as aircraft noise above this level is associated with adverse health effects.
For night noise exposure, the GDG strongly recommends reducing noise levels produced by aircraft during night time below 40 dB *L*night, as aircraft noise above this level is associated with adverse effects on sleep.
To reduce health effects, the GDG strongly recommends that policy-makers implement suitable measures to reduce noise exposure from aircraft in the population exposed to levels above the guideline values for average and night noise exposure. For specific interventions the GDG recommends implementing suitable changes in infrastructure. "
In setting these levels, WHO considered that for the Lden value, "It was confident that there was an increased risk for annoyance below this exposure level", and for the Lnight value, "11% of participants were highly sleep-disturbed at a noise level of 40 dB *L*night.".
Progress has been very slow so far in achieving the 1999 Guidance, but the Government's commitment to reduce noise was shown in the " **(19 night-flight-restrictions-at-heathrow-gatwick-and-stansted-decision-document.pdf),** Paragraph 2.21: "The 48dB LAeq 6.5hr contour is therefore used for comparative purposes to measure progress and assess the impacts of different options for the night flights regime. Our assessment of the health impacts associated with different options does measure impacts below this - down to 45dB LAeq 6.5hr". However this came out before the latest WHO Guidance of 40 dB Leq8hr which strengthened the evidence of the adverse effects from noise, so the least that the public would expect for a brand new airport is to seek to achieve the new WHO levels.

As part of this clampdown on noise, the Government is now going further in its "Aviation 2050 **(Chapter 3, Ref: 6 aviation-2050-print.pdf)**, saying it intends to have a "stronger and clearer" framework with better incentives for noise reduction and noise caps set at the planning stage.

To implement this the CAA has proposed a national aviation noise limitation scheme in: CAP 1731 Aviation Strategy Noise Forecast and Analyses December 2018, CAA **(20 CAP 1731 Aviation Strategy Noise Forecast and Analyses-2.pdf)** and on Page 64 they say:
"In summary, the proposed limit scheme consists of:

1. 1) A nationally set absolute Quota Count limit or noise contour area limit at a particular noise level for both day and night, aggregated across all major airports (which Manston would be if it meets NSIP requirements);
2. 2) A locally set absolute Quota Count or noise contour area limit at a particular noise level for both day and night for each airport;
3. 3) Local monitoring of the number of highly annoyed and highly sleep-disturbed people;
4. 4) Reporting requirements."

If these are implemented as proposed then there would be a national cap on airport noise for England, together with individual caps for each airport.
In the case of the national cap, it would provide no allowance for a new Manston Airport, as it is not an existing airport so there would be no "spare" capacity for Manston to use, so that Manston would be severely limited by noise constraints.

Despite the stricter noise controls that are coming, recent research shows that even these controls may not be sufficient to reduce the adverse effects of noise.
The paper "Transportation noise and public health outcomes: biological markers and pathologies
29 Aug 2018, , Faulkner J, Murphy E, presented at Internoise 2018, reviewed 50 items of academic literature which show that adverse health impacts begin somewhere between 30 to 39 dB, in other words below the WHO level of 40 dB.

This makes it clear that that the impact on health is serious and urgently needs to be addressed.

Internoise 2018 also had a paper from Arup who have developed ambisonic auralisations of noise from proposed road schemes, and the Netherlands Aerospace Centre (NLR) has developed an aircraft noise simulator to demonstrate to communities proposed changes.

If this proposal is to proceed then the Applicant should be required to use these technologies to ensure that impacts are minimised.

2 The Noise Mitigation Plan (NMP) including the choice of relevant noise contours

In line with the Government's intention to reduce noise (Chapter 3 of Ref **7, aviation-2050-print.pdf**) they expect the airport must plan for future noise reductions, and this must reviewed periodically.
So the Applicant's Noise Management Plan (NMP) should show how the levels would be reduced over time, with 5 yearly commitments.

The document refers to good practice, such as Heathrow's trials of steeper approaches and departures, Gatwick's structured landing charges to incentivise quieter aircraft, Birmingham's raising height of noise preferential routes, and London city having higher fines for infringements and for it and Heathrow to have league tables of environmental performance.

The "Air Navigation Guidance: Guidance on airspace & noise management and environmental objectives", DfT, 2017, (**21 air-navigation-guidance-2017.pdf**) guides the CAA in assessing noise at different altitudes, and so the Applicant's Noise Mitigation Plan needs to include this Guidance, and have appropriate management systems to ensure that the Airport users actually comply with it.
The Guidance describes the Government's objectives and Section 3.3 includes:
"the CAA should keep in mind all of the following altitude-based priorities of the Government:

in the airspace from the ground to 4,000 feet the Government's environmental priority is to minimise the noise impact of aircraft and the number of people on the ground affected by it, particularly with regard to noise disturbance above 51dB LAeq16hr or 45dB Lnight;

in the airspace at or above 7,000 feet, the CAA should promote the most efficient use of airspace with a view to minimising overall aircraft emissions meaning that mitigating the impact of noise is no longer a priority;

where practicable, it is desirable that airspace routes below 7,000 feet should seek to avoid flying over Areas of Outstanding Natural Beauty (AONB) and National Parks; and

all changes below 7,000 feet should take into account local circumstances in the development of airspace structures, including the actual height of the ground level being overflown, and should not be agreed to by the CAA before an appropriate community consultation/engagement has been conducted by the airspace change sponsor."

I am very concerned that the proposed Noise Mitigation Plan (TR020002-002383-2.4) is worse than night flight regimes already rejected by Thanet District Council (TDC).

In 2009 Infratil, applied to TDC for permission to have scheduled night flights, and Infratil suggested a QC total for the airport of 1,995 and indicated that this QC total would mean an average of 7.7 flights a night. The QC was two thirds of the 3,028 QC points proposed by RSP nine years later.
TDC commissioned independent noise experts, Bureau Veritas, to assess the impact of Infratil's proposals on the community, and in November 2010 Bureau Veritas concluded that:
"Even with a sound insulation scheme for residents whose dwellings would be exposed to 57 dB LAeq,8h or more *it is BV's view is that the predicted number of people likely to be exposed to significant levels of average night-time noise is not sufficiently justified bythe number of passengers and freight activity that are forecast to benefit from the proposals. This is on the basis that the* ***number of people likely to be impacted by night noise at Manston (MSE), normalised with respect to the annual passenger throughput, is greater than that at each***

***of the designated London airports**, BV considers that there is a good case for seeking a **lower annual quota limit than the 1995** proposed. Alternative lower limits have been proposed for consideration which would place MSE in line with the quota limits at other airports. At the designated London airports, the quota limit is accompanied by a movement limit and it would be **good practice to include a movement limit in any quota count regime established at MSE**. Introducing this measure and lowering the quota count limit would mean that the control system would take effect at a lower level of noise impact, thus limiting disturbance to a lower level.*
*In order to reduce noise impact on nearby residents due to individual aircraft movements, BV would recommend that **bedrooms of dwellings predicted to be exposed to 90 dB(A) SEL or more are also included in the sound insulation scheme**.*
*BV suggests an additional control to protect residents from noise impact during the whole night-time period, i.e. including the evening and morning shoulder-periods when the majority of night-flights are to occur. Imposing a suitable area limit for the **48 dB***
***LAeq,8h night noise contour would be an appropriate means** for controlling this.*"
"*On the basis of the forecasts, however, MSE is showing a greater normalised disbenefit to that of Heathrow in terms of dwellings exposed to 54 dB LAeq,8h. In fact, the predicted number of people exposed to this level of noise at MSE is over double the number that were exposed to noise at Stansted and at Gatwick airports which cater for 10-15 times the number of passengers."*

This makes it clear that, even in 2010, RSP's 2018 night flight proposal would have been deemed wholly unacceptable by Bureau Veritas and therefore by TDC, because;
• It proposes a QC limit of 3028 where Bureau Veritas thought that 1,995 QC points was unacceptable
• It has no ATM limit
• It is not proposing insulation for dwellings that would suffer 90dB(A) SEL unless they experience these noise events 18 times a night at least
• It gives the developer the freedom to operate a night airport with a greater negative impact on the community than the scheme put forward by Infratil would have delivered.

It should also be noted that the new WHO Guidance recommends 40 dB at night, not the 48 dB that BV recommended.

A toothless system of penalties

RSPs' proposed system for fining airline operators that do not abide by the night flight regime is insulting. RSP proposes that any departing aircraft at night that exceeds 82dB LASmax at the noise monitoring terminal 6.5km away from the start of roll will be fined £750 and a further £150 for each decibel above that. In contrast, aircraft operators at Heathrow are fined £4,000 for each decibel in excess of the limit.
Even in the year 2000, when the local Council had no experience of regulating airport operations, the system of fines agreed with the Council was stricter than the regime that RSP is suggesting now. In 2000 the fine for exceeding the agreed decibel level was an initial £500 with an additional £500 being levied for every additional decibel above the agreed limit.

Heathrow is the busiest airport in the UK, but even so its Quota Count limits were reduced by over 40% to below 3,000 in the Night Flight Restrictions at Heathrow Gatwick and Stansted Decision Document DfT 2017 (Table 5). **(19 night-flight-restrictions-at-heathrow-gatwick-and-stansted-decision-document.pdf)**
The Government also stated (Paragraph 2.1) that: "it expects a ban on scheduled night flights of six and a half hours at an expanded Heathrow "
It went on to state that (Paragraph 2.3): " the environmental objective in our consultation document was to 'encourage the use of quieter aircraft to limit or reduce the number of people significantly affected by aircraft noise at night, while maintaining the existing benefits of night flights."

Manston has no 'existing benefits of night flights' so there is no case for starting any night flights now.

Also I strongly dispute that are any 'benefits of night flights' except for the convenience of aircraft operators.

The very welcome eight hour night period, as proposed by the Applicant, needs to be compared with the flight time and the surface transport part of a journey. The Applicant (NSIP Justification, ibid) refers to a 2.5 hour Turn Round Time, so the loading plus unloading time for any flight would be 2.5 hours, it also has the clearance time at each end of the flight (customs/immigration/health etc) and the travel time to and from each airport, so usually the eight hour night ban would be much shorter than the total journey time, with no real inconvenience to the recipient of the load.

'Humanitarian flights' are allowed so that allows the rare urgent care aircraft to operate.

The Government in its Night Flight Restrictions at Heathrow Gatwick and Stansted Decision-document DfT 2017 (**19 ibid**), said:
"4.14 Therefore, from October 2017, all movements that are currently exempt will count towards the airports' movement limits. These will all however remain QC/0 and be exempt from the noise quota limits.
4.15 From October 2018, the new QC/0.125 category will be introduced which will apply to the majority of exempt aircraft currently in operation at these airports. The delay in introducing the new QC category will provide sufficient time for industry to adapt to the changes we are making, while counting exempt flights towards movement limits will ensure there is no increase in the number of exempt aircraft operating at the airport in the interim period."
Hence ALL aircraft should be counted within the Movement Limit in the Eight hour night period, and the QC system should count down to the QC 0.125 which are 81 – 83.9 EPNdB.

I am also concerned that the Plan says: "
11.2 During the Day Time Period the operator of any departing aircraft that exceeds 90 dB LASmax at the relevant noise monitoring terminal will be subject to a penalty of £750 and a further penalty of £150 for each additional decibel exceeded above 90 dB LASmax.
11.3 During the Night Time Period the operator of any departing aircraft that exceeds 82 dB LASmax at the relevant noise monitoring terminal will be subject to a penalty of £750 and further penalties of £150 for each additional decibel exceeded above 82 dB LASmax. "
I query the use of LASmax, as that is a "Slow" measurement so averages out the Peak noise level, and it is the peak noise level which will wake people up or disturb them. The maximum sound levels is the highest time-weighted sound level and the "Slow" means it is measured over a 1 second time period, whereas Fast is measured over a 125 millisecond time constant.
It would make more sense and be more consistent and less confusing to use the same EPNdB as in the QC system it includes the tonality aspect of aircraft and which is also more correlated to the 'noisiness' of the aircraft.

So a Maximum of 90 EPN dB for dayt and 82 dB EPN dB for day would be more acceptable, but is still too high to avoid affecting people..

I also noticed that Part 2 of the Noise Mitigation Plan is a mess – the first QC column is variously listed as <54. <64, <84 and >84 and all the headings have a range of terminology which is meaningless.

It looks as if no one proof-read this, so please can I have proper copy?"

The Noise Management Plan does not appear to include having an airport charge to incentivise the use of quieter and lower emission aircraft. The CAA carried out a study in 2013 (**22 CAA, CAP 1119 Noise-related charging review.pdf**) and from that they suggested:
"**Good practice principles**
This study has highlighted a number of principles which I consider to constitute good practice in the setting of airport noise and emissions charges:

1. a) Noise charging categories should be based on ICAO certification data, to incentivise best-in-class.
2. b) Noise charging categories should of equal width, typically 5 EPNdB, or narrower, to ensure adequate differentiation of noise performance.

3. c) The noise charging categories used at a given airport should cover the full range of aircraft in operation at the airport. This range should be reviewed periodically and modif ied as appropriate.
4. d) Noise charges for operations occurring at night should be greater than those that occur during the day.
5. e) Where noise-related charge differentials occur depending on the time of day of an operation, the scheduled time of the operation should be used as oppose to the actual time. Penalties may be used to dis-incentivise operations scheduled to occur on the cusp of the night period that regularly fall into the night period.
6. f) There should be a clear distinction between noise-related landing charges and any non-noise-related charges, e.g. demand-related charges.
7. g) Charging schemes should ideally be harmonised across airports within the UK. Aircraft should be treated similarly from one airport to another, even if the charges at each airport are different. ”

I consider that introducing such charges would show that the Applicant is serious about managing the airport impacts and is trying to do its best to minimise them, so I expect the Applicant to provide a detailed proposal for Airport Charges, which should also include an environmental charge proportionate to maximum Take Off Weight, to encourage lower emission aircraft.
The income from these charges could reduce the other airport charges as well as being used for community benefits such as noise insulation.

I look forward to seeing the Applicant's proposals.

There is a proposal to try and reduce the number of planes coming into land over Ramsgate, that is in an East-West direction. However Pilots do not like to land with a tail wind because the pilot has less control of the plane. There are genuine safety issues with landing with stronger tail winds and it would be dangerous to land with a significant tail-wind component.
This is because the aircraft has to be flying faster (relative to the ground) to remain airborne and in control and in the air control is all about Airspeed. Thus when it lands there is more of a stress on firstly the tyres and then on the brakes as a result of the higher speeds involved because, now, Goundspeed is the order of the day. Most aircraft tyres are speed-limited by the manufacturers to avoid tyre damage.
So the norm is that above about 5 knots wind, they land into the wind, so the intention of reducing flying over Ramsgate may be good, but not realistically achievable so this should be made clear.

2. The use of aircraft quota count restrictions

3. **Cumulative effects of aircraft and road traffic noise**

Many aircraft fly over East Kent and there is no method of controlling their impacts on East Kent except by an airspace change, which is extremely difficult to achieve.
There are major changes coming to airspace in the South East, and the original NATS timetable for airports to consult in August 2020 has been delayed, and NATS is proposing a new “tube” network to which aircraft will fly from the relevant airport.
So the Applicant is unlikely to be able to agree airspace until long after the Examination is completed, so the actual noise impact on Kent cannot be properly examined before then.

So the examination of Manston needs to ensure that noise environment does not become any worse for Kent as a whole due to the addition of Manston's aircraft to the existing large numbers of over-flights.

5 Location of noise monitors

See also 2005 CPRE Kent Report (**24 KIA Manston RepOD2.doc**) in “Issue 7 below: **Noise impacts of previous airport operations”**, which makes clear that noise monitors need to be located to avoid existing high background noise.
The CAA (**24 Departure Noise Mitigation: main report www.caa.co.uk)** shows that planes are now heavier and noisier, with some aircraft 400 feet lower- this increases noise by 2 to 3 dB, and that the steeper departure

reduces noise under the flight path but increased it for those to the side and the noise lasted longer, so noise monitors further away than the 6.5 km from start of roll, would help to manage this.
It would also be good practice to have monitors both under the flight path and to either side.

6 Outdoor and indoor impacts of noise

7 Noise impacts of previous airport operations

A professional report for CPRE Kent carried out by Capita Symonds in 2005, (**24 KIA Manston RepOD2.doc**) shows that the background noise levels from the small Fokker 100 passenger aircraft, caused significant noise. The Report said:

A noise survey of a sample of E U Jet aircraft using Kent International Airport – Manston was carried out on Friday 29th April 2005.
From position 3 close to the centre of Ramsgate the measured noise levels of aircraft passing overhead suggest that a large number of people may be disturbed by aircraft using the airport when considering the usual flightpath aircraft take over the town

With three measuring points the Background noise levels were measured, as in the Table 5.1 of the Report.

Position 1, west of the runway, was the site of the airport's own noise measuring location. The LA 90 varied between 57 and 64 dB. It should be emphasised that background noise levels at this location are significantly higher than most other locations to the west of the runway owing to the close proximity of the airport's noise monitoring equipment to the busy dual carriageway road A299, just 10 metres away.

An increase in aircraft traffic will lead to an increase in vehicle traffic on the A299 leading to the airport. Consequently an increase in aircraft traffic causing increased road traffic will also raise background noise levels at location 1.
During the background noise survey the strong wind from the direction of the road resulted in a worst case background noise level.

At the rural position 2 a location that is more typical of the general area road noise from the A299 was still the dominant noise, and the LA 90 varied between 46 and 49 dB. Reduced background noise levels could therefore be anticipated in the substantial area further from the A299 that is still close to the western end of the runway. From tables 6.3 and 6.4 it can be seen that passing aircraft produce noise levels substantially above background noise levels.

At location 3 in the urban environment of Ramsgate centre the lowest background noise level between 39 and 47 LA 90 dB was recorded, so there was also the greatest difference between background noise levels and noise levels from passing aircraft is shown in table 6.5. This difference will have a significant impact upon people's enjoyment of using the town's amenities, have an impact upon speech intelligibility and a detrimental effect upon the learning environment.
It can be seen when comparing background noise levels with the L_{eqT} overflying aircraft noise measurements noise levels are increased by up to 30dB A. To quantify this further an increase of 10dB A is the equivalent of a doubling of noise perceived by the human ear.

Since aircraft on flightpaths to the east of the runway either land or taking off generally take a route across the centre of Ramsgate much of the town will experience noise levels similar to those measured. Although there are various methods of assessing disturbance from aircraft in the vicinity of airports the measured noise levels at position 3 would indicate that a large number of residents are likely to be affected by noise from aircraft using the airport.

Frequency analysis was also carried out and Chart 1 showed the third octave frequency spectra of a Fokker F100, E U Jet passing overhead immediately after take-off heading north west when measured from position 2,

and Chart 2 showed the third octave frequency spectra of a Fokker F100, E U Jet passing overhead on the landing approach heading north west when measured from position 3.

A prominent tonal component can be identified in the third octave spectra if the level of a one-third octave exceeds the level of the adjacent bands by 5dB or more.

Chart 2 suggests that there is a prominent tonal component in the low frequency spectra at 32Hz. Whilst no other tonal components can be identified in the third octave spectra a distinct low whine can be heard from these aircraft

The two charts show there is some variation in the shaping of the frequency spectrum between the measurements taken for the aircraft shortly after take-off and the aircraft on the landing approach. Common to both sets of analysis is the fall off in frequency levels only at the higher end of the spectrum somewhere in the range of 4,000Hz and 8,000Hz. Speech generally occurs within the range of 250Hz and 4,000Hz so it can be seen that speech intelligibility will be disrupted at the recorded levels without people raising their voices. In turn this is likely to spoil peoples enjoyment of the local amenities and is likely to have a detrimental effect upon those in a learning environment as discussed further on in this report.

The noise levels measured suggest that people enjoying the amenities such as public footpaths and Monkton Nature Reserve in the relatively tranquil rural area to the west of the airport runway are likely to be disturbed by the increase in background noise levels caused by aircraft.

It should be noted that these effects were noted for a small passenger aircraft so larger aircraft or cargo aircraft would be much worse.

8 Limitations and uncertainty of noise modelling

The Heathrow Terminal 5 Inquiry heard a lot about noise, especially about the inadequacy of the A weighted Leq and the the Inspector made some very pertinent remarks on this **(ibid under issue I, Noise 1, above, ref: 18 the_quiet_con hacan.pdf).**

J Operational issues – to include: :

1. Operational relationship to, and progress with, the Airspace Change Process

In the past decade airspace change proposals have raised very considerable concerns and received many objections. That has shown that people do not notice a decrease in noise as much as they do an increase. One of the disadvantages of the Performance Based Navigation (PBN) system is that it narrows the flying corridors, so that people on the centre line of the PBN route receive many more planes overhead in contrast to earlier systems where aircraft were spread over a wider swathe. As a consequence of the concerns and the very restricted available airspace over the UK because we have so many planes it has taken longer than expected to agree new routes. So I consider that agreeing new flightpaths for Manston is a considerable risk, and it could significantly delay the Proposal, with all the consequent effects of that. While the ExA may conclude that the proposal is otherwise viable for a DCO, I would strongly recommend that the ExA recommends that the Secretary of State (SoS) only gives formal approval after this issue, and any other issues not determined in the Examination, are resolved to the SoS satisfaction.

2. Air Traffic Movements

3. Progress with Aerodrome Certificate

4. Night flights

See section on Noise Management Plan above

If there should be night movements, has the issue of increased nocturnal HGV and other vehicle activity needs to be considered

5. Phasing
6. Safety and security
7. Customs and immigration
8. Major accidents and incidents
9. Aerodrome safeguarding

K Other environmental issues - to include:

1. Baseline data
2. **Identification of worst case scenarios**

RSP refer to Gatwick's single runway 282,000 aircraft movements in 2017 (Para 20, RSP's Document TR020002-002382-2.3 - NSIP Justification),showing that Manston's single runway would not be a restriction on flight numbers. Although it goes on to say that Manston's existing taxiway, would halve that number, the Application describes a new taxiway being built to avoid that restriction.
Hence Manston's runway actual capacity with the Proposal would the same as Gatwick, namely 282,000 movements.
This means that the impact assessments would have to be based on this number as "worst case".

RSP also use the capacity of the aircraft stands as a factor limiting maximum capacity., but I dispute the NSIP Justification (paragraph 22) for a minimum of 2.5 hours to turn around at cargo stands. I have found evidence of times as short as 45 minutes, and that was over a decade ago, (**25 http://www.airliners.net/forum/viewtopic.php?t=336357**), with a current 50 minutes at Heathrow for Airbus A 319 and 80 minutes for an A321 (http://www.traveller.com.au/plane-turnaround-time-why-fast-turnarounds-are-essential-for-airlines-gtkoby) and obviously there is a great variety depending on how full aircraft is etc. Bearing in mind modern technology, see for example Virgin's use of computerised tools, Avtura", (**26 130425-Virgin-FV-2.pdf**) an average of below two hours should be easily achievable, especially with a new airport actually designed for minimum turn around time. So 16 movements a day aircraft per stand or 304 movements per 16 hour day.
This gives 110,960 ATM's a year for cargo only, with the possibility of 282000 – 110960= 170840 passenger/other ATMs.

Likewise I dispute that ATMs will only be for cargo- the Application states (d DCO APP-006, Schedule 1) that there will 19 Code E, 3 Code C and 4 Code C stands a total of 26 Stands.
So given that these other stands are likely to be passenger oriented (ExQ1 OP1.11 answer will clarify this), then a turn-round of 1 hour means that the 16 hour day can take 16 atms per day or 26*16*365= per year.
So this calculation totals 151,840 ATMs per year, with only flights in the day.
Thus RSP's total of 83,220 maximum for day ATMs is significantly below the actual capability.

Even if a Condition preventing additional stands being built is applied to the grant of the DCO, as it should be, then there would also needs to be a cap on ATMs at 17,110 ATMs in the day (total of cargo+ other flights) if the RSP is to guarantee that this ATM limit will not be exceeded, in order to ensure that environmental limits were achieved.

Otherwise the environmental impacts should be assessed at 282,000 if there no conditions on stands or ATMs, 151,840 daytime ATMs per year for a capped number of 26 Stands, and if night flights ATMs are to be uncapped then add the 75,920 ATMs at night as well.

The calculations do not assume that an even faster turn round could be achieved (which is likely bearing in mind the pressures for improvements), but the turn round values are conservative and could be even shorter, but the values used allow for other factors on the ground delaying flights.

This is especially important as the commonly used noise parameter Leq is an *average* noise level, so more aircraft will increase the Leq, even if the maximum noise level does not increase.

RSP say (Para 28, TR020002-002382-2.3 - NSIP Justification) that: “It is no more than a very remote possibility that the airport will operate at its theoretical maximum capability”.
I agree, but I do not consider that even 10,000 cargo ATMs will be achieved, but if there are no caps on ATMs, as RSP wants, then the impacts must be assessed on the maximum possible, because there would be nothing to stop Manston expanding as much as it wants if the future is very different to expectations.

RSP also argues, (Para 31, TR020002-002382-2.3 - NSIP Justification) that: “a cap would not limit aircraft noise as it could be taken up by aircraft that were noisier than those that have been assessed”. So here again the simple answer is to assume true worst case, and assess impacts on the worst aircraft allowed to land given in the Noise Mitigation Plan Appendix. It may be that the noisiest is not the least efficient, so the Climate Change impacts would need to be assessed on the least efficient aircraft.
RSP are perhaps thinking that in Year 20 silent electric aircraft might be in regular use, but in that situation the airport could apply to Thanet Council for permission to increase the number of permitted ATMs, which would be likely to be permitted if all other factors (eg road traffic etc.) were acceptable.

There are several possible combinations for the “worst case” scenario, but the maximum possible ATMs should be used to assess the consequent number of HGVs, Vans, etc.
The three aircraft scenarios are:

1 the maximum ATMs with smaller noisiest, least efficient freight aircraft, which has implications for noise as people's annoyance increases with number of flights, even if the *average* noise level, Leq, doesn't increase very much.
It also means that more HGVs or vans would be needed than for larger aircraft, because a 20 tonne HGV may be able to take load off one aircraft, but only if the load can be taken by one operator, and it is more likely that a diverse load will be collected or delivered by more than two or more vehicles.

2 the maximum ATM's made up of the largest, noisiest and least efficient cargo aircraft, which yield the highest tonnage and most HGVs and Vans.

3 the maximum ATMs with the largest, noisiest and least efficient passenger aircraft and 10,000 largest, noisiest and least efficient cargo ATMs (to meet the NSIP Justification) would yield more car traffic but fewer HGVs and vans.

If any Night flights are permitted then the ATMs need to include the maximum night ATMs.

The impacts of these aircraft would also need the associated impacts on surface transport, assumming maximum loads for each aircraft, noise and climate change impacts etc., to be assessed.

Manston, unlike the main UK airports, is not connected to the national pipeline system, and so fuel would need to be delivered by road. The traffic worst case for fuel deliveries could assume that a road tanker can carry up to 40,000 litres of kerosene. The number of road tankers will depend on the Maximum number of ATMs, the fuel efficiency of these aircraft assuming Maximum Take Off Weight (MTOW), and the routes being flown. The European Environment Agency (EEA) publishes ‘Corinair’ data on aircraft fuel consumption by aircraft type and by distance flown, so that worst case figures can be obtained.

3. Cumulative effects, including the relationship to the proposal by Vattenfall Wind Power Ltd
4. Effects of construction, operation, maintenance and decommissioning methods, including waste and soil management
5. Approach to mitigation and monitoring
6. Opportunities for enhancement

7. **Flood risk**

The Applicant's documentation seems only concerned with flooding on and from the site itself, and does not consider flood risk around Thanet.

However the records show (Thanet Stage 1 SWMP - Appendix C, in KCC Library) that in 1953 the Wantsum channel was flooded and the roads and railway to Thanet were out of action for some three days, and it took six months or so before they were reinstated. The level of the event (still water) was approximately 4.8 metres above Ordnance Datum. Upgrades of sea defences were of course carried out, but these would have been only to the standards at that time, and as the information below shows, the flood risks are now much higher, and can be expected to increase, for example if all the Greenland ice melts the sea level could rise by seven metres (**27 Greenland Ice melt.rtf**).
In addition the Committee on Climate Change report Managing the coast in a changing climate (**28 Managing-the-coast-in-a-changing-climate-October-2018.pdf)** shows the increasing impacts of climate change on our coastal areas and that far too little is being done about it.

The Government provides flood risk factors for various climate scenarios (see: www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances#what-climate-change-allowances-are) and Table 3 shows the sea level allowance for each epoch in millimetres (mm) per year with cumulative sea level rise for each epoch in brackets (use 1990 baseline)

Area of England	**1990 to 2025**	**2026 to 2055**	**2056 to 2085**	**2086 to 2115**	**Cumulative rise 1990 to 2115 / metres (m)**
					1.21 m
East, east midlands, London, south east	4 (140 mm)	8.5 (255 mm)	12 (360 mm)	15 (450 mm)	

I do not have the figure for sea level change between 1953 and 1990 but adding it and the the heights above to the 4.84 metres above Ordnance Datum shows the vulnerability of Thanet.

The section: 'High++ allowances for peak river flood flow and mean sea level' says:
“The high++ allowances will only apply in assessments for developments that are very sensitive to flood risk and with lifetimes beyond the end of the century. For example, infrastructure projects or developments that significantly change existing settlement patterns. This includes urban extensions and new settlements.
The high++ allowances are in Environment Agency guidance ‘Adapting to climate change - advice for flood and coastal erosion risk management authorities’.”

Hence the Isle of Thanet is a highly inadvisable location for a scheme which has to have good road road access both in and out of Thanet.
In contrast, although I do not agree with all of the Stone Hill Park proposals, they do include retaining the runway, which could be used for emergency helicopters etc., in a flood situation, as well as retaining and improving all the ancillary and historical aviation parts, but without the noise and emissions of RSP's proposals..

With regard to impermeable areas, TR020002-002422-5.2-8 - Environmental Statement - Volume 8 - 1 of 3 - Appendices 8.2-8.3, Appendix 9.1 Part 1, RCEF54574-004 – Drainage Strategy document says:
“5.4 The *Proposed Development* will impact the existing breakdown of areas, as there will be a need to construct on existing greenfield area. Post-development, the overall impermeable area within site would be 169.479 ha (55.90%) with a remaining permeable area of 133.707 ha (44.10%).
5.5 The permeable area will consist of existing greenfield and soft landscaping.
7.13 The *existing* site, with an area of 303.186 ha is 32.62% impermeable. ”
This means that existing site has 98.9 ha impermeable area compared to the proposed 169.479 ha, which is an increase of 70.6 ha.
Apart from the increased run-off from this increased impermeable area it also means loss of the carbon absorption of the previous permeable area, so this loss needs to be added to total carbon emissions in the Climate Change section.

8. Impacts on land and water quality, including effects on the aquifer and drainage discharge to designated nature conservation sites

9. **Public health, including mental health, including of night flights and cumulative effects**

The ExA is already aware of CPRE's Tranquillity work **(29 www.cpre.org.uk/what-we-do/countryside/tranquil-places)** which shows the importance for public health of tranquil areas.
This is also supported by the work of the UK National Ecosystem Assessment (http://uknea.unep-wcmc.org/). who estimated that the health benefits of simply living near a green space could amount to as much as £300 per person every year. They have produced a Handbook for decision-makers (**30 HandBook_final.pdf**)which includes section: "6.2 Risk management for a potentially contested environmental policy on the drawing board" which may be helpful for the Examination.
The UK National Ecosystem Assessment Follow-on: Synthesis of Key Findings (**31 UK National Ecosystem Assessment FO Synthesis.pdf**) may also be helpful as it says (Section 2.3, page 52): "For decisions to be both robust and efficient, they should avoid appraising pre-determined options, instead, allowing the characteristics and corresponding values of the real-world to determine the best use of scarce resources. …. The Integrated Model (TIM): a programmed system that links a series of modules together to assess both the drivers and consequences of land use change".

10. Buried munitions, Unexploded Ordinance (UxO) and other military material

L Socio-economic issues – to include:

1. **Effects on the tourism/ holiday trade**

The Tourism Deficit, that is the difference that people from the UK spent abroad and the people from outside the UK spent here, is large because so many people fly abroad, and providing more air transport tends to increase the deficit.

The deficit was £16.9 billion in 2015 – which was 17.6% of UK total balance of payments deficit (ONS), and stood at £21.3 billion in 2016 (**www.ons.gov.uk/peoplepopulationandcommunity/leisureandtourism/articles/traveltrends/2016**).
By coincidence, this is almost equal to the £22bn total contribution that the government calculates the air transport and aerospace sectors combined make to the UK economy (**32 next-steps-towards-an-aviation-strategy.pdf**).

The most recent data from ONS for 2017 (**33 Travel trends 2017.pdf**) says:"Travel Trends:
There were 39.2 million visits by overseas residents to the UK in 2017, 4% more than in 2016.
There were 72.8 million visits overseas by UK residents in 2017, an increase of 3% when compared with 2016.
Overseas residents spent £24.5 billion on visits to the UK in 2017, and UK residents spent £44.8 billion on visits overseas in 2017.
The most frequent reason for visits was for holidays, and Business visits decreased in 2017, both for UK residents visiting abroad and overseas residents visiting the UK."
and it says:
"The reported spend for visits include any spending associated (excluding fares) with the visit, which may occur before, during or after the trip."

The decline in business journeys reduces the economic value of flights, and the £20.3 bn deficit shows that aviation continues to be an economic drain on the UK with the consequent loss of community benefits.

Tourism bodies often promote the economic benefits that tourism brings, and the US Government's Bureau of Tourism claimed that every 33 inbound tourists' spending creates or supports one job in USA. Obviously each country is different, but if we turn that around we can see that having 33.6 million more tourists going abroad rather than coming in is equivalent to exporting the equivalent number of jobs from the UK – in this case it could be one million jobs lost to the UK.

2 Effects on schools

3. Estimates of employment generation

I have particular doubts about the employment forecasts projected by the applicants. Employment projections claimed by previous owners of Manston were all greatly overstated and the current forecasts are not convincing.

A problem about air transport jobs is that from the Government downwards, those in the business quote misleading figures. For example, the Aviation Strategy, *Aviation 2050,* (**34 aviation-2050-print.pdf**) exaggerated the economic benefits to the UK.
The second paragraph of the Aviation Minister's Foreword says "*Today we have the largest aviation network in Europe and the third largest in the world, an industry that contributes at least £22 billion to the UK economy, along with over 230,000 jobs."*

It conflates air transportation with aerospace industries. Aviation employment is defined in the ONS Annual Business Survey ('ABS') as the combination of '*Air transport*' (SIC 51) and '*Service activities incidental to air transportation*' (SIC 52.23).
This same definition applied at the time of the 2003 '*Future of Air Transport*' White Paper which stated that aviation provided 200,000 direct UK jobs.
By 2011 this had – according to the DfT – fallen to 150,000 UK jobs, using the two categories SIC 51 and SIC 52.23, as reported in the ABS.

The latest available ABS data shows the aggregate of employment categories SIC 51 and SIC 52.23 (i.e. total direct aviation jobs) to be 124,000. This is 0.4% of all UK jobs which has fallen from 0.7% in 2003.

124,000 aviation jobs is just over half (54%) of the industry employment figure of "*over 230,000 jobs"* claimed by the 2018 Green Paper.

So it is perhaps not surprising that the industry follows the Government and inflates employment figures.

Another source is AVI0203 Worldwide employment by UK airlines (**35 avi0203.ods**), which shows that employment in 2007 of 85,864 had decreased to 79,464 in 2017, and the decrease was caused by loss of maintenance, tickets and other personnel, with only pilots increasing by a thousand, so that suggests that apart from pilots other staff are declining and likely to continue to do so with increased use of IT.

I would still recommend the former senior Treasury officer, Brendon Sewill's report "Airport jobs: false hopes, cruel hoax', (**36 Airport_jobs_false_hopes_cruel_hoax_March2009_AEF.pdf**) highlights that the"Claims that airports create 'indirect', 'induced' and 'catalytic' jobs are based on dubious statistical concepts." and that "Between 1998 and 2004, despite a 30% rise in air passengers, the total employment attributed to airports and airlines actually went down."

Over many years of looking at reports on the economic and employment benefits of expanding air transport, the ones promoting expansion invariably include large indirect benefits and so promote a promising overall benefit.

In contrast the C E Delft's Report "The Economics of Airport Expansion" (**37 CE Delft - The Economics of Airport Expansion.pdf**) concludes:
"This study provides a transparent framework for (social) cost benefit analysis of airport expansion and new airport development projects. It is extremely important that all types of effects are included in the Cost Benefit Analysis (CBA) *and to avoid any double counting by including indirect effects*. This means that considerable effort is needed to evaluate the type of effects that can be expected to occur and to appropriately include them in the CBA.
Many studies find a positive correlation between aviation and economic growth, but no causal relationship between connectivity and economic growth was found. The positive effect of aviation on economic growth appears to be stronger for remote and poor regions than for central, well-developed ones. It is not clear whether this effect is truly additional, or whether regions with airports grow at the expense of other regions."

So this is saying that there is no causal relationship between connectivity and economic growth, and where a

relationship is found it is stronger for remote and poor regions, but even this effect can be from taking activity from other regions.

Obviously an airport does create some jobs – and a broad brush estimate of jobs relative to ATMs is by dividing UK ATMs by the number of UK air transport jobs: for 2017, there were 3,099,000 ATMs so the 124,000 jobs equates to 25 ATMs per job, or for the 10,000 cargo ATMs proposed there could be 400 jobs.

As for the airports own staff, sadly cargo aircraft do not need as many staff as for passenger craft because cargo aircraft may bring their own unloaders/loaders with them, as occurred previously, and cargo does not need refreshments, toilets and other ancillary services which need staff. Even the trucks nowadays have their own forklifts or cranes on them, minimising the need for staff at the airport.

I recognise Thanet urgently needs to increase its employment offer but I query that the airport operations described by RSP can be the solution it claims to be, particularly in the light of the impacts on residents and tourism.

If the claims were achieved it could adversely affect East Kent by distorting the local employment market, increasing housing and infrastructure needs and increasing costs for existing employers.

2. Scope for local employment
3. Cumulative effects regionally in South East of other proposed airport developments
4. Scope for training and education schemes

5. **Scope for agreements to provide benefits for Communities**

I contend that community benefits are so small compared to the impacts, that they do nothing to reduce the detriment to the community.

An aspect that reduces any supposed benefit from the airport is that Aviation does not pay its fair share of taxes - for example there is no fuel duty nor VAT on aviation fuel, and this means that the Government loses around £10 bn a year, with Air Passenger duty raising around a third of that around £3.3 bn (**39 www.statista.com/statistics/284345/air-passenger-duty-united-kingdom-hmrc-tax-receipts/).**

Aviation also benefits from other tax exemptions such as the Purchase and maintenance of aircraft which are zero-rated for VAT, an advantage not available to surface transport. [and can reclaim any VAT that is paid.]

Brendon Sewill's historic assessment of aviation, "The Hidden Cost of flying AEF 2003" (**38 Hidden Cost Final.pdf**) and its later update "The Hidden Cost of Flying Supplement *April 2003"* (**39 Hidden cost Supple Econ inst2.rtf)** highlights the loss to UK taxation and therefore the loss Community Benefit.

External costs are the costs caused by an activity, such as damage caused to roads by HGVs but they pay some road tax. The external costs of aviation are not incorporated in taxes, and although Air passenger Duty is intended as a proxy from emissions, it is too small compared to all the external costs.

"The Dutch report 'Economic and sustainability impacts of an aviation tax . *CE Delft, June 2018* (**40 Economic and sustainability impacts of an aviation tax.rtf**) they say:
"In all the variants the aviation tax has a modest positive impact on Dutch economic welfare, GDP and CO2 emissions. This holds for both background scenarios.
The impacts of the aviation tax are relatively modest. This is because the tax itself is likewise fairly modest (several percent of the average ticket price) and because of the serious capacity restrictions at Schipol Airport, in particular. Without an aviation tax, these restrictions lead to higher profits for airlines. The tax will be paid for largely by the airlines from these higher profits.
As a result of the capacity restrictions, an aviation tax will not lead to fewer flights but to a shift in traffic segments (passenger/freight, OD/transfer, European/intercontinental destinations). This means the tax will have only a modest impact on CO2 and particulate emissions and noise.
Given the revenues accruing to government, in all the variants and scenarios the tax, in the form investigated,

will increase overall economic welfare. These welfare gains stem mainly from some of the tax revenue coming from foreign airlines and passengers, and because depressed demand due to the tax will lead to alternative, non-aviation consumption expenditures (in the Netherlands) that are taxed."

The ExA cannot create taxes, although it can make recommendations to the Secretary of State which would be welcomed, but the ExA can recommend as a condition of approval that the airport levy appropriate charges on those who use its facilities. So the ExA can decide that the airport should levy charges on aircraft that relate to the following:
Noise charge, based Quota Count level
Night use charge: for all flights between 2300 and 0700 hours
Emissions charge: based on maximum take off weight
Plus the airport operators own charges for use of the airport.

These charges would be legal because they do not involve a charge or tax on the aviation fuel, which is currently illegal (see: www.cedelft.eu/en/publications/2208/a-study-on-aviation-ticket-taxes **(41 CE_Delft_7L14_A_study_on_aviation_ticket_taxes_DEF.pdf)** especially page 3, "an aviation ticket tax can withstand legal challenges if it is not linked to fuel consumption and if it does not differentiate rates within the EU."

Impacts on other developments in Thanet
A major downside of noise from the new airport is that it would blight some areas within Thanet, and possibly in Canterbury and Dover districts, and prevent, for example, housing because of the noise.
See for example, the refusal of housing near a quarry because of existing noise (**42 www.bailii.org/ew/cases/EWHC/Admin/2018/3526.html**).

Hence I consider that alternative uses for the site would create more benefits with much less damage.

I have concerns about the inequality of the proposals which would benefit the better-off but have a disproportionately negative impact on the less mobile and less well-off, in an already very deprived area of Kent, as shown in the 2001 CPRE Kent report (**1 Manston Final.rtf**).

6. The possible existence of war graves

M Traffic and transport – to include:

1. **Strategic transport modelling, including the traffic effects of the Proposed Development on the local and national road network, notably the M2/ A2 corridor and cumulative impacts with other proposed developments**

The Lower Thames Crossing is a government scheme so likely to go ahead – and this will increase traffic in Kent, especially East Kent.
Many people have long been critical of the high risks associated with depending on one port, Dover,for around 60% of the UK's RO-RO freight traffic. Adding Manston would simply increase the risks of disruption to that traffic.
If the Manston proposal is added, the road system would become even less efficient, with greater negative impacts because congestion would greatly increase from both Manston and the Dover and Ramsgate crossings. It is well known that building new roads or increasing capacity on existing roads does not reduce congestion, it simply generates more traffic. See: CPRE's "The end of the road? Challenging the road-building consensus, 2017' (**43 TheZendZofZtheZroad.pdf**) which shows how this has been known for decades – but ignored.

So Manston and the proposed road improvements would increase congestion on these roads to the detriment of Kent.

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MANSTON
THE REAL IMPACT

A REPORT BY

CPRE KENT

THE KENT BRANCH OF THE COUNCIL FOR THE PROTECTION OF RURAL ENGLAND

Contents

CPRE Kent

CPRE is the national charity that helps people to protect their local countryside where there is threat, to enhance it where there is opportunity, and to keep it beautiful, productive and enjoyable for everyone. Since its formation in 1926, CPRE has had a record of remarkable achievement, including key roles in the establishment of National Parks and the creation of Green Belts. It is the only organisation working for the whole countryside and the more sustainable use of land and other resources in town and country.

CPRE Kent is the leading county branch, with a membership of 2,400. It strives to influence planning policy through well-balanced input into the normal planning process. At local level it is well represented by groups of volunteers. It also works to increase awareness of the importance of protecting our Kentish countryside inheritance.

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1EXECUTIVE SUMMARY

The development of Manston Airport on the Isle of Thanet, Kent has been both rapid and controversial. The developer, Wiggins, has recently published a Master Plan outlining its vision for the airport, including a prediction of up to 10 million passengers by 2020. This would make Manston roughly the same size as Stansted is now.

Whether or not Manston succeeds as a commercial airport remains to be seen. What is certain is that the development has raised a number of crucial questions regarding the development of airports generally, and the future of the aviation industry in the UK. These relate to the future growth of the aviation industry, the role of the planning process in controlling development, the role of national and regional government in setting standards for operations, and the implications, both positive and negative, on the economy and the environment.

There has been a lack of information and debate about the benefits of job creation against the potentially serious effects on quality of life. Ramsgate is particularly affected because it lies one mile away, directly in line with the single runway. Approach and take off patterns will affect areas extending beyond Canterbury and Whitstable. The development has also been the subject of criticism from environmental groups and some local residents because of the apparent lack of controls over the development. In particular, no Environmental Impact Assessment has been undertaken, and environmental controls are based on a voluntary agreement between the developer and the local authority, leading many to ask whether the controls have any teeth.

This report has been produced in the absence of this information. It does not seek simply to put the case against developing the airport- indeed it is not unreasonable for light aircraft to use the airport but this is very different from the potentially huge impacts of frequent large passenger and freight aeroplanes. Rather, it sets out to consider: -

a) the future of the aviation industry as a whole, and the implications this might have for the future of Manston Airport
b) the planning background to the development of Manston
c) the economic, social and environmental implications of developing the airport

In this report, we argue that the current situation regarding the development of Manston Airport is unacceptable, both from an economic and environmental point of view. The report concludes with a list of recommendations as to how the situation could be dramatically improved. While these are relevant to development at Manston, they are equally significant to future development at other airfields in the UK.

2.BACKGROUND

2.1The History of Manston Airport

Manston airport is located on the Isle of Thanet, in the Northeast corner of Kent jutting out into the North Sea. Nearby to the north lies Margate, which almost merges with Broadstairs and Ramsgate which is approximately one mile to the east of the runway, which is aligned west-east. The total population of the area is over 100,000, Ramsgate having a population of about 40,000. The Map shows the Aerodrome and runway in relation to Northeast Kent.

Manston airfield began in 1918 and was a major RAF base during the Second World War. Subsequently, it remained the property of the Ministry of Defence but increasingly became used for civilian purposes. At 2750m long, and capable of being extended by a further 350m, it was once the longest runway in the United Kingdom, but has now been overtaken by Heathrow and Gatwick.

The airport is now owned and operated by The Wiggins Group, a small, listed property development company. The Group's involvement with Manston began when it undertook a joint venture with the Sir Robert McAlpine Group to develop Kent International Business Park. In July 1997 the civilian operating rights to the airport were acquired together with a 115 year lease over the 38 acres of land needed to operate the flights. In September 1998, Wiggins bought the entire 700 acre Manston aerodrome from the Ministry of Defence and Thomson-CSF were contracted to operate the airport. Wiggins set out some ambitious plans to develop the airfield, which was renamed London Manston Airport.

2.2Wiggins' s proposal to develop Manston Airport

A Section 106 agreement between Thanet District Council and Wiggins of September 2000 required the production of a Master Plan within six months, to show full details of Wiggins proposed development of Manston. Wiggins has produced "London Manston Airport: a Strategy for Success", (1) *(numbers in brackets refer to the Bibliography at the end of this Report)*, which has been available for public comment, in which their ideas for developing Manston are briefly outlined. An Environmental Impact Assessment is required six months later. The Section 106 Agreement does not say what has to be done about the impacts found from this assessment.

Although only 64 passenger flights with 7,594 passengers flew in 2000, the developer aims to expand the airport to cater for 4 million passengers by 2010. Further, it believes that due to growth in the aviation industry, combined with capacity shortage at other airports in the South East, this figure could increase to at least 6 million passengers, and eventually as many as 10 million by 2020.

Plans for freight are equally ambitious. Cargo traffic, much of it consisting of imports of flowers,fruit and vegetables, has grown from zero to 32,200 tonnes per annum. Following the construction of a new taxiway and apron in autumn 2001, the developer expects this to rise to 70,000 tonnes by 2002 and 200,000 tonnes by 2005. The developer's long term forecast is for up to 400,000 by 2015, due to growth in cargo transport combined with congestion at Heathrow and Gatwick.

The existing terminal can provide for 375,000 passengers per annum. The developer anticipates that a new terminal will be needed at some stage in the future, together with parking facilities. However recent experience when two 400 seater aircraft arrived sequentially showed that the existing facilities could not cope and passengers went direct from the plane to the coaches, without being processed through the terminal. Furthermore, more warehousing will be required at the airport and at Manston Park. The developer also hopes to construct a new hangar and related facilities to the north of the B2050 road.

2.3Wiggins Group

Wiggins is essentially a property development company, although it is quoted on the Stock Exchange in the Construction Sector. Wiggins acquired the civilian operating rights to Manston and received a Certificate of Lawful Use as a civil aerodrome, but the scale of use was not defined. In September 1998 it acquired the remaining 700 acres of the airfield for £4.75 million, and undertook to spend a further £8 million to satisfy the Civil Aviation Authority's requirements.

Wiggins is involved in a network of airports called Planestation, which includes one airport in each of the USA, Czech Republic, Germany and Denmark. The company hopes to attract cargo and passenger traffic by offering low cost alternatives to other major airports.

2.4The local economy of Thanet

Thanet is a traditional seaside resort with attractive countryside inland. It has significant numbers of retired people. It is an area of relatively high unemployment and is a European Regional Development Area. The local economy has historically relied upon tourism, intensive horticulture and the port at Ramsgate. Like many coastal areas, the area has suffered from decline in the tourist industry in recent decades. The closure of the Hover Port at Ramsgate, and the reduction of ferry services from Ramsgate harbour, have been further blows to the local economy.

In recent years the economy of Thanet has been showing signs of improvement. Unemployment has fallen from around 15% to 7%, with Pfizer in nearby Sandwich providing a wide range of jobs and it is claimed that a new shopping centre planned for Haine Road could create 1,600 new jobs. However, Thanet's economy still lags behind the rest of the county, and most of Southeast England. Assertions of job creation from developing Manston have understandably swayed local opinion in favour Wiggins's proposals.

3.PUTTING MANSTON IN CONTEXT

3.1Growth forecasts in the aviation industry

Government predictions for the growth of the aviation industry make sobering reading. In its draft White Paper "The Future of Aviation"(2), the former DETR forecasts indicate a potential rise from 160 million passengers per annum (mppa) in 1998 to 400 mppa in 2020. Even if it is assumed that growth continues thereafter at a lower rate, the number could rise to over 500 mppa by 2030, the end of the period to be covered by the White Paper. As SASIG (3) points out, the growth in demand is forecast to amount to almost 11 million additional passengers a year, requiring, if it is to be met," the equivalent of a new runway every four or five years somewhere in the UK." This would require new airport capacity in the UK equivalent to more than five new airports the size of Heathrow today.

Forecasts of traffic are inevitably uncertain, and these predictions describe the possible growth patterns in the absence of any constraints. However, resistance to growth on this scale is likely to be high and, bearing in mind the resistance to building a new runway at Gatwick and a new terminal at Heathrow, it is difficult to see how a new runway could be built every five years. It is also accepted that aviation is a growing contributor to global climate change.

3.2Tax free aviation?

At present the aviation industry is heavily subsidised. There is for example no tax on aviation fuel, no VAT on meals consumed by passengers on planes, and no VAT on new planes bought by an airline, or on aircraft servicing. (See especially Tax Free Aviation (4)). The view that it is time for aviation to start paying its external environmental costs is rapidly gaining strength. The EU Commission has called for fiscal measures to control the "unsustainable" growth in air traffic, and the European Parliament has voted to proceed with this independently if no international agreement is reached in 2001 (5).

Faced with this re-thinking of the privileged position of aviation it is difficult not to believe that airfares will rise substantially in real terms in the next few years. If this happens the rate of growth of demand will fall, and the demand for new runways will decline. One assumption built into the Government's forecast of 400 mppa was that airfares would decline by 1% per annum in real terms. But if this assumption is replaced by the assumption of fares staying level in real terms the forecast figure of 400 mppa drops to 300 mppa (3).

Most projections for oil supply indicate that the supply is at, or is near its peak. Hence as supplies decline the price will increase, and if it remains untaxed the price change will be more obvious than it is to the UK motorist where changes are obscured by the proportion that goes on tax.

Furthermore if aviation was taxed like other industries, this would equate to around £5.2 billion extra income to the Treasury, or taxation could be reduced by £110 per adult in the UK (6).

We quote these results not simply to show the fragility of traffic forecasts but also to draw attention to the importance of airfares, which are especially vulnerable to changes in taxation policy.

3.3The environmental impacts of aviation

Airports have a profound impact on the environment and quality of life in the local neighbourhood and globally. The environmental effects of airport expansion include: -

perpetual noise intrusion and loss of tranquillity;

deterioration in the local air quality;

risk of pollution to both surface and underground water supplies;

possible loss of historic buildings and destruction of village communities;

damage to landscape and amenity, light pollution, loss of wildlife habitats;

additional traffic on existing roads with increasing congestion and the need to build new roads, leading to loss of countryside, further pollution and loss of tranquillity;

the need for extensive new building to provide for industrial and commercial development and warehousing, leading to even larger loss of countryside;.

moreover, air transport is an industry with one of the fastest growing contributions to global warming. When every other industry is seeking to reduce its emissions, it is difficult to see how unrestrained growth in air travel can be justified. Even BAA supports bringing aviation within the Kyoto agreement, and to set up a Sustainable Aviation Forum (7)

3.3Government guidance and SERAS

Currently aviation is still operating in the "predict and provide" philosophy that ruled road building and house building throughout the 1980s. This is an essentially self-fulfilling prophecy, which involves predicting the rise in demand and expanding capacity to meet that anticipated demand. It does not take into account the negative impacts of expansion, nor the role of alternatives, nor how meeting demand can actually fuel demand.

"The Future of Aviation" (2) sets out options for the future of the industry. Following extensive public consultation, a final draft is expected in spring 2002. In parallel with this study, the government has published a document called SERAS, "South East and East of England Regional Air Services" study(8). This seeks to find suitable sites for building new runways, should the increase in demand justify this. SERAS is still going through public consultation, and it is unlikely that the final document will be produced before the middle of next year. This means that we will not know the government's priorities for the location of future growth in aviation for at least a year.

4.PLANNING AND LOCAL DEMOCRACY

4.1The Planning background

In July 1993 the Department of Transport published a report entitled Runway Capacity to Serve the South East (RUCATSE). A working draft of the Isle of Thanet Local Plan, dated July 1997, reported that RUCATSE accepted that Manston was not suitable as being able to provide a high capacity runway for the South East- in other words it is not suitable as a 'National' airport. However "its role as a regional airport with the potential to increase its market was clearly acknowledged".

In fact, what RUCATSE said was that if viewed as serving the Southeast, development of either Lydd or Manston before 2020 "would attract almost no additional passengers, even with substantial improvements to surface access. This indicates that benefits to users from these options would be very low. We therefore conclude that Lydd and Manston should be remitted to the regional airports subgroup". The base forecasts showed that the airports had significant potential purely as regional airports catering for local demand.

RUCATSE has now been superseded by the SERAS study (8) which mentions no fewer than eight airfields in the Southeast, including Manston, that are currently seeking to develop into commercial airports.

In 1996 the Kent Structure Plan was published. It contained no specific proposals for the development of land at RAF Manston but Thanet District Council was already well advanced in its plans for the area. The July, 1997 draft Local Plan noted that the airport "has a good weather record and is capable of 24 hour operation." Kent International Airport had invested substantially in passenger and freight handling facilities. The passenger terminal could have a capacity for a million passengers annually. Road improvements and "overheating" in other regional airports were expected "to further boost the attraction of Kent International Airport to operators and customers." Both Kent County Council and Thanet District Council had in mind the promotion of the concept of a Euro Air Park with air side developments that would reflect "an operational requirement for direct access by aircraft."

In 1998 the Isle of Thanet Local Plan was published. Surprisingly this contained no specific proposals for development of land at RAF Manston. Yet in August of the same year the Council issued its Supplementary Planning Guidance (SPG) entitled Central Island Initiative, providing interim guidance for the development of this land. It was "intended to ensure that appropriate development (could) proceed without delay". Recognising that it reflected "a vision for the Manston area extending into the long term", the authors accepted that it had not been "subject to the full range of statutory procedures for scrutiny and examination that accompanies Local Plan preparation". There does not appear to have been much public consultation for such a potentially significant development.

However in December 1998, Kent County Council published A Sustainable development Strategy for the SouthEast (9), which had policy ST 9, "To reduce the growth in air travel and influence its distribution in order to minimise the associated environmental effects". To help minimise these environmental pressures, it went on to say that Local Authorities could assist by encouraging energy-efficient modes of transport especially by identifying environmental constraints at South East airports (paragraphs 3.6.36 & 3.6.37)

4.2The role of the planning process

Manston's military past means that its development into a passenger and freight airport is effectively exempt from the planning system. With the granting of Certificate of Lawful use from the Civil Aviation Authority, former military airfields such as Manston are not subject to the normal rigours of producing a planning application. Neither do they have to produce an Environmental Impact Assessment. However Planning Policy Guidance 24 does say that for the "construction *or development* of an aerodrome with a basic runway length of 2,100 metres or more ….an Environmental Assessment will be mandatory" (Annex 3, paragraph 12) Although Manston's runway is 2750m, such an assessment has yet to be carried out. The lack of a planning application also means that other interests, such as those concerned with the environment,

health or noise, have no opportunity to scrutinise development or object to any aspects of it.

In the case of Manston, local democracy has been further jeopardised because the decision to proceed with the airport development was taken by delegated authority. This means that planning officers, rather than majority vote of the elected council, gave permission for the go-ahead.

Subsequent developments appear to be coming through on a one-by-one basis, rather than being part of an overall ten year Development Brief for the whole site, and the adjoining Business Park. This might be seen as a way to circumvent the requirements of paragraph 46 of the DETR Circular 02/99 (Environmental Impact Assessment) and so avoid the need for proper environmental assessment which the full development proposals would require.

4.3The role of regional and national government

This loophole in the planning system is worrying because, unlike many other commercial activities, the effects of airports are felt much further afield than the area around their location. Even if Manston were to become an airport of regional, rather than national significance, its effects will be felt over a much wider area than Thanet, including for example Canterbury and Whitstable. Improvements to transport infrastructure, that many would argue are essential to the airport's success, could affect the whole county of Kent and beyond. Yet repeated calls by CPRE Kent and others have failed to attract any interest from either regional (GOSE) or national government (former DETR). The response has simply been that the decision of the future of Manston Airport is that of Thanet District Council. Repeated approaches to both government offices have confirmed this position.

The contrast with planning procedures adopted to consider other airport developments could hardly be greater. The planning process for the development of the fifth terminal at Heathrow has lasted for several years, and the Inquiry Report has yet to be published.

Even BAA consider that "The current approach to gaining planning consent in the absence of a strategic framework from Government is simply not the way to develop an industry as important to Britain as aviation (7). They go on to say 'The real question is how the aviation industry can be encouraged to develop sustainably, so that the benefits can be reaped by society and for the economy while effectively protecting the environment and making prudent use of natural resources."

4.4Local Consultation: Manston Airport Consultative Committee

Soon after development at Manston started, an airport consultative committee (MACC) was set up. However, this was heavily dominated by pro development interests. Requests by CPRE and other environmental groups to join the committee were turned down.
The one environmental group that has been represented on the committee is the Manston Airport Group (MAG). MAG has repeatedly criticised the lack of transparency over the development, and has challenged the basis on which the decision to develop the airport was taken but was unsuccessful in its case, although the judgement did define the limits of permitted development. MAG is concerned that a full public inquiry should be held into the proposed development of Manston.

A meeting of Canterbury City Council on 2 November, 2000, recorded that "Although Canterbury City Council requested involvement in further discussions with the airport this was declined…"

4.5Availability of information

A key problem of airports is that lack of formal control means that much less information has to be published than would be the case for comparable developments of other types. The discussion in Section 6.1, below, on the Night Time Flying Policy illustrates the lack of control over some of the potentially intrusive activities.

The latest document, The Manston Master Plan (1) typifies the problem where even those sympathetic to the airport say “the much-hyped master plan for London Manston Airport came as something of an anti-climax when it landed this week…all the prophesies are surrounded by so many ifs and coulds and maybes that they hardly paint a crystal clear future. The man on the Thanet omnibus will feel no wiser this week as to whether he should welcome or dread the airport on his doorstep. Whether such expansion will prove feasible or desirable will depend on many issues, not least environmental concerns. (10)

As the Master Plan lacks detail, it is impossible to envisage a meaningful environmental impact assessment on the Plan’s proposals.

It is to be hoped that the developer and Councils will follow the Government’s good practice guidance on “Communication of Information on Major Infrastructure Projects” (11) and issue more concrete and detailed information. This should be published with adequate time allowed for effective consultation and response to take place.

Whatever the reason for the lack of availability of this information, it has certainly made it more difficult for those interested to achieve an understanding of the impacts and to effectively influence the potential developments.

4.6Conclusions

As a result of this situation, development at Manston Airport is proceeding: -

without a regional or national strategy for airport development in the UK, let alone one for the SE
without an Environmental Impact Assessment
without a planning application for the overall development
without any meaningful public consultation, such as a public inquiry.

5. THE IMPACT OF MANSTON ON EMPLOYMENT

5.1 Job creation and destruction

The developments at Manston are likely to affect the local economy in several ways. The public debate, conducted mainly in the local press, has centred on the effect on employment. Much of it has been characterised by hopeful assertions rather than careful analysis. The assertions have ranged from "the airport will create lots of jobs" to more quantified statements based on predicted numbers of flights and comparison with other airports and the application of a “rule of thumb” relating employment to the number of passengers and the tonnage of freight. These assertions have certainly swayed much local opinion in favour of the airport with little regard to the potential cost to the environment.

We argue below that much of this quantification has to be rejected. We also argue that apart from the creation of jobs at the airport, and in more distant locations as airport-induced spin-offs and income multiplier effects, there will be the destruction of jobs as noise and other environmental impacts impinge on existing economic activity. This is discussed below. Other economic effects are discussed in the next chapter.

5.2 Estimating employment

Direct employment

In The Future of Aviation (2), the former DETR distinguishes between three kinds of employment: on-site employment, direct employment, and indirect employment. It defines only one of these. *Direct Employment* is defined as “that which is wholly dependent on airport-related activities, whether on-site or off-site. It includes employees of airline and handling agents, airport operators, concessions (retail and restaurants) freight/cargo business, control agencies (Customs & Excise, Immigration) and other on-site ancillary organisation (e.g. hotels)”.

Under the heading of “Direct employment opportunities” the Manston Master Plan (1) says that “research has shown there to be a clear correlation between passenger throughput and on-site job creation, with typically 1000 new jobs being created for every million passengers per annum (mppa), and a similar number of new jobs for every 100,000 tonnes of cargo. Although it is reasonable to expect that economies of scale and operating efficiencies from new and improved technologies may reduce these ratios, experience of other UK and European airports suggests that the ratio tends to hold good depending on the level of on-site services, e.g. aircraft maintenance.”

On this basis the Master Plan suggests that by 2010 “on-site employment” could provide some 6,000 job opportunities. The next paragraph in the Master Plan, headed “Indirect Employment Opportunities” enumerates many employment opportunities that come within the former DETR’s definition of Direct Employment and have already been accounted for by the rule of thumb. Local off-site expenditures by airport firms and employees will generate economic activity, and it is this that is properly called Indirect Employment which is discussed in the next Section.

The ‘research’ and “clear correlation” mentioned above are highly questionable. Apart from the airport itself, there are many on-site employers as indicated by the former DETR’s definition of Direct Employment. Some of these are concessionaires, tenants, and contractors who employ staff in many places and move their employees from place to place, often on a daily basis. Some of the jobs are part-time. Some are seasonal. There may well be a “clear correlation” in the sense that the larger of two airports is likely to have the larger on-site employment.
However Wiggins suggestion that every additional one million passengers will “typically create 1,000 new jobs, is based on a rule of thumb that has “respectability” through frequent repetition and unquestioning acceptance rather than through any thorough research.

It should be noted that BAA reports that Stansted currently “handles around 12 million passengers per

annum (mppa)", including over 100,000 tonnes of freight, and "employs 9,500 people" (12). BAA goes on to say that this employment figure " would increase to around 16,000 were the airport to increase to about 25 mppa". Thus an increase of 13 mppa would result in the on-site employment of 6,500 people rather than the 13,000 predicted by the rule of thumb, which can no longer be taken seriously.

Thus there are good reasons for suggesting that the employment figures in the Master Plan are flawed. If we rely on BAA expertise it seems likely that, even if Manston has the volume of passenger and freight business suggested by the operator, the figure of 6,000 job opportunities should be replaced by 3,000 or 4,000, with the caution that many of these will be seasonal or part-time jobs. Clearly jobs will be created, although they will be a lot fewer than predicted. People living outside Thanet will take some. Others will move from elsewhere in the country to take up jobs, but they will often bring partners with them, and most of these partners will swell the numbers of job seekers. Even if 4,000 new jobs are created, if 1,000 go to new comers with job-seeking partners, the net gain in jobs to local residents is reduced to 2,000. It is this kind of figure, rather than 6,000 that should be used for the basis of policy decisions.

Indirect employment

Spending by airport firms and employees will generate further demand and employment. There is no universally applicable rule for estimating the volume of this indirect employment effect, but most researchers use a multiplier of about 1.5 or 1.6, so that 1,000 new jobs generate a further 500 or 600. However the location of these jobs depends on where the spending takes place. Even the permanent full-time employees will in many case live or spend outside Thanet. Seasonal workers are likely to do much of their spending in their home towns, or where they study, if they are students. Construction workers traditionally come from all over the country and remit part of their income to their families. In short there are several reasons for believing that the beneficial indirect impact on Thanet will be substantially less than these multipliers imply.

The Oxford Economic Forecasting (OEF) Report, which was largely sponsored by the aviation industry, says that "in the long run overall level of employment is not determined so much as the level of demand from particular industries as by the supply of workers looking for a job. (13)" and " employment does not provide a reliable indication of the contribution aviation makes to the economy."

Thus OEF have been unable to find a direct link between airports and job creation, and have found that employment levels depend on the supply of available workers. The implication of this is that local employment depends on skills being available, which may not be the case in Thanet.

There are also potential negative employment effects, as discussed in the next section.

5.3Potential negative effects on employment

One consequence of the airport could work in the opposite direction, reducing the level of employment. As the Map shows, the airport is very close to Ramsgate, and the descent path to the airport goes right over the town centre. The distance from the beginning of the runway to the Library in the town centre is only 2.3 miles.

The economy of Thanet still heavily depends on spending by visitors, ranging from day trippers (who are markedly fewer now that there is no passenger ferry) to holiday makers and longer term visitors such as students at language schools. A great deal of public money is being spent to attract them.

Many of the ordinary houses, especially the larger ones, which are under the flight path, take in visitors throughout the summer, and let rooms to language students throughout the year. There are also some 52 hotels in Ramsgate, large and small, with over 250 in Thanet as a whole. (14) If air traffic grows to the predicted levels, with several planes passing low overhead every hour of the day and night, then these houses and hotels would lose a lot of business. Homeowners find it more difficult to move away, so have to

be more tolerant but visitors adjust less easily to aircraft noise than do residents. Losing sleep at night, and finding that aircraft noise mars even their daytime enjoyment of the beaches, they will tend to look for quieter seaside resorts- and advise their friends to do likewise.

Students at language schools will also be affected similarly, but will be particularly disturbed during lessons because learning a language is an aural experience. They too, and their friends, will look elsewhere for quieter places in the south where guest houses and language schools flourish.

One small English Language School, (Contact English), specialising in providing lessons for business people has already moved out of Thanet because of existing and expected noise from planes passing overhead. It was located close to the town centre.

Once Ramsgate has a reputation for being noisy, exaggeration could quickly kill the visitor industry. The loss of income by guesthouses and hotels will reverberate through the local economy as both they and their remaining visitors spend less on food and services, potentially leading to loss of shops and restaurants. All this will lead to less local employment.

Although this will be at its worst in Ramsgate, some adverse effects on employment would be experienced further afield. Language students and other visitors will return home and reports that Ramsgate is noisy by day and by night is likely to be heard as a condemnation of the whole of Thanet and north east Kent. Bad reputations are easily, and often unfairly, acquired.

It is easy to reject such arguments as unsubstantiated by statistics, but statistics relate to the past. A function of planning is to think about the future, and about how people react, or will react, to pressures of different kinds. There is already evidence from the experiences at Heathrow and other airports, but none of these is so close to a town whose present economy heavily depends on visitors. Waiting for more evidence means waiting until it is too late. The only way of preventing the problems described is to use every possible means to manage the number of flights in the day, eliminate night flights, and ensure that all aeroplanes are as quiet as possible. As indicated in 5.2 above, the job creation potential is very much less than has been claimed, so the overall effects of such a noise mitigation policy on employment would be minimal.

The main cargoes coming in to Manston are currently fruit, vegetables and flowers, which does not seem helpful to Kent’s title as the Garden of England.

Noise levels and the wider economic and social costs are discussed in the next chapter.

6.THE ECONOMIC AND SOCIAL COSTS OF MANSTON

6.1 Noise levels and frequency of flights

The argument that noise affects the level of employment cannot be fully appreciated without some idea of the level of the noise and the frequency of planes that is implied by the operator's traffic forecasts.

Measuring noise levels

The units used for measuring noise are decibels (dB), and the A-weighted value (dBA) is usually used. The normal human ear can hear between 1 and 130 dBA. The decibel reading is commonly manipulated in various ways that take account of such factors as the timing and frequency of noise events, resulting in units such as the Noise and Number Index, Leq (equivalent continuous noise), Effective Perceived Noise and Lmax, the maximum loudness of single events. The decibel is defined in such way that a difference of 3.01 dB between two measurements implies a doubling of the noise. Thus 60 dB is twice as loud as 57 dB, and 63 dB is twice as loud again.

Some idea of the meaning of these levels is provided by the Government's Planning Policy Guidance Note 24, which Thanet District Council has implemented as Policies SG 4, 5 and 6. These stipulate that in considering applications for new residential developments they will not normally be allowed within the 63 to 72 dBA contour, but if an exception is made sound insulation of 30 dBA is required, with no development allowed at all where level is above 72 dBA. However for levels between 57 & 63 dBA approval is subject to conditions about levels of sound insulation that will bring readings down by 20 dBA. Noise should not be a determining factor where predicted aircraft noise levels are below 57 dBA.

Applications for non-residential development such as schools (of which there are seven on the flight path) and hospitals, which are considered to be sensitive to noise, will not normally be permitted where the level exceeds 60 dBA.

The European Union has found that "None of the computation methods (for calculating noise levels) presently used in the member states satisfies the requirements for modern harmonised methods." They go on to recommend a day-evening-night level, Lden, which adds 5 dBA to the evening value and 10 dBA to the night time value, thus emphasising the greater impact of noise in the evening and at night. (16). This also specifies the assessment method to use around airports.

The Section 106 Agreement

Unfortunately any existing development is not protected, and airports and airlines have legally privileged positions. The only protection for existing development is embodied in the voluntary Section 106 Agreement between Thanet District Council and Wiggins ("the Owner"). The first draft was published in March 2000, and was later modified. Here we note its concern with noise, especially night time noise.

Regular (i.e. other than occasional) Night Flying is not to take place until six months after a Night time Flying Noise Policy has been prepared and lodged with the Council. "Night" is defined as between the hours of 23:00 and 07:00 . This Policy has to ensure that no aircraft with a noise classification in excess of Quota Count 4 (which equates to a maximum of 98.9 EPNdB) takes off or lands during night time. It has to be formulated after consultation with the Council, but the Owner is free to reject the view of the Council upon producing a reasoned justification and taking into account, with "due weight", such further views as the Council may express.

Whether or not this Policy has been prepared the Owner will pay a fine for the first occasion when an aircraft with a noise classification in excess of Quota Count 4 takes off or lands at night. Within the next twelve months the second violation **by the same aircraft** attracts a fine of £2,000; the third occasion £4,000, and so on, doubling each time. At the end of twelve months the slate is wiped clean.

More generally noise is limited by the hypothetical 1996 63 dBA Leq (the 16 hour, 07:00 to 23:00) contour, which depends on predictions of both noise levels and numbers of flights. This encloses an area much smaller than the more usual 57 dBA Leq. Every year the owner is required to produce a similar noise contour based on the year's operations. If this exceeds the 1996 contours by not more than 5% the owner is fined £10,000. If the expansion is between 5% & 10%, the fine is £40,000, if more than 10 % then it rises to £100,000.

The Owner is also required to produce a detailed scheme for noise insulation of buildings within the 63 dBA Leq contour (which ignores night flights!). There is also to be noise monitoring carried out by the owner, and after March 31st, 2002, aircraft that exceed agreed (or imposed) maximum noise levels will incur fines of £500 plus a further £500 "for every 1 decibel above the agreed base level".

Although this appears effective, careful reading of the document reveals plenty of opportunity for circumvention.

BAA quote the effect of Stansted's expansion- the area within the 57 dBA Leq has tripled in size between 1980 and 1999, while the number of people within that noise contour has quadrupled. This is despite BAA's efforts to reduce noise such as: fines for airlines that exceed noise limits £1000 per breach (the money received going to local bodies for noise mitigation); discounts on landing charges for quieter aircraft; monitoring flight path to ensure "continuous descent approaches'; providing fixed electrical power to aircraft so that engines are not used; noise insulation scheme; restricting operations such as testing and reverse thrust(17).

This shows that noise is a very serious and difficult problem. The clear weakness in the Section 106 Agreement is that it uses the 63 dBA level rather than the 57 dBA, which is four times quieter. There are of course far more people within the 57 dBA contour and if they were living near London City Airport they would automatically qualify for noise insulation (18). The same should apply here.

According to FoE (19) "real life measurements show that 'official (noise) figures' are regularly exceeded". They recommend standardised noise measurements around airports, and that there should be no increase in the population exposed to more than 55 dBA Leq, with appropriate measures to reduce bedroom noise below the WHO draft guidelines level of 30 dBA Leq

We too would query whether 57 dBA is the right level, as it was derived as long ago as 1985 by the CAA, and consider a lower level would reflect proper concern for local people and their environment.

Frequency of Flights

Wiggins' vision is that the airport will handle 10 million passengers per annum by 2020. The average number of passengers per plane is not a very meaningful statistic but may be used cautiously to provide a rough idea of how many flights may be associated with number of passengers.

The early results of the initiatives taken by Wiggins to develop the airport are now being seen. Sometimes the debate about the volume of flights has been based on statistics of Aircraft Movements, but these are very misleading. Between 1987 and 1998 the numbers of movements fluctuated between 14,000 and 21,000 (although the CAA considers the historical data to be unreliable) (20). However these movements were almost entirely of light aircraft.

For instance only 984 of the 27,071 movements in the year 2000 were Air Transport Movements- there were 17,723 movements by Aero Club planes, and 6,122 by private planes. In other words less than 5% of the total were of the larger (and noisier) Air Transport Planes. It is these that cause concern.

The numbers of Air Transport Movements in recent years, with a forecast for 2010, are:

YEAR	1999	2000	2010
Passenger Planes	46	64	33,300
Cargo Planes	700	920	8,600
TOTALS	**746**	**984**	**41,900**

Published statistics do not allow us to predict levels for 2001, but Wiggins are confident of expansion and place a lot of faith in the development of the charter passenger operation, involving MD11 flights from the USA, connecting passengers by coach to cruise liners operating from Dover.

Of the 984 transport flights in 2000, 64 were passenger flights with 7,594 passengers and 920 cargo flights carried 32.2 thousand tonnes. These imply loads of 120 passengers and 35 tonnes per passenger or cargo plane.

The Master Plan expects passengers to rise to 4 million passengers per annum (mppa) by 2010 and between 6 to 10 mppa in 2020. Freight is expected to rise to 200,000 tonnes by 2005, and between 350 and 400 thousand tonnes by 2015, which suggests around 300,000 tonnes by 2010. So in 2010 the 4 mppa would be carried in 33,300 planes, and the freight would need 8,600- an annual total of 41,900 planes.

This produces a daily average of around 115 planes, or nearly five planes per hour, day and night. Figures for the last few years hint at a December peak for freight and a busy period of June to September for passengers- in 2000 there was only one passenger flight outside this period. Hence it is not unreasonable to suggest that in the summer months there could be 250 to 300 planes a day by 2005- that is a plane every five minutes. Even if it is not reached by 2005 then it will be reached a little later on the Master Plan forecasts.

It should be noted that freight planes are usually noisier than passenger planes “this is due to the fact that many freighter aircraft are of Chapter 2 category, generally older than those used for passenger services from UK airports (21).

For those who are sceptical about the impact of noise on visitors may reconsider their scepticism with these figures in mind.

The Costs of Noise and Pollution

The effect of aircraft noise on house prices has been widely studied and is reviewed briefly in Valuing the External Costs of Aviation (22*)*. Typically the investigations are conducted at established airports and it is not easy to apply them to rapidly developing new airports. The results are summarised through a “noise sensitivity depreciation index” (NSDI) which provides a measure of the percentage change in house prices associated with a unit change in noise levels Leq (16 hours daytime). Typically it shows that a rise of 1 dBA is likely to reduce house prices by between 0.5 % and 1.0 %. It is difficult to apply this type of marginal result to large increases in noise, but as an illustration if current noise levels are a noticeable but unobjectionable 45 dBA, then a rise to 63 dBA would produce a fall in house prices of between 9% and 18%.

It can be expected that the Council Tax band would be affected similarly, producing a saving to the householder, but a loss of revenue to the Council.

Noise also imposes non-monetary costs, such as disturbance and health impairment. To a large extent these are reflected in house prices, but we mention them again briefly in the concluding paragraph of this chapter.

Vibration and Pollution

Where there is noise there is vibration. When a large plane descends over Ramsgate, buildings are shaken

and window frames rattle. The decorative and functional iron and stone work of listed buildings vibrate and begin to disintegrate. Pollutants are discharged into the atmosphere and affect buildings as well as people. "Non-attributable' decay sets in. Little work has been published on such matters, but there is abundant anecdotal evidence. Public and private money is being spent on the maintenance and preservation of buildings and amenities, whose fabric and well being are being damaged by aeroplanes whose operators pay negligible taxes and have minimal legal responsibility for the damage they do.

It is well known that aircraft emissions damage the atmosphere, contributing to climate change. In this Report we are primarily concerned with what happens locally. The DETR paper (22) says: "Poor air quality in the vicinity of airports can give rise to a range of effects on human health and the environment. Local air pollutants emitted from aircraft during landing and take-off include VOCs, CO2, NOx, SO2 and indirectly ozone. Health impacts include both mortality and morbidity effects while environmental impacts range from effects on crops, forest damage, damage to buildings and materials to reduced visibility and effects on ecosystems."

Impacts often forgotten, even by the Government's Future of Aviation (2) consultation is the demand for services such as water, the potential for water pollution from run off, which can contain toxic antifreeze, and the impact on landscape. There are particular risks at Manston because it lies above a Groundwater Source Protection Zone, pollution of which would endanger drinking water supplies. In addition surface water runs off to Pegwell Bay, so pollution could cause problems there. Expanding Manston would produce negative effects on all these, not least because larger, and more, fuel tanks would be needed. The recently proposed paint spraying facility also exemplifies these risks.

Likewise the Thanet Coast Site of Special Scientific Interest (SSSI) together with the Sandwich Bay SSSI, Stodmarsh National Nature Reserve, Monkton and Minster Sites of Nature Conservation Interest would all be affected.

PPG 11Regional Planning, (23) says "it will be important to identify and take account of environmental …needs, opportunities and capacities". This 'bubble concept' of environmental capacity has been applied to Zurich Klotten & Stockholm Arlanda airports (15).

An intense study of transportation options for the future (24) has concluded that "business as usual is an unviable strategy to attain a sustainable future for the transport sector...For the desired situation (of sustainability) much more intensified government action and subsequent changes in individual behaviour ..are necessary".

A growing awareness of these issues is now beginning to affect national and international policies. Kent County Council's own researches show that the public wants better environmental protection (25). One of the main questions posed in the The Future of Aviation (2) is "How should the Government ensure that aviation meets the external costs for which it is responsible?" One estimate given by the former DETR (22) is that if these social costs were passed onto passengers by increased fares, short haul fares would rise by about 3.5% and long haul by 6%. This could cause a fall in demand of about 3% and 5% respectively. If this happens in the next few years and the increase in air travel is less than is now predicted, this could affect the financial viability of Manston.

6.2Impacts on quality of life

All the above show that consideration of the quality of life for local people is very important.
The air emissions are compounded by road emissions arising from passenger, staff and freight transport to and from the airport. In addition the traffic will also congest the area and the airport could cause changes in the pattern of urban development. These impacts do not appear to have been considered adequately.

The current government has placed much emphasis on an urban renaissance. This vision has been set out in the context of widespread concerns over the environmental impact of new housing. Research in the mid

1990s showed that derelict land in urban areas outside London in South East England grew by 45% between the later 1980s and mid 1990s, contributing to economic decline and social problems, as well as being a symptom of them. In Planning Policy Guidance 3 on Housing (26) the government announced a radical new vision for housing development, with higher targets for developing brown field (previously developed) land, together with higher standards for architectural design.

Recent changes in the Budget, which include greatly reducing the tax incentives in favour of developing green field rather than brown field land, suggest that the government's commitment to an urban renaissance is genuine.

Integral to the government's vision is improving the quality of life in urban areas, and making them attractive places to live and work. Tranquillity, and a clean environment, are important elements to this. This is especially significant for Thanet, whose economy relies heavily on visitors enjoying the coast or making use of English language schools, for example, to say nothing of the effect it can have on the quality of life of residents.

Rapid growth of an airport in close proximity to a major urban area is likely to jeopardise efforts to raise the quality of life in the urban area concerned. Ramsgate is a case in point, its centre being so close to the runway at Manston and planes having no option but to land and take-off over it at low altitude. This, together with the current lack of any meaningful environmental controls at the airport, does not bode well for the future of the town.

If Manston were to grow to the size that Stansted is now, then current noise contours for Stansted suggest that not only would most of Ramsgate fall within the 57 dBA zone, but the quiet villages of Minster and St Nicholas at Wade would also suffer these noise levels.

A study carried out for the Seattle Tacoma Airport (Canada) (27) for the airport developers, concluded: "Whether benefits are measured in terms of time saving to the travelling public, direct and indirect jobs (and income) created, or tax revenues generated, the vast majority of benefits go to persons who do not reside in the five impacted cities that are the focus of this study. **On the other hand, there is evidence that the adverse socio-economic impacts (costs) of the Airport are concentrated in the five (local) Cities of Burien, Des Moines, Federal Way, Normandy Park and Tukwila. From the perspective of these cities, the Airport's benefits are far less than its costs."**

7.PROSPECTS OF GROWTH AT MANSTON

The scale and success of future activity at Manston depends on the interaction of two factors: the plans and management success of the airport operators and the more general development of air transport in the UK and especially in the South East.

7.1Transport around Manston Airport

Manston is located 75 miles from central London – approximately the same distance as Peterborough or Swindon. Road connections to London are good, with continuous dual carriageway all the way to the M25. Local roads and road connections to the ports of Dover, and the towns of Canterbury and Ashford are poor however, with only single carriageway roads. The local transport capability is rather limited- if 800 passengers arrive then not only are coaches used but taxis from as far away as Canterbury are also used.

At present there is no rail connection to the airport. The nearest station is Ramsgate, and there are usually three trains an hour to London. The journey time from London to Ramsgate or Margate is some two hours (compared with 35 minutes to Gatwick or 40 minutes to Stansted). While Thanet is generally quite well served by local buses the airport currently has a very poor service.

Hence Manston is not well placed in relation to large centres of population that might use its services.

PPG 11 (23) says: ”the Regional Transport Strategy should look at the siting of rail/road terminals and port and airport links to rail and waterways. In doing so it should help promote the carriage of freight by rail and water”- in other words promote modes other than roads or air.

The Aviation Environment Federation observes that "high-speed rail is competitive with air travel in terms of travel time and cost for journeys under 500 kilometres". Within Europe almost 50% of all traffic during 1998 involved flights of less than 500 kilometres and 70 % of flights in Europe are less than 1000 km (29). With rail speeds increasing to over 300 kilometres per hour means that rail will prove an increasingly formidable rival to air transport on many short haul routes. High-speed rail uses less energy and so produce fewer emissions. The development of high-speed rail links might thus go a long way towards satisfying environmental concerns regarding aircraft noise and emission levels. The Intergovernmental Panel on Climate Control (IPCC) have now finalised their report on "Aviation and the Global Atmosphere". One of the headline points reportedly put forward for consideration by Governments to ease noise and emission levels, refers to "the substitution of rail travel (for air travel) where appropriate". Other important consequences of any transfer of short haul traffic from air to rail are that it should allow for the opening of airport slots for other traffic (particularly long haul) and reduce air traffic congestion levels. Of course, the feasibility of this proposition depends on a variety of factors such as infrastructure costs, geographical considerations etc (28.)

The Master Plan mentions freight from Brussels. However with the excellent rail links via the tunnel this typifies what should be transferred to trains.

It is interesting to note that the recently completed TGV link to Marseilles now allows the trip from Calais to Marseilles to be completed in four hours. So London to Marseilles can be done in six and a half hours for £95, without the delays of transport to airports and longer check-in times.

High speed rail links to Ramsgate, and eventually perhaps to Manston, are proposed (Netrail) but it would be better for rail to be used instead of air as this represents a potentially huge market shift, providing significant environmental benefits.

For the people of Thanet, better rail links would be more appreciated by people than better air links.

There area good port facilities at Ramsgate, 3 miles away by an improved direct road, which have been

developed over the years. The port of Dover, approximately 20 miles distant, has frequent passenger and freight services to the continent. Ashford, approximately 45 minutes journey by road, provides further links to the continent through the CTRL.

While Kent County Council may support the development of Manston Airport in principle, there is no mention in the Strategic Plan of how the county's infrastructure would cope with a further six million people travelling to and from Thanet, let alone 10 million. This is surprising to say the least, as major improvements in transport infrastructure have a long lead time in planning terms. Likewise if employment were to increase as suggested this would have impacts on other infrastructure such as houses, schools and health services which would need planning and funding.

As the Certificate of Lawful Use does not define the scale of use, at some stage a Planning Authority could decide that use exceeds a level that might be considered reasonable compared to previous use, and could require a retrospective Planning Application. This lack of definition and associated uncertainty makes infrastructure planning impossible, as well as deterring possible investors.

7.2Can Manston succeed financially?

Many local airports need financial support from their local authority, as shown, for example, by Lydd Airport.

The success of Manston seems to rest on assumption that growth of aviation will cause congestion elsewhere, and that the government will not prioritise other locations in the South East for increasing capacity to meet that demand.

The future demand for passenger flights at Manston seems likely to be dominated by trips originating overseas. Manston is geographically remote even within the Southeast. Until it can offer a frequent service to a wide range of destinations this remoteness will detract from whatever other merits it may have as a point of departure for residents of the south-east, or, even more so, for people living further north or west. If pressure on other airports grows rapidly then tour operators will be forced to think hard before they turn down the opportunity to fly from Manston: but holiday makers will still prefer to fly from airports that are more easily reached and tour operators will have to heed this. We cannot predict the numbers of British passengers using Manston but the next few years could well be less busy than has been asserted, especially if tax policy changes.

It is a different story for trips originating abroad. Until fliers from overseas recognise that, despite its name, London Manston Airport is hardly on the capital's doorstep, there may be greater interest from abroad than from the south-east. Two other factors are likely to bring traffic. One is the alliance with shipping lines operating from nearby ports, and the growth of cruise traffic fed by foreigners landing at Manston and proceeding to the port by coach. The other is the link with other Planestation airports. "Estimates" of traffic from these sources can at present be little more than guesses. These, too, would be subject to the impact of taxation.

The former DETR also forecast that air freight traffic at British airports was to rise from just under 2,500,000 tonnes in 2000 to double this level in 2010. According to The Future of Aviation (2) around 70% of all freight and parcels traffic is currently carried in the baggage holds of passenger aircraft. The UK freight forwarding industry is concentrated around Heathrow "and goods are frequently consolidated there even when they are subsequently shipped from another airport."

The former DETR says that there are indications that the proportion of freight carried in dedicated all-cargo flights may increase, due partly to growth in the small package/express sector. This sector is expected to grow very rapidly, even at 20% per annum. "It seeks airports that can offer 24-hour operations " especially in the south east. "There are likely to be increasing tensions between what the freight industry regards as essential to its viability and environmental objectives, in particular noise objectives."

In the year 2000, 32,200 tonnes of freight were carried, so in terms of freight, Manston was already comparable with Luton (36,100 tonnes) and other second-tier airports. With its emphasis on air-side operations, Manston may seem attractive to freight companies, but they are likely to resist efforts to restrict flying at night.

Finally if SERAS (8) follows RUCATSE and favours other airports and thus gives them preferential treatment, Manston's viability would be threatened. It may be significant that Manston is not an 'Officially safeguarded Civil Aerodrome', unlike possible competitors such as Southend or Biggin Hill.

8.CONCLUSIONS AND RECOMMENDATIONS

8.1Seeking a balance

Development of Manston Airport has been proceeding apace. CPRE Kent is not averse to the principle of some development at the airport. Indeed, it believes that appropriate and carefully planned development as a local airport could play a role in assisting the economy of Thanet and some of the surrounding regions. But there are important balances to be struck. As well as bringing opportunities for some jobs, airports bring noise, pollution and congestion, all of which lower the quality of life in the area affected. Without adequate planning and control then there is the risk that the airport would carry on developing inexorably. Any plans for the future of Manston must be carefully defined and take all factors into account so that overall there is a positive benefit to the area.

8.2Concerns over the development of Manston Airport

With the above in mind, CPRE Kent has raised a number of very serious concerns over the way development is proceeding. These include: -

The fact that development is proceeding in the absence of any clear strategy for the future of the aviation industry both in the UK and the South East. Such a strategy could include provisions for constraining the growth in demand, the selection of specific sites where future airport development should be concentrated, and stricter environmental controls over aircraft and airports;

Failure of the regional and national government to play a part in the development: no fewer than eight airports are seeking to develop into passenger airports in the South East at the present time. The potential impact this could have on the environment would be felt over a much wider area than just the local authority concerned, especially if the associated infrastructure development is included. In any case, it is doubtful whether all of these could succeed in the face of competition with each other and growth of the existing major airports at Heathrow, Gatwick and Stansted. Coupled with the absence of any national guidelines about environmental controls at airports, the reluctance of regional and national government to play a part in the future of development of airports such as Manston can only be described as breathtaking;

Lack of local democracy: development is proceeding with little meaningful consultation with local people and environmental groups. While it may be true that many local people are in favour of development, assuming that they understand the limited information provided by the developer and local authority, developing the airport will affect a much wider area than simply the residents of the Isle of Thanet.

Circumvention of the planning process: the Local Authority has successfully argued that a former military airfield with a Certificate of Lawful Authority requires no Planning Application. Nevertheless, the absence of a planning application means that the ability of other interests to comment or object to the development are effectively nil, and the ability of effective control measures to be placed on the airport's development and operation are drastically reduced.

Failure to address the local economic effects: no meaningful analysis of the full economic implications of developing the airport has been undertaken, or is planned. The figures for job creation are tenuous at best, being based on a ratio dependent on anticipated rapid growth in air travel. Quite apart from the fact that researchers dispute the validity of this ratio, exponential growth in the aviation sector is by no means assured. Furthermore, there has been no mention of how many of the anticipated new jobs will be taken up by current Thanet residents, how many will be seasonal or part-time, or what skills will be required. Neither has any assessment of the negative effects on the local economy been undertaken.

Environmental implications: environmental implications have been virtually ignored. Aviation is the

fastest growing contributor to global climate change, and a major polluter. But maintaining a high quality environment is not simply of importance for leisure or aesthetic value. It is of crucial economic significance, especially in Thanet, whose economy relies heavily on visitors enjoying the coast or making use of English language schools, for example. Developing the Airport could have drastic implications for quality of life in Ramsgate at least, and is likely to jeopardise plans for an urban renaissance in the town.

8.3Recommendations

With these points in mind, CPRE Kent makes the following recommendations: -

A moratorium should be placed on all future airport development, at Manston and elsewhere, until the government's strategy for the future of the aviation industry is set out. Such as strategy is unlikely to be finalised before the middle of 2002.

As a part of this strategy, national and regional government must play a much greater role both in controlling the development of new airports, and in setting standards for their operation. These standards must have the protection of the environment at their core;

The Master Plan for developing Manston Airport should not be accepted in its current form. The Master Plan should include a proper analysis of the economic implications for Thanet, including an assessment of job creation;

The revised Master Plan should include much more specific details of the proposed development of the area together with full details of the measures proposed to reduce the environmental impacts, especially those of noise, traffic and pollution;

A Public Inquiry into all the proposed developments over the next ten years should be undertaken to ensure that the views and concerns of local people are properly taken into account;

The Section 106 agreement should be reviewed using professional advisors independent of airport operators to ensure that meaningful environmental controls are applied to the levels of noise, traffic, pollution levels and night flying.

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Published: 15 June 2006 www.nature.com/articles/nature04877

The importance of the diurnal and annual cycle of air traffic for contrail radiative forcing

- Nicola Stuber, Piers Forster, Gaby Rädel & Keith Shine

Nature **volume 441**, pages 864–867 (15 June 2006)

Abstract

Air traffic condensation trails, or contrails, are believed to have a net atmospheric warming effect[1], although one that is currently small compared to that induced by other sources of human emissions. However, the comparably large growth rate of air traffic requires an improved understanding of the resulting impact of aircraft radiative forcing on climate[2]. Contrails have an effect on the Earth's energy balance similar to that of high thin ice clouds[3]. Their trapping of outgoing longwave radiation emitted by the Earth and atmosphere (positive radiative forcing) is partly compensated by their reflection of incoming solar radiation (negative radiative forcing). On average, the longwave effect dominates and the net contrail radiative forcing is believed to be positive[1,2,4]. Over daily and annual timescales, varying levels of air traffic, meteorological conditions, and solar insolation influence the net forcing effect of contrails. Here we determine the factors most important for contrail climate forcing using a sophisticated radiative transfer model[5,6] for a site in southeast England, located in the entrance to the North Atlantic flight corridor. We find that night-time flights during winter (December to February) are responsible for most of the contrail radiative forcing. Night flights account for only 25 per cent of daily air traffic, but contribute 60 to 80 per cent of the contrail forcing. Further, winter flights account for only 22 per cent of annual air traffic, but contribute half of the annual mean forcing. These results suggest that flight rescheduling could help to minimize the climate impact of aviation.

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The effects of rising temperatures on the UK

Even if global temperature increases are limited to 2°C or less, there are projected to be impacts for the UK. Temperatures over land would be expected to increase by more than the 2°C global average. In a 2°C world in the UK there could be a 30% decrease in river flows during 'dry' periods, a 5-20% increase in river flows during 'wet' periods, and between 700 and 1,000 more heat-related deaths per year in South-East England compared to today.

In a 4°C world in the UK impacts become

↑ Contents

If we take action to radically reduce greenhouse gas emissions now, there's a good chance that we can limit average global temperature rises to 2°C above pre-industrial levels. This doesn't mean that there will be no more changes in the climate – warming is already happening – but we could limit, adapt to and manage these changes.

If we take action now:

- we will avoid burdening future generations with greater impacts and costs of climate change
- economies will be able to cope better by mitigating environmental risks and improving energy efficiency
- there will be wider benefits to health, energy security and biodiversity

The economic benefit of taking action now

It makes good economic sense to take action now to drastically cut greenhouse gas emissions. If we delay acting on emissions, it will only mean more radical intervention in the future at greater cost, and larger impacts on society.

Taking action now can also help to achieve long-term, sustainable economic growth from a low-carbon economy.

↑ Contents

Sir Howard Davies
Former Chair, Airports Commission

Sir John Armitt
Former Commissioner, Airports Commission
Chair, National Infrastructure Commission

07 June 2018

Dear Member of Parliament,

This week the Government has laid before Parliament its final National Policy Statement (NPS) for Airports, which sets out its support for a third runway at Heathrow, built to the north west of the existing runways. There is little doubt that Parliament will request a vote on the NPS. The Airports Commission reviewed the case and options for expanding aviation capacity in great detail over nearly three years, and reached a firm conclusion in its final report that the strongest case was for a third runway at Heathrow. This letter sets out why we made that recommendation and why we continue to believe that it would be the most effective option to address the UK's aviation capacity challenge.

Our nation's aviation sector is a source of significant strength. The UK benefits from the third largest international aviation network in the world after the US and China; London has the largest origin and destination market of any city in the world; and Heathrow until 2013 served more international passengers than any other airport and even now is surpassed only by Dubai. The strong links to established and emerging markets across the world that this provides and the position it allows the UK to occupy at the heart of the global transport network are extremely valuable: supporting trade in goods and services, connecting friends and families, and enabling British companies, universities and other institutions to develop and maintain strong global networks. But the continuation of this success cannot be taken for granted, and the rise of Dubai is only one indicator of the risks that the UK faces.

A hugely diverse airports sector serves the UK's cities and regions, with different gateways focusing on different geographic areas or markets – from the low-cost leisure travel that dominates at airports such as Southend or Liverpool, to the overnight freight services at East Midlands and Stansted, to the business-focused network offered from City. But Heathrow plays a unique role, as the only airport in the country with the sheer aggregation of demand, not only from UK travellers but also from those transiting at the airport, to support a dense and far-reaching network of long-haul services.

Heathrow has been operating at the limits of its capacity for well over a decade, however, and with no space for additional services, the airlines at Heathrow are gradually consolidating services from the airport on the most profitable routes. This not only reduces the UK's overall access to new and emerging markets, but also reduces access from regional airports into Heathrow's network of long-haul routes. Gatwick has over recent years provided a valuable release valve, but the growth of its long-haul network has been halting and it remains predominantly a short-haul airport. Other airports, such as Birmingham, Manchester and Glasgow, are also gradually adding long-haul routes, which are of huge value to their regional economies, but nonetheless tend to duplicate destinations already served from Heathrow, rather than adding new links to the UK's overall network.

As other hub airports in Europe and beyond continue to expand, the impression created is one of the UK being increasingly inward-facing and having limited ambition to expand its reach, even as it navigates the uncertainty caused by its impending departure from the European Union. Now should be the time to build on our strengths, not to diminish them, but preventing expansion at Heathrow would achieve only the latter.

The case for expansion at Heathrow

The Airports Commission began by looking at the aviation requirements of the UK as whole. Our analysis indicated clearly, however, that outside of the south east the challenge is not one of airport or runway capacity. We therefore made a number of recommendations in our interim report relating to access to and the efficiency of the UK's regional airports, but focused our work on expanding capacity on the congested airports around London.

Those airports are not, however, interchangeable. Stansted, Luton and Southend serve predominantly short-haul, leisure markets, and all have further capacity for growth. Stansted has recently attracted a small number of long-haul services to foreign hubs, but none of these airports would provide the weight of demand which would support a more extensive long-haul network, including to new and emerging markets. City Airport benefits from excellent access to central London but has a short runway and significant environmental constraints on its operations, which would prevent it expanding beyond its core business-focused market.

Gatwick would provide a more promising location for expansion. It is a large and growing airport, well-connected by rail to London and operating close to capacity, with a diverse route network and an increasing number of long-haul services. But Gatwick still operates as a point-to-point airport, with little connecting traffic and – despite Heathrow's long history of constrained capacity – few long-haul routes which are not either to leisure destinations such as the Caribbean or Florida or to global cities and major hubs for which alternative UK connections also exist.

In contrast, Heathrow is one of the world's most important aviation hubs, with a long-haul route network which surpasses by far that available from any other UK airport. This provides the vast majority of UK flights serving the new and emerging markets to which access will be so important in future, as well as unparalleled connectivity to North America and good links to the Far East. Demand for access to Heathrow from airlines is extremely strong, as demonstrated by the high prices paid for any slots which become available at the airport, such as the $75m recently paid to Scandinavian airline, SAS, for just two slot pairs. As a result, any new capacity made available through expansion would be rapidly taken up, enabling new routes and services to be established.

Heathrow is also the most important freight airport in the UK, with a well-established logistics sector in the surrounding area which would benefit significantly from the new connectivity and capacity provided through expansion. Additional capacity would also help to promote competition at the airport, by enabling new providers – including low cost carriers – to gain access to slots, and it would provide the opportunity to tackle Heathrow's declining domestic aviation links, and open new routes and services to the UK's regions.

In respect of surface access, an expanded Heathrow would be well-connected not only to central London but also to the wider UK, including to Bristol, Wales and the south west via the GWML, and to Birmingham, Manchester, Leeds and beyond via a direct link to HS2 at Old Oak Common. Enhanced rail links to the west and south of the airport would provide the opportunity to further improve its connectivity. In contrast, Gatwick is located on the wrong side of London for much of the country, and is highly dependent on a single rail link into the capital, providing little resilience or onwards connectivity to the rest of the UK.

A balanced package

Our conclusion was that the case for expansion was strongest by far at Heathrow, but we did not consider that expansion could come at any cost. We therefore proposed a balanced package combining new capacity with strong environmental conditions and an enhanced approach to compensation and mitigation for local communities.

In respect of aviation noise, our analysis indicated that the number of people affected by an expanded airport would be fewer than at Heathrow today, as improvements in aircraft and engine technology balanced out the growth in flights, and we proposed that this should be safeguarded through a binding 'noise envelope'. In addition, we recommended a ban on arrivals and departures in the late evening and very early morning following expansion, as these were highlighted as a particular issue by local communities throughout our work, and the establishment of an independent aviation noise authority to provide oversight. We also looked closely at the potential effects of expansion on air quality around the airport and made clear that expansion should be contingent upon acceptable performance in this area.

Alongside these important environmental safeguards, we stressed the importance of addressing the wider concerns of the communities around the airport. This included generous compensation – in excess of market value – for those who might lose their homes; proper funding for community mitigation measures, overseen by a new Community Engagement Board and with local schools a priority; public transport improvements to mitigate the effects of expansion on local roads and rail services, as well as to reduce environmental impacts; and access to jobs and training for local people.

If these conditions are met, our view is that an expanded airport can be both bigger and better, for the UK as a whole and for local communities. We have been pleased to see that the National Policy Statement reflects the balanced package put forward in the Airports Commission report.

The arguments against expansion

The Airports Commission concluded that, with the right environmental and community safeguards in place, the case for expansion at Heathrow is strong. Nonetheless, in the course of the House's deliberations, you will hear many arguments against it. We deal with a number of the most important here, and set out why we consider them to be wrong.

The first is that expansion at Heathrow is unnecessary because new aircraft, such as the Boeing 787 Dreamliner, and operating models, such as low-cost long-haul, mean that hub airports will become an increasingly outdated concept. This argument is not, however, borne out in practice. The majority of 787s and Airbus A350s are being bought not by challengers to the established airlines, but by classic hub carriers, such as United, British Airways, Singapore Airlines, Qatar Airways and Cathay Pacific, and hence are being used to strengthen the major hubs' networks further rather than to bypass them. Furthermore, while new low-cost long-haul services are providing valuable price competition to established carriers, they tend to duplicate routes served by other carriers, rather than expanding the overall network. If the business model for low-cost long-haul proves viable over the long term, it may be a useful addition to the UK's overall connectivity, but it is not a replacement for new hub capacity.

The second argument is that expanding Heathrow would be detrimental to the UK's regional airports. We do not believe this to be the case. The UK benefits from strong regional connectivity, with many successful airports outside London. Manchester has an increasingly broad long-haul network, including flights to China, South East Asia, and the US, and other airports such as Birmingham, Glasgow and Newcastle are also attracting long-haul routes, particularly into the Middle Eastern hubs. But these airports are successful because they serve large catchments with growing economies, and because they are entrepreneurial and effective in attracting new carriers, not because Heathrow is constrained. In fact, in many cases, they have actively supported new capacity at Heathrow, as better links into that airport and its routes to new markets across the globe would be valued by their passengers, alongside any direct long haul connections they provide themselves.

The third is that it would be better to build a brand new airport to the east of London than to expand at Heathrow. Any such new airport would come, however, at enormous cost and bring enormous risk, threatening the thriving economy that has grown up around Heathrow and in the Thames Valley over many decades. Heathrow is one of the UK's most important economic assets, and there would be no guarantee that its success could be replicated in a new location, with none of the supporting infrastructure in place. Developing a freight and logistics cluster comparable to that which already exists around Heathrow, for example, would take many years, assuming it happened at all. There is no real appetite amongst the communities of north Kent or from airlines for a new airport, and it would also be on the wrong side of London for much of the UK, requiring hugely expensive new transport links to enable access. Furthermore, any environmental gain in terms of fewer people affected by aviation noise would be counter-balanced by impacts on an unprecedented scale on one of the UK's most important wildlife habitats. The right approach, therefore, is not to close Heathrow, but to ensure its expansion is accompanied by strong environmental and community safeguards, as the Airports Commission proposed.

Fourth, it may be argued that expansion at Heathrow is incompatible with the UK's commitments to reduce carbon emissions, but on this issue we took our lead from the Climate Change Committee (CCC), one of whose members, Baroness Brown of Cambridge, was also a member of the Airports Commission. Our analysis of the case and options for expansion took full account of the CCC's assessment of the level of growth in aviation which could be accommodated within the UK's statutory carbon targets, but still identified strong

pressure for new capacity at Heathrow, reflecting its position as the UK's only hub airport. As our report noted, the more that the 'carbon budget' for aviation shrinks, the more important it becomes for that budget to be used as efficiently as possible, making it all the more vital for capacity to be available where it is most needed.

Finally, an argument has often been made that a third runway would be the thin end of the wedge and that as soon as the initial case for expansion was accepted, a fourth or even a fifth runway would become inevitable. This is simply not the case. In congested airspace such as that above London, there is a limit to the number of flights that can be managed at any single location and a third runway would already take Heathrow close to this limit, drastically reducing the capacity and, hence, economic benefits from any fourth runway. The most viable site for a new runway would also already have been taken, driving up the costs and environmental impacts of any further expansion. Therefore, the Airport Commission argued strongly that in supporting a third runway, the Government should firmly rule out a fourth. We are pleased that the NPS follows this advice.

Conclusion

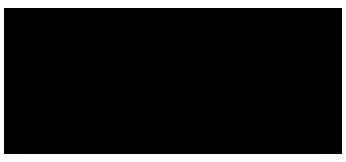
The Government's proposal for expansion at Heathrow will inevitably attract passionate and informed contributions from across the House on all sides of the debate. Issues of this kind, in which the needs of the nation as a whole must be balanced against the potential consequences for local communities, will always deserve scrutiny of the most detailed and critical kind. With appropriate measures in place to reduce and mitigate the local impacts, however, the national interest should prevail.

Our firm view is that the proposal for expansion at Heathrow meets that test. It is the most effective option to promote and increase the UK's connectivity to the international markets, particularly in new and emerging economies, on which our prosperity increasingly depends. It would send a powerful message that the UK is determined to remain open and outward-facing, regardless of the wider changes in the world around it. And it can be done in a way which not only protects the interests of local communities, but actually delivers benefits for them by removing night flights, imposing a strict noise envelope and providing significantly increased funding for mitigation measures.

We hope that this letter gives a clear explanation of how we arrived at that view and proves helpful as you consider how you will vote on this crucial issue.

Yours sincerely,

Sir Howard Davies



Sir John Armitt

https://www.theccc.org.uk/wp-content/uploads/2019/02/Aviation-Letter-from-Lord-Deben-to-Chris-Grayling.pdf

The Rt Hon Chris Grayling MP
Secretary of State for Transport
Great Minster House
33 Horseferry Road
London SW1P 4DR

12 February 2019

Aviation 2050 – The future of UK aviation

Dear Secretary of State,

I am writing to you to provide my Committee's views on your recently published consultation, Aviation 2050 – The future of UK aviation.

The UK's currently legislated 2050 target is to reduce economy-wide greenhouse gas emissions by at least 80% from 1990 levels. Since the Climate Change Act became law, the UK has ratified the Paris Agreement, implying even stronger action. You will be aware that my Committee has been asked by Ministers to offer advice on the implications of the Paris Agreement for the UK's statutory framework, including when 'net-zero' emissions can be achieved. A stronger UK target would require more effort from all sectors, including aviation. We intend to provide an updated view on the appropriate long-term ambition for aviation emissions within our advice on the UK's long-term targets. We will publish our report in spring. Following that, we will write to you directly to set out the implications for the Aviation Strategy.

Our present planning assumption, which underpins the fifth carbon budget and the current 2050 target, is that UK aviation emissions in 2050 should be around their 2005 level (i.e. 37.5 MtCO2e). Your acceptance of this planning assumption in the consultation is a very welcome step. The final white paper should further clarify that this will be met on the basis of actual emissions, rather than by relying on international offset credits.

Aviation emissions in the UK have more than doubled since 1990, while emissions for the economy as a whole have fallen by around 40%. Achieving aviation emissions at or below 2005 levels in 2050 will require contributions from all parts of the aviation sector, including from new technologies and aircraft designs, improved airspace management, airlines' operations, and use of sustainable fuels. It will also require steps to limit growth in demand. In the absence of a true zero-carbon plane, demand cannot continue to grow unfettered over the long-term.

Our analysis, and that of industry, suggests the largest contribution to reducing aviation emissions will come from new technologies and aircraft designs. Research we have commissioned jointly with your department, which was published alongside the consultation, indicates that many of these developments are likely to be cost-effective, given their potential fuel savings. The final white paper should build on the approach set out in the Aerospace Sector Deal and Future Flight Challenge, and set out a clear strategy to ensure these technology solutions are developed and brought to market in a timely fashion.

In our recent Biomass review1 we advised that government should not plan for high levels of biofuel use in aviation in the long-term, given uncertainty about sustainable biomass supply and cost-effectiveness. Production of aviation biofuel will likely need to be in conjunction with carbon capture and storage (CCS) to be competitive with competing uses for biomass (e.g. in industry, electricity generation, or hydrogen production). A pragmatic planning assumption would be to aim for up to 10% biofuel use in aviation in 2050. In the period to 2030 government policy should aim to develop a market for aviation biofuels produced in genuinely CCS-ready facilities, and should facilitate this by achieving more of the 2030 Renewable Transport Fuel Obligation through aviation fuels.

We welcome your proposal to ask the National Infrastructure Commission (NIC) to scrutinise the needs case for

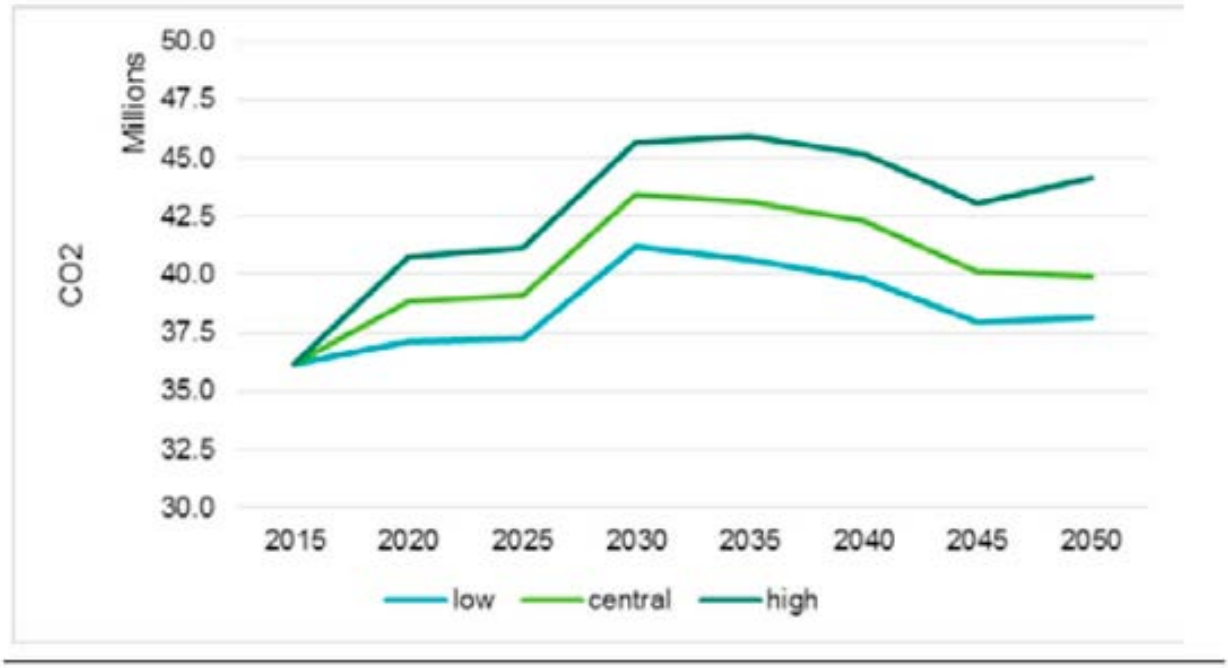
further airport expansion. The consultation paper also states other conditions must be met prior to further expansion. The work of the NIC is already consistent with the requirements of the Climate Change Act and the government's climate change commitments; the final white paper should clarify that this will continue to be the case.

We also welcome the commitment to negotiate in the ICAO a long-term goal for global international aviation emissions that is consistent with the Paris Agreement. The ICAO's current carbon policy, CORSIA, has an end date of 2035 and will need to be based on robust rules that deliver genuine emission reductions. A new long-term objective would provide a strong and early signal to incentivise the investment in new, cleaner, technologies that will be required for the sector to play its role in meeting long-term targets. This is particularly important in aviation given the long lifetimes of assets. A similar approach has been agreed for global shipping emissions in the IMO, which has set a target for greenhouse gas emissions to be at least 50% below 2008 levels by 2050.

I note that your consultation commits to regular updates of the Aviation Strategy. These regular reviews will provide an opportunity to respond to a future decision by Parliament to meet the UK's commitments under the Paris Agreement. I hope the final white paper will set more specific time-points for these reviews, and align them to developments in government climate strategy overall.
Yours,
Lord Deben Chairman,
Committee on Climate Change

1 CCC (2018) Biomass in a low-carbon economy

He says "The final white paper should further clarify that this will be met on the basis of actual emissions, rather than by relying on international offset credits". If I understand correctly, this means that the Government should not be able to trade their way out of this, which is what the industry intended to do and what was suggested by the Airports Commission in producing their "carbon traded" analysis. Am I correct?
All the best
Neil
Yes I think it's the clearest statement ever from CCC that their longstanding advice for emissions to be limited to 37.5 Mt should be treated as a real target, and not a net one that can be met through the international offset scheme CORSIA. And yes we agree that that does seem to be the basis on which the Government claims disingenuously to be "accepting" the CCC's advice on the planning assumption, since the latest DfT forecasts for actual emissions look like this...



It sounds very much meanwhile as though a tougher planning assumption is on the way in the context of CCC's advice on Paris.

HOUSES OF PARLIAMENT
PARLIAMENTARY OFFICE OF SCIENCE & TECHNOLOGY

POSTNOTE

Number 590 November 2018

EU Environmental Principles

Environmental principles inform legal and political frameworks that aim to minimise the ill-effects of human activity on the environment. In the EU (Withdrawal Act) 2018, the UK has committed to incorporating a set of environmental principles into UK legislation. This POSTnote summarises these principles and considers potential opportunities and challenges surrounding their implementation post-Brexit.

Overview

- EU environmental law and policy is based on four core environmental principles contained in Article 191(2) of the Treaty on the Functioning of the European Union (TFEU): the precautionary, prevention, rectification at source, and polluter pays principles.
- The principles do not create direct legal rights but have been used by the courts to interpret and apply EU environmental law.
- The precautionary principle is applied to manage risk in cases of scientific uncertainty.
- The polluter pays principle is used to allocate responsibility for pollution costs, although attributing these costs can be complex.
- There is ongoing discussion around future implementation and adoption of the principles in the UK post-Brexit.

Background

Environmental principles inform legal frameworks that relate to environmental protection or sustainable development.[1] One group of environmental principles has been used in EU policy-making since the 1970s, and a wider set of principles were agreed globally at the 1992 Rio Declaration on Environment and Development.[2,3] They are also nested in a whole array of broader principles (including proportionality and subsidiarity outlined in the Treaty on the Functioning of the European Union (TFEU) articles 3, 5, 9–12). These broader principles apply to the environmental policy realm but are not specifically 'environmental'.

Article 191(2) of TFEU sets out four main environmental principles that must guide policy within the scope of EU law (CBP8132).[4] These have been influential in formulating a range of EU directives and regulatory actions, and will constitute the main focus of this note. The principles listed are:

- **The precautionary principle**, which allows regulatory action to be taken even if a risk has not been established with full certainty.[5]
- **The prevention principle**, which aims to prevent environmental damage; such as to protected species or to natural habitats, water and soil; rather than to react to it.[6]
- **The rectification at source principle**, which seeks to prevent pollution at its source rather than remedy its effects.[7,6]
- **The polluter pays principle**, which requires polluters to bear the financial cost of their actions.[8]

European Union (Withdrawal) Act 2018

In Section 16(2) of the EU (Withdrawal) Act 2018 along with the four core principles, a further five principles are outlined.[9] Two of these are contained in Article 11 of TFEU:

- **The integration principle**, which requires environmental protection measures to be integrated into all EU policies and activities, with a particular view to promote sustainable development.[9,6,10]
- **Sustainable development**, which is not defined in TFEU, but widely defined internationally as development that aims to "meet the needs of the present while not compromising the ability of future generations to meet their own needs" (POSTnote 408).[11,12]

The other three principles are qualitatively different from the four core principles, outlining not general ideas of policymaking, but legal rights for individuals around which there is extensive jurisprudence. These ensure that the UK continues to live up to its Aarhus commitments without the implementation structure of EU law:

- **Public access to environmental information**, which ensures access to written, visual, aural or database

information held by public authorities concerning the environment.[13]

- **Public participation in environmental decision-making**, which relates to the right of public participation in public decision-making relating to environmental matters.
- **Access to justice in relation to environmental matters**, which enables individuals and their associations to exercise rights granted to them under the Aarhus Convention.[14]

The Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community requires the UK to respect the four main principles outlined in TFEU in environmental legislation.[15] This POSTnote provides an overview of these, examining their merits, challenges and options for implementation in the UK post-Brexit.

The Precautionary Principle

The precautionary principle was defined in the 1992 Rio declaration as "where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environment degradation."[3] The principle has been applied globally to guide policy on issues such as food safety, air quality, acid rain, climate change, North Sea pollution and most frequently to the restriction of chemicals.[16-20] EU applications of the principle include:

- The Environmental Quality Standards Directive 2013/39 EU,[21] which sets environmental quality standards for priority substances on a precautionary basis. For example, persistent organic pollutants, potentially toxic metals (POSTnote 579) such as cadmium,[22] and polycyclic aromatic hydrocarbons [23] are subject to standards set to achieve 'good' water quality as required by the Water Framework Directive (WFD).[24]
- Article 6(3) of the Habitats Directive (92/43/EEC), which requires impact assessments to be carried out where a plan or project is likely to have a significant effect on the integrity of a designated habitat site.[25] The UK Government was ruled against by the European Court of Justice for not complying with the Directive when allowing water abstraction in wetland sites designated under the Directive.[25]
- The deliberate release of Genetically Modified Organisms (GMO Directive) 2001/18,[26] including requirements for field testing in the research and development stage assessing how their use might affect ecosystems,[27] which is discussed below.

The precautionary principle has been advocated as a benchmark for regulating risk across different legal cultures.[28] However, translating scientific uncertainty into legal obligations requires a careful and nuanced understanding of both.[29,30] Decision-makers need to have rational and accountable decision-making processes for addressing risks. This involves applying tests of administrative review to understand the legality of decision-making. A report for the European Commission (EC) Directorate General Environment highlighted that actions guided by the precautionary principle should be based on costs, benefits and best available scientific evidence. However, it also stated that an advantage of the approach is the overt recognition of uncertainties and the negotiated nature of decision-making.[5] The precautionary principle is not intended to eliminate risk, but ensure that the benefits of a decision outweigh the risks. For example, chlorine is often used for its antimicrobial properties to protect human health, but poses a health risk in high concentrations.[31] A precautionary approach is applied when there is a risk of harm, and scientific knowledge is not sufficient to reduce this risk. If harm can be demonstrated, a preventative approach is taken (below and Box 1).[19]

The Precautionary Principle and GM Crops

In 1998, the EC started a negotiation on new genetically modified (GM) legislation,[32] halting the application process for approving GM Crops. In 2003, the US started a World Trade Organization (WTO) case against the EU on the grounds that the approval of biotech products was so slow that it amounted to a moratorium. In this case, the EU invoked the precautionary principle.[33] It contended in particular that the 2003 Cartagena Protocol on Biosafety – to which the EU, but not the United States, is a party – permits states to adopt a precautionary approach toward products created with new technologies.[34] Although the dispute settlement panel found in favour of the US, it did not state any opinions on the legality of future EU measures or whether the precautionary principles is part of international law binding on all states.[34]

Box 1: Neonicotinoids and Bees

Neonicotinoids are a class of pesticides which have been associated with declines in bee populations.[35] In December 2013, acting on advice provided by the European Food Safety Authority, the EC triggered an open-ended restriction on three neonicotinoids linked to impacts on bees used for seed treatments, soil applications and foliar sprays (SN06656).[36-38] These measures were based on concerns that they could have harmful, but not lethal, effects on bees (SN06656). However, at the Standing Committee for Food Chain and Animal Health, and a submission to the Appeal Committee, there was no qualified majority support for the European Commission's proposal to restrict neonicotinoids. As a result, the Commission took the decision on the restrictions itself.

In 2018, an EU-wide restriction on outdoor neonicotinoid use will come into place.[38,39] While the precautionary principle is not always about imposing bans, the prevention principle may require such restrictions. The restrictions on their use followed scientific debate, which concluded that there was a greater risk of harm to bees than had been previously understood.[40,41] A report by the European Food Safety Authority highlighted that bees are exposed to harmful levels of neonicotinoids in treated pollen, nectar and drifting dust.[42] Some studies have outlined the need for landscape-scale experiments in real conditions to be undertaken to determine the effects of neonicotinoids on bees at different spatial and temporal scales.[40, 43, 44] Further studies have highlighted the need for further measures to avoid the use of other, more environmentally harmful chemicals in response to the ban (SN06656). As one of the authors of an academic paper, the Defra Chief Scientific Advisor has suggested monitoring of the use and effects of pesticides are required at the landscape level to inform risk-based pesticide use, which makes the trade-offs between the environmental effects and food production more explicit.[45]

The links between the low levels of GM crops grown in EU countries and the precautionary principle are not straightforward.[46] In the UK, public opinion opposing GM increased alongside challenges surrounding food safety (arising from issues such as the transmission of bovine spongiform encephalitis to humans[47,48] and *Listeria* food poisoning from cheese).[49] This was coupled with additional public concerns that biotechnology companies were exercising too much control over consumers' choices.[50] Perceptions of risk can be shaped by the nature of the risk and the context within which is occurs (POSTnote 564).[51] This will influence regulatory approaches as well as legislative principles. In 2015, the House of Commons Science and Technology Committee recommended that when decisions are made about emerging issues on science and technology, a broad range of social and ethical factors should be taken into consideration. They also recommended a permanent 'Citizens Council' to provide advice on potential social and ethical impacts to the Advisory Committee of Releases to the Environment (whose remit includes Genetically Modified Organisms).[52]

The Prevention Principle

The prevention principle is intended to prevent, rather than react to, environmental harm from unregulated action.[6] Unlike the precautionary principle, it is applied in law and policy when the risk of harm to the environment is clear.[53] However, the precautionary and prevention principles have been closely linked to one another;[53] for example, in the case of ozone-depleting chemicals.[19] In the 1970s, there was general consensus (but no proof) that chlorofluorocarbons could destroy the ozone layer. Thus, their use was cautioned (precautionary).[19] By the late 1980s, scientific evidence emerged that depletion of the stratospheric ozone layer increased ultraviolet radiation exposure, exacerbating the risk of skin cancers and cataracts in humans and animals. This prompted a preventive approach, requiring the phase-out of chlorofluorocarbons in middle income countries within 10 years and low income countries within 15 years.[54] Until the agreement of the Montreal Protocol in 1987, there was uncertainty as to which principle was being relied upon, but there was scientific consensus on the risk of harm by the time the Protocol came into force in 1989.[19]

The prevention principle was one of 11 objectives and principles listed in the First EU Environmental Action Programme in 1973.[55] In 1983, in the EC's Third Environmental Action Plan it was applied to waste policy (e.g. incineration, landfill and wastewater).[6,56] The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal (1989) was the most comprehensive global treaty on waste, forming a basis for several applications of the prevention principle in EU law.[57]

Rectification at Source Principle

The rectification at source principle guides the regulation of pollution from its source rather than in the wider environment.[58] It is not applied as an absolute rule, but as an overriding guide to policy; for instance, encouraging the development of environmentally friendly technologies and products to reduce pollution at the earliest stage.[59] It has also been used to inform legal interpretation of some EU environmental regulation.[1,60]

The Polluter Pays Principle

The polluter pays principle (PPP) asserts that those who produce pollution should bear the environmental and social costs of their actions. The PPP was first recognised by an international body in 1972, the Organisation for Economic Co-operation and Development.[61] Prior to this, air and water resources were used as 'sinks' for pollution, with damage to human health and property being paid for by society rather than by the polluter.[61] Disproportionate social and private costs of pollution were being 'externalised' from the polluter to wider society. The PPP aims to overcome these defaults by requiring polluters to internalise the cost of potential pollution in the production process (built-in costs), rather than allowing society to incur costs in the aftermath.[62]

Designating Costs

The PPP has been utilised as an economic tool for managing different types of environmental pollution through embodiment in legislation including: The Waste Framework Directive,[63] Landfill Directive[64] and Water Framework Directive.[65] However, it is often difficult to define the polluter, the source of pollution,[66] and the associated liability cost over time. Where pollution derives from multiple sources, it should be designated to all polluters.

For example, the Nitrates Directive forms an integral part of the WFD and is one of the key instruments in the protection of waters from agricultural sources. Nitrate pollution may derive from multiple sources in river catchments (Box 2). Stakeholders have also been penalised under the WFD for the failure to meet water quality standards.[67] However, even when the pollution can be attributed to only one stakeholder, the PPP does not necessarily deter pollution by those who can afford to pay the cost.[68]

The Environmental Principles after Brexit

The European (Withdrawal) Act 2018 outlined a set of 9 environmental principles to provide a basis for future environmental policy action in England.[9] Provisions in section 16 of the Act 2018 require the Government to publish the draft Environmental Principles and Governance

Box 2: Designation of Nitrate Vulnerable Zones

In 1997, two farmers challenged the UK Environment Secretary of State on the implementation of the Nitrates Directive across three UK rivers (Waveney, Blackwater and Chelmer).[69,70] They argued that in designated zones where nitrate concentrations had exceeded the Directive limit of 50 mg/l, non-agricultural sources of nitrates were a major contributory factor (such sources include transport, power station and domestic heating[71]). On reference to the European Courts of Justice, the High Court of Justice held that ". . .as regards the polluter pays principle, the directive does not mean that farmers must take on burdens for the elimination of pollution to which they have not contributed . . . viewed in this light, the polluter pays principle reflects the principle of proportionality".[72]

Bill within six months (CBP8132), which must include a set of environmental principles and a policy statement relating to their application and interpretation. Several groups, including the British Academy have outlined the importance of environmental governance arrangements for the application of the principles in their response to Defra's consultation on the principles, which preceded the Act.[73]

Challenges and Opportunities

There are a number of challenges and closely related environmental governance issues associated with the implementation of the environmental principles in the UK. These include:

- The proposed independent watchdog that might advise or potentially sanction the UK Government in relation to applying the principles.[74,75] The European Commission enforces EU legal obligations, which may be interpreted or reviewed in accordance with the TFEU environmental principles. The General Council of the Bar of England and Wales (the Bar Council) recently highlighted that the watchdog (as proposed in Defra consultation) would lack equivalent powers to those currently available to the EC and other related legal bodies.[76]
- Developing consistent UK-wide principles and a mechanism for enforcement on all public bodies in relation to applying the principles (see below).[77] At present the principles will only apply to England, and there are concerns that the UK Government could make decisions that do not fit with principles set by the National Assembly of Wales and those in the Scottish Continuity Bill.[78,79] This could result in different emerging sets of standards running in parallel in Wales or Scotland and being applied to devolved matters.
- Some organisations have raised concerns that trade with non-EU countries may be prioritised over strengthened environmental standards,[80] which could hamper adherence to the principles in future.

Application of the Principles by Public Bodies

The House of Commons Environmental Audit Committee Report on the Government's 25-Year Plan for the Environment highlighted the importance of the principles being applied to all public bodies, including non-departmental public bodies and local authorities, and not just central Government.[77] The view that principles should be applied across all government departments and local government was also outlined by stakeholders in evidence to a National Assembly for Wales Climate Change, Environment and Rural Affairs Committee report.[78] Given concerns over weak legislative language such as the Government 'having regard to' the principles and their application,[77] establishing legislative language requiring all public bodies to comply with the principles would represent a greater commitment to the environment.[77,81]

Potential Additional Environmental Principles

As well as retaining EU principles in UK law, several organisations have highlighted the options for incorporating additional environmental principles.[77,76,82] These include the principle of non-regression, which articulates that there should not be any lowering of environmental standards, ambition or protection.[83] An example of its application would be continued commitment to the mitigation of climate change at both a national and international level.[84] This would ensure that environmental standards are not rolled back over time; for instance, when new trade agreements are being negotiated.

Witnesses to the EAC inquiry also referred to a 'high level of environmental protection', outlined in Article 191(2) of the TFEU.[77] The Government has also announced in the 25-Year plan to incorporate 'net gain' into development, meaning that development projects must improve environmental quality or equal any damage caused.[77] Other academics have described developing an 'environmental advancement' principle aimed at pursuing increasingly high environmental standards.[84] Other suggested principles include using the 'best available scientific evidence' to inform policy action and the principle of management at an appropriate physical scale, such as the river catchment.[77,74,85]

Other commentators have highlighted the issue of adopting other non-environmental EU principles, such as the 'innovation principle', which the EU Political Strategy Centre described as a 'counter principle' to the precautionary principle.[86] It is defined as the objective of a "highly competitive social market economy, aiming at full employment and social progress, and a high level of protection and improvement of the quality of the environment" (Article 3(3) TEU). Its primary aim is to encourage sustainability and employment, while establishing higher productivity and competitiveness, including social and environmental benefits.[86]

Application and Interpretation of the Principles

Environmental principles have the potential to shape decision-making by the UK government and public bodies. The Government's forthcoming statutory statement of policy on the environmental principles application and interpretation will largely determine how they are implemented. The Environmental Audit Committee recommended this policy statement will require robust scrutiny and consultation to ensure that environmental standards are maintained or improved.[77] In the 25-Year Plan for the Environment, the UK Government stated its ambition to leave the environment in a better state than that it was inherited.[87] However, realising this ambition may depend on the effective implementation of the environmental principles in policy frameworks, the sanctioning regime adopted for not doing so, and regulatory frameworks being afforded scope to incorporate additional principles in future.

POST is an office of both Houses of Parliament, charged with providing independent and balanced analysis of policy issues that have a basis in science and technology. POST is grateful to Anna Lavelle for researching this briefing, to NERC for funding her parliamentary fellowship, and to all contributors and reviewers. For further information on this subject, please contact the co-author, Dr Jonathan Wentworth.

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REFFERENCE 10

www.theccc.org.uk/2019/01/11/chris-stark-2019-promises-some-of-the-most-important-work-weve-ever-produced/?utm_source=CCC+-+Master+List&utm_campaign=7fe9b50dad-EMAIL_CAMPAIGN_2018_04_26_COPY_03&utm_medium=email&utm_term=0_8e2885ebd5-7fe9b50dad-34294865

A very happy new year from the CCC.

In 2018 we celebrated the tenth anniversary of the Climate Change Act, which established the Committee on Climate Change. As we enter our second decade, we're in rude health. 2019 promises some of the most important work we've ever produced.

The commentary on the Climate Change Act's tenth anniversary focused – rightly – on the UK's record of reducing emissions from electricity generation. There was less discussion of the recipe that led to that outcome: clear goals and well-designed policies, leading to a strong industry response built – crucially – on the support of successive governments. So it's hard to avoid concerns about the political environment at present. Contrast Westminster's near-unanimous enthusiasm to tackle climate change in 2008 with the political divisions now exposed over Europe. The birthday celebrations reaffirmed that there is still broad political support to address climate change in the UK – this will need to be translated into solid backing for the next stage of UK action.

A trio of reports in the latter half of 2018 brought home the dangers of inaction:

- The Intergovernmental Panel on Climate Change's 1.5°C special report brought sobering clarity to the scientific evidence on the impacts of global warming, including a valuable summary of the evidence of impacts at 1.5°C
- The UN's Emissions Gap report, published shortly before COP24 in Poland, reminded us that global efforts to meet the temperature goals of the Paris Agreement are now substantially off-track
- The Met Office's UK Climate Prediction 2018 report provided the clearest assessment yet of what the UK will experience from the changing climate: rising sea levels; increased temperatures (higher in the summer than the winter); and changing patterns of rainfall. All this is summarised in Michael Gove's speech at its launch

We are now very clear on the global position: the world has already reached around 1°C of post-industrial warming; we are on course for an alarming 3°C; extreme weather events happening now can be attributed to warming at this scale with confidence; yet, current national pledges are not sufficient to keep temperature increases to the Paris goal of 1.5°C.

The UK's approach should be seen in this light.

Last year, we gave a cautious welcome to the UK Government's Clean Growth Strategy: a plan is now place (a notable achievement amidst the political turmoil on Brexit) but the policies do not yet match the ambition. Our June Progress Report informed Parliament that the UK is off track to meet the fourth and fifth carbon budgets. And our early assessment of the UK's National Adaptation Programme revealed a plan that fails to match the scale of challenge the UK faces in adapting to the changing climate. There is clearly more to do in 2019.

We offered deeper commentary on crucial policy issues:

- Our letter to Chris Grayling on transport decarbonisation, new scenarios for power (p69), and major reports on the role of hydrogen and biomass in a low-carbon economy, contributed to the body of evidence supporting much greater ambition by government to reduce UK emissions
- Managing the coast in a changing climate became one of our most widely-read reports for some time, reflecting the strength of interest when the impacts of climate change are made real for communities
- And a special mention for our land use report – one of our most challenging pieces of work – which offered an integrated assessment of how land use must change to meet the mitigation and adaptation requirements of the Climate Change Act. We now have a set of scenarios that will act as the basis for a major report on agricultural policy later this year

Our aim with the 2019 programme is to inform policy across the *whole* of government, especially those arms of government that have not played a lead role in the first decade of work. In early 2019, we'll publish a report on housing, offering our assessment of the steps needed to reduce emissions from the housing stock and adapt it to the changing climate. We'll publish new advice on aviation, as DfT finalise their aviation strategy, and we'll make an assessment of the progress of the Scottish Climate Change Adaptation Programme. There also will be new advice to Northern Ireland. And during the summer, we'll make a bumper assessment of the UK's mitigation and adaptation progress in our statutory report to Parliament. In the second half of 2019, our agriculture report is planned to provide a solid basis for the reforms to agricultural policy that are promised by Defra.

Which brings us to our principal challenge in 2019: responding to the request from Ministers to consider

‘net-zero’. Ten years ago, in our first act as the newly-independent Committee on Climate Change, we advised that an 80% cut in greenhouse gas emissions was the appropriate 2050 target. Parliament agreed. In the decade that has followed, a great deal has changed. This is the right time to reappraise the long-term target. We intend to offer a thorough and rigorous assessment of where we stand in light of the UK’s commitments under the Paris Agreement. It feels like a ‘crunch’ moment: our aim is the gold standard appraisal.

Of course, the hardest challenge is not setting new long-term targets; it is acting now. The lesson from last year’s IPCC report is not – as some have said – that we have 12 years to respond to climate change, it’s that we must act *immediately*.

In 2019, expect the CCC to return regularly to the need to implement the simple, effective steps that we know will cut emissions and prepare us for the unavoidable changes in the UK’s climate. That’s our most important New Year’s message.

Air transport Movements 2007 - 2017 (in thousands)

Table 4.2

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Percentage change on past year
London Area Airports												
GATWICK	259	256	245	234	245	240	244	255	263	277	283	2
HEATHROW	476	473	460	449	476	471	470	471	472	473	476	1
LONDON CITY	77	84	67	60	61	64	68	70	79	80	77	-5
LUTON	83	86	75	69	72	72	71	76	87	103	106	3
SOUTHEND	1	1	-	-	1	7	9	12	9	8	11	37
STANSTED	192	177	156	143	137	131	132	143	154	164	172	5
Total London Area Airports	1,088	1,077	1,004	954	992	986	994	1,026	1,065	1,106	1,126	2
London Heliports												
METRO LONDON HELIPORT	-	-	-	-	-	-	-	-	-	-	-	-
Total London Heliports	-	-	-	-	-	-	-	-	-	-	-	-
Other UK Airports												
ABERDEEN	103	100	94	88	95	99	100	106	96	78	82	5
BARRA	1	1	1	1	1	1	1	1	1	1	1	6
BARROW-IN-FURNESS	-	-	-	-	-	-	-	-	-	-	-	-
BELFAST CITY (GEORGE BEST)	40	40	38	39	41	36	37	36	41	41	37	-11
BELFAST INTERNATIONAL	52	54	44	39	37	39	37	35	36	38	42	9
BEMBRIDGE	-	-	-	-	-	-	-	-	-	-	-	-
BENBECULA	3	3	3	3	3	2	2	2	2	2	2	4
BIGGIN HILL	-	-	-	-	-	-	-	-	-	-	-	139
BIRMINGHAM	104	103	94	85	84	84	85	89	90	104	112	8
BLACKPOOL	13	11	11	10	9	10	10	8	7	7	5	-20
BOURNEMOUTH	12	12	9	7	6	7	7	7	9	4	4	-8
BRISTOL	59	60	54	54	53	51	54	53	55	61	64	5
CAMBRIDGE	-	-	-	-	-	-	1	1	-	-	-	--
CAMPBELTOWN	1	1	1	1	1	1	1	1	1	1	1	4
CARDIFF WALES	23	23	20	17	16	14	14	14	14	16	17	6
CARLISLE	-	-	-	-	-	-	-	-	-	-	-	-
CITY OF DERRY (EGLINTON)	6	6	4	4	4	3	3	3	2	2	2	3
COVENTRY	7	4	1	-	-	1	1	1	1	1	-	--
DONCASTER SHEFFIELD	9	7	6	7	6	4	4	5	6	10	10	-1
DUNDEE	3	4	4	4	3	3	1	1	1	1	1	-20
DURHAM TEES VALLEY	11	9	6	6	5	4	4	4	4	4	4	12
EAST MIDLANDS INTERNATIONAL	61	66	57	52	54	55	57	57	56	55	57	3
EDINBURGH	115	114	106	101	105	103	104	101	107	116	123	6
EXETER	17	15	13	12	12	12	13	12	13	13	14	2
GLASGOW	94	87	74	69	70	72	73	74	80	85	89	4
GLOUCESTERSHIRE	-	2	2	2	1	1	1	1	1	1	-	-88

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Percentage change on past year
Other UK Airports												
HAWARDEN	-	-	-	-	-	-	-	-	-	-	-	-
HUMBERSIDE	13	13	14	13	13	13	12	12	11	9	7	-26
INVERNESS	15	14	12	10	10	10	10	10	11	11	12	9
ISLAY	1	1	1	1	2	1	2	2	2	2	2	18
ISLES OF SCILLY (ST.MARYS)	12	11	11	10	11	10	11	9	11	12	10	-13
ISLES OF SCILLY (TRESCO)	3	3	2	2	2	2	-	-	-	-	-	-
KIRKWALL	11	11	11	10	11	10	11	11	11	11	12	9
LANDS END (ST JUST)	5	5	5	5	5	6	7	6	8	9	7	-17
LEEDS BRADFORD	40	38	33	33	33	30	30	30	31	32	35	9
LERWICK (TINGWALL)	2	2	2	1	2	2	1	1	1	1	1	-11
LIVERPOOL (JOHN LENNON)	46	44	42	43	46	36	33	30	33	38	35	-7
LYDD	-	-	-	-	-	-	-	-	-	-	-	76
MANCHESTER	207	191	162	149	158	160	161	163	165	185	196	6
MANSTON (KENT INT)	1	1	1	1	1	1	2	1	-	-	-	-
NEWCASTLE	58	55	50	47	45	44	43	43	42	42	44	4
NEWQUAY	10	12	13	11	7	5	5	6	6	7	8	17
NORWICH	23	21	20	16	16	16	22	23	23	24	24	0
OXFORD (KIDLINGTON)	-	-	-	-	-	1	1	-	-	-	-	-91
PENZANCE HELIPORT	6	6	5	5	4	3	-	-	-	-	-	-
PLYMOUTH	5	6	8	7	2	-	-	-	-	-	-	-
PRESTWICK	20	20	15	13	10	8	9	7	4	5	5	6
SCATSTA	11	11	13	13	13	14	13	12	11	7	8	4
SHEFFIELD CITY	-	-	-	-	-	-	-	-	-	-	-	-
SHOREHAM	2	2	1	1	1	-	1	-	-	-	-	--
SOUTHAMPTON	47	45	41	40	41	39	36	36	34	37	39	5
STORNOWAY	7	8	7	6	6	6	6	6	6	6	7	10
SUMBURGH	8	8	7	7	7	7	9	10	11	12	12	-3
SWANSEA	-	-	-	-	-	-	-	-	-	-	-	-
TIREE	1	1	1	1	1	1	1	1	1	2	2	3
UNST	-	-	-	-	-	-	-	-	-	-	-	-
WICK JOHN O GROATS	2	2	2	2	2	2	3	2	2	2	2	-1
Total Other UK Airports	1,291	1,250	1,121	1,048	1,054	1,029	1,037	1,033	1,046	1,097	1,135	3
Total All Reporting UK Airports	2,379	2,327	2,124	2,002	2,046	2,015	2,031	2,059	2,111	2,203	2,260	3
Non UK Reporting Airports												
ALDERNEY	9	9	8	8	7	7	6	6	6	6	6	3
GUERNSEY	38	40	38	37	38	34	33	26	24	24	23	-4

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Percentage change on past year
Non UK Reporting Airports												
ISLE OF MAN	30	28	26	24	24	23	20	17	19	19	15	-21
JERSEY	41	44	38	38	38	37	34	28	25	26	24	-6
Total Non UK Reporting Airports	118	120	110	107	107	101	94	78	74	74	67	-9

Notes

(a) Excludes Air Taxi operations.

Please note that figures may change overtime as each new version is produced. Information relating to an airport that has ceased to handle regular traffic/closed will be excluded from this table completely. For data concerning historical years it is recommended that you use earlier produced versions of this table.

An Airport-by-Airport outline of the freight picture at each of the UK's airports

A supplement to:

Air Freight: The Facts

Researched and written by Rose Bridger Published by Airport Watch

October 2009

UK airport freight and growth plans

Top 20, listed by descending freight volumes – 2007

1. Heathrow

2007 1,310,987 tonnes, 2008 1,397.054 tonnes (7 % increase)

Handles over 50 per cent of UK cargo, 94 per cent bellyhold, the majority, 86 per cent of all UK belly freight.[1] Interim Masterplan 2005 forecast freight growth up to 2015-16 1.8 million tonnes, an average annual growth rate of 3.3 per cent. Growth projection assumptions include an increase in the number of A380's using the airport after entering service in 2006 and phase 2 of Terminal 5 becoming operational in 2011.[2] BAWC have their own cargo facility 'Ascentis'. Heathrow's development plans for a third runway do not specifically include air freight 'improvement', 'increase in capacity will ease congestion for all aircraft including those carrying air freight'.[3] AW the freight is bellyhold does not have specific growth plans or facilities. DfT 2003 consultation forecast that if Heathrow's bellyhold capacity is fully utilised the throughput would be 'around 2 million tonnes'.[4] That level of growth in bellyhold freight would be approximately a 50 per cent increase on volumes in recent years.

2. East Midlands

2007 274,753 tonnes

2008 261,507 tonnes (5% decrease)

The largest 'pure freight' airport in the UK, which means almost all dedicated freighter aircraft, also some bellyhold freight. Plans to quadruple freight volumes by 2016. East Midlands handled 34 per cent of all freight carried by dedicated freighter aircraft in 2008.[5] Cargo West is a new complex jointly developed b the airport and DHL Aviation, it has a 333,000 m² sorting facility. There is the potential for additional purpose built cargo accommodation on areas of undeveloped real estate owned by the airport, over 100 acres of undeveloped land have been earmarked for cargo development. Agricultural land to the south of the side alongside the A453 has been highlighted for cargo development after 2020. East Midlands can handle the largest freighter the B747, An-124 and An-225. Runway lengthening of 190 metres to 3,083 metres will enable large freighters to take off at full capacity.[6] The runway extension is

supported by Leicester County Council claiming that the environmental impact will be marginal.[7] Neil Robinson, the site's environmental manager, claimed that the lengthening of the runway will actually reduce noise as the planes will be able to approach the runway at higher altitudes over the nearby village of Kegworth.[8] Operates 24 hours with peak traffic late evening. In 2008, GAC Logistics opened a new logistics premises that tripled its floor space, state sit specialises in 'Fast Moving Consumer Goods (FMCG), pharmaceutical, textile and entertainment industries'.[9] The noise from night flights is a particular problem, currently 50 flights per night. The AWP predicts that by 2030 there could be over 60,000 cargo flights per year.[10]

3. Stansted

2007 203,747 tonnes

2008 197, 378 tonnes (3% decrease)

99 per cent of Stansted cargo in dedicated freighters and this is projected to continue although greater diversity in passenger aircraft mix and more long haul services could increase bellyhold freight. There is already 41,000 m² of cargo space, with land available for development for expanding cargo facilities. Stansted's freight growth depends on the development of a second runway which is still being pursued. Construction of second runway would entail destruction of nearly 800 hectares of countryside and demolition of 73 homes and 14 non-residential buildings, 35 of which are listed buildings.

4. Gatwick

2007 171,078 tonnes

2008 107,702 tonnes (37% decrease)

Currently has cargo centre covering 11 hectares with 23,000 m² of cargo shed floor space. Freight volumes have been falling since a peak of 320,000 tonnes in 2001.[11] Interim Masterplan published in 2006, depends on second runway. Freight tonnage plummeted by 37 per cent to 107,702 tonnes in 2008. Cargo growth projections, which were previously for between 500,000 and 550,000 tonnes which had anticipated BA long haul growth at the airport, have been scaled down.

5. Manchester

2007 165,366 tonnes

2008 141,781 tonnes (14% decrease)

Manchester Airport's World Freight Centre is situated close to Junction 6 of the M56, about 100 freight forwarders and agents are located on the site. Exports include aerospace and automotive components, biotechnology, electronics, pharmaceuticals and textiles. There are facilities for heavyweight and outsize cargo. In February 2007, with the support of a government loan, Pangaean opened a 743 sq metre temperature controlled or 'perishables' handling centre for temperature controlled food imports, including fish, vegetables and flowers which included orchids from Taiwan. The centre also handles pharmaceuticals which require temperature control. The facility expected its volumes to triple from 6,000 tonnes in its first year of operation to 18,000 tonnes in year two. Additional routes for perishable produce were

announced on December 2007, with three times per week from Tel Aviv and Shanghai, and weekly from Moscow.

The Pangaean perishables centre went bankrupt in March 2009 with the loss of just three jobs. At exactly the same time, Manchester Airport sought Council approval to build two giant air freight units. This would involve the demolition of Rose Cottage, a Grade II listed building with nearby a 300 year old natural pond with a colony of rare crested newts. Along with dozens of mature trees the area provides a rare natural oasis in a heavily industrialised area. The Save Rose Cottage campaign has brought together Green and Liberal Democrat councillors, Stop Expansion of Manchester Airport (SEMA) community organisations and residents of Rose Cottage opposing the development. The cargo expansion plans pursued even though the airport's cargo throughput plummeted 42 per cent between December 2009 and January 2009. In June 2009 the decision was made to go ahead with one of the two cargo sheds, leaving Rose Cottage in place but effectively hemmed in by this development. Manchester Airport expects to develop the second freight unit as the economy recovers, with the possibility of relocating the cottage, which is not possible for the surrounding wildlife area. Airport City development was announced in March 2009, on 30 acres purchased from the Burford Group will include more cargo and logistics facilities.[12]

6. Belfast

2007 38,429 tonnes

2008 36,115 tonnes (6% decrease)

Plans freight volumes of 109,000 tonnes by 2030, almost triple 2007 tonnage, with a high figure of 148,000. The Masterplan states that "additional dedicated facilities will be constructed to accommodate this growth", which entails expansion of cargo facilities and apron on the west of the existing airport lands. New aircraft parking stands for freight. Business Park launched April 2007, claimed will create 8,000 jobs over 15 years, covers just over 40 hectares and expected to include new freight handling facilities in addition to offices and warehouses.[13] There will be ongoing development of the Airport Business Park over the Masterplan period to 2030.

7. Luton

2007 38,095 tonnes

2008 40,518 tonnes (6% increase)

Luton Airport maintained its freight growth with a 6 per cent increase in 2008, and also continued freight growth in the early months of 2008. In 2007 Luton Airport withdrew its Masterplan which had included a replacement runway, and focused on maximising utilisation of the existing site. Luton has two cargo stands, it is used as an overflow airport for cargo, for those that cannot obtain space at Heathrow.[14] The BIP handles livestock and horses flights, and notable shipments have included 25 Cossack horses from Ukraine, 470 Alpaca from Chile and 1,000 sheep from New Zealand.[15]

8. Glasgow Prestwick

2007 31,517 tonnes

2008 22,966 tonnes (27% decrease)

Glasgow Prestwick's Draft Master Plan, in 2008, outlines its strategy to develop its cargo business as Scotland's 'most significant scheduled freighter airport'. Plans 4 per cent annual freight growth to 50,000 tonnes in 2016 and 100,000 tonnes by 2033.[16] As freighter operations grow, additional freight facilities are planned to the south-east of the site, with the entire freight operations moved to the new area.[17] In June 2008 the airport reported it was handling 20 B747's per week.[18] BAWC scheduled freighter operations from Glasgow Prestwick include oil well business out of Aberdeen and aeronautical equipment out of Belfast.[19] Glasgow Prestwick's BIP reported nine horses stopping over between Kentucky in the USA and Gothenburg, Sweden.[20] As detailed in section 3.3 of the *Air Freight: The Facts* report Glasgow Prestwick has been the beneficiary of considerable government agency funding for freight related expansion.

9. Kent

2007 28,371 tonnes

2008 25,673 tonnes (10% decrease)

Kent Airport plans to increase freight from 25,673 tonnes in 2008 to 400,000 tonnes in 2015 and 500,000 tonnes in 2033, almost twenty fold. This freight growth projection is based on an anticipated growth trend to 40,000 tonnes for the year 2008-2009, but freight actually decreased substantially during this period. Freight figures are highly variable month to month. Although tonnage fell 10 per cent in 2008, but in recent months has reported growth including May 2009 to 2,260 tonnes, 69 per cent higher than May 2008.[21]

Kent Airport currently has a 3,200 sq meter cargo area, which includes a BIP. Most of the cargo is carried in dedicated freighters. In June 2008, Hellman Worldwide Logistics announced that an equine BIP (for horses) on the same model as at Glasgow Prestwick Airport is planned.[22] Trade press article stated that perishables volumes in 2006 were 'around 20,841 tonnes' which is the same figure as the CAA total cargo tonnage.[23] Racing cars sometimes boost monthly cargo tonnage. Equipment for concerts including Sting and the Spice Girls.[24] The Draft Masterplan published in October 2008 notes freight as the airport's primary source of revenue.[25] Masterplan states that additional freight handling facilities will be developed and identifies land outside the airport boundaries in order to enable expansion. Freight facilities are located to the North West of the runway and plans to expand this area to accommodate 250,000 tonnes per annum.[26] Plans to develop MRO activity.[27] A dedicated rail link with the airport with a possible freight interchange is supported by the Local Plan.

The China Gateway Project is in development at Manston Business Park, adjacent to the airport. This aims to promote Chinese business and investment in China, with a Chinese electronics warehouse along with offices and a conference centre.[28] The plan is for China Gateway to be a 'large logistics and trade platform focusing on the production, demonstration, trade and distribution of largely high-value mechanical and electrical products ' and the emphasis is on air freight using the airport, although the road network and Dover and Ramsgate Ports will also be used.[29]

10. Edinburgh

2007 19,292 tonnes,

2008 12,418 tonnes (36% decrease)

Currently there are 12 cargo stands on the east side of Edinburgh Airport, along with warehouses, transit sheds and offices in the Cargo Village of 7,000 metres on the East side of the site. The Masterplan in 2006 forecast 3.2 per cent per year growth to 2030.[30] So far though, freight is declining, with the 2006 freight throughput of 36,389 tonnes plummeting by approximately two-thirds to 12,418 tonnes in 2008. Freight growth is anticipated to be mainly bellyhold traffic so CATM's only forecast to rise from 7,800 to 8,100 by 2030.[31] The Masterplan states that new development for cargo up until 2013 'will be undertaken only as a result of specific requests from cargo handlers', but an 'indicative expansion zone' is included.[32] Indicative land use plans have been produced which include 4.5 hectares adjacent to the Cargo Village to expand the cargo facility by 2020, and another 5.5 hectares for cargo facilities by 2030. Land outside airport boundary has been highlighted for acquisition. The land take for cargo expansion is just a small part of approximately 400 hectares for the airport's expansion, including for a new runway, which would include farmland to the south of the existing site boundary. The airports' expansion would require the current site of the Royal Horticultural and Agricultural Society of Scotland, which would need to be relocated.[33]

11. Birmingham

2007 13,585 tonnes

2008 12,192 tonnes (10% decrease)

From a high of 29,116 tonnes in 1999, Birmingham Airport's freight volumes have declined to just over 12,000 tonnes in 2008, down ten per cent on 2007. Claims to be 'the busiest cargo and mail facility in Scotland' fading as Glasgow Prestwick has reported more cargo since 2007. 'In the future the airport does not consider the development of purpose-built facilities for dedicated air freight services to be a priority for the airport'.[34] The Masterplan mentions and does not revise the 2002 air freight forecast of an increase to 200,000 tonnes by 2030 which was based on the majority of freight as bellyhold stating that 'there is significant potential for freight activity based on 'belly hold' operations'. Bellyhold activity would be greatly enhanced by dedicated processing facilities, removal of a number of buildings 'will not necessarily be replaced by buildings to process freight', British Airways Cargo Centre and the Servisair Cargo Centre will be retained to support freight activities.[35]

12. Coventry

2007 7,469 tonnes

2008 5,921 tonnes (21% decrease)

The UK's fastest growing freight airport in 2005 when it reported 6,142 tonnes. , rose further to 7,785 tonnes in 2006 then declining 21 per cent decline in 2008 to 5,921 tonnes. No Masterplan. Lost scheduled services from low cost airlines Thomsonfly and Wizz Air, ceased commercial flights in 2008 and stated would 'focus on business aviation and freight only'. In June 2009 announced the airport will be developed as a 'UK cargo, ad hoc charter and executive jet hub' and the owner, Howard Holdings, has put it up for sale.[36]

13. Glasgow

2007 4,276 tonnes

2008 3,546 tonnes (17% decrease)

Declining freight volumes from just over 8,000 tonnes in 2004 to less than 3,000 tonnes in 2008. Masterplan anticipates 11,250 tonnes by 2015, 13,000 tonnes by 2030. Growth plans to 2030 requires land not currently owned by the airport. 52 hectares of farmland at Netherton Farm to the east of the current airport boundary, allocated for extension to airfield taxiway and for new and displaced cargo facilities. The Masterplan includes development of cargo and maintenance facilities and claims that instead of increasing the noise problems already suffered by the neighbouring Kirklandneuk and Renfrew communities, the buildings 'will have the potential to act as a noise barrier'.[37]

14. Liverpool

2007 3,709 tonnes

2008 3,740 tonnes (1 % increase)

Liverpool Airport's freight volumes have decreased from 24,568 tonnes in 1998 to 3,740 tonnes in 2008. The Masterplan growth targets for cargo to grow from 5,330 tonnes in 2007 almost tenfold to 40,000 tonnes by 2015 with a 7 hectare cargo area, and then plans include a world cargo centre to increase freight volumes to 220,000 tonnes by 2030, almost 60 times the current volume. The development of the world cargo centre would include construction of a parallel taxiway south of the existing runway with apron stands for 10 aircraft.[38]

15. Aberdeen

2007 3,434 tonnes

2008 4,006 tonnes (17% increase)

Night flights have enabled freight growth since 2005, laregley attributed to the oil and gas business, and Aberdeen Airport maintained growth in 2008 of 17 per cent to 4,006 tonnes.[39] The Masterplan states that 8,800 tonnes possible by 2030. Cargo facilities occupy 0.8 hectares, two transit sheds and 1,600m² of warehouses, plus a DHL facility of 820m², BAA land is available for cargo expansion, and the Masterplan states that further land for freight growth 'will undoubtedly be needed' and is planned to be met by reduction in use of the helicopter support and maintenance area as the oil and gas business contracts as North Sea reserves run out, and development of some other land at Dyce Drive.

16. Cardiff

2007 2,391 tonnes

2008 1,344 tonnes (44% decrease)

Cardiff Airport Masterplan forecasts as increase from 2,391 tonnes of freight in 2007 to 9,000 tonnes by 2015, with a high estimate of 18,000 tonnes. By 2030 estimated 18,000 tonnes, which could rise to 32,000 tonnes by 2030. This higher freight growth is based on the possibility of attracting an integrated carrier and if Royal Mail resumes mail operations.[40] The

AWP highlights Cardiff Airport's potential to develop a 'Centre of Excellence' for aircraft maintenance and training, including a maintenance centre for long haul aircraft.[41]

17. Robin Hood (Doncaster Sheffield)

2007 1,602 tonnes

2008 1,350 tonnes (16% decrease)

Robin Hood (Doncaster Sheffield) can handle the world's largest aircraft including the An-124. Freight handled by the freight forwarder GX Danbritt warehouse doubled between 2006 and 2007, and cargo included flowers from Florida and trucks to Africa and lobsters to Spain. The Masterplan details the development of the 62 acre business park, a transhipment hub, aprons to park large aircraft and large cargo distribution and handling warehouse. The only available area is agricultural land.[42] Airport owners Peel have applied for night cargo flights, which is being opposed by local organisations including the Campaign for Protection of Rural England. Robin Hood Airport plans to increase cargo volumes to 120,000 tonnes by 2030, more than eighty times the current throughput. It is anticipated that cargo volumes could be even higher if the airport could attract an integator with dedicated freighters carrying parcels. Development after 2016 would include construction of a new transhipment hub with aprons to park freighters and a large cargo and distribution warehouse, built on agricultural land to the South West of the runway.

18. Belfast City

2007 1,057 tonnes

2008 168 tonnes (84% decrease)

No cargo growth plans

19. Durham Tees

2007 786 tonnes

2008 290 tonnes (63% decrease)

Durham Tees Airport's freight has decreased from 1,455 tonnes in 1998 to 290 tonnes in 2008. No Masterplan has been published. The Skylink Business Park was announced in March 2008 by airport operator Peel Holdings, an investment of £110 million. Work on new security fencing began in April 2009.[43] An additional 50 hectares of land was allocated for airport development in March 2009. Managing Director of the airport, Hugh Lang stated in an interview that the airport has a freight growth target of 26,000 tonnes by 2015. The article also states of the over 100 hectare building programme, the development is 'the most strategically important in the region', is the 'first big-scale freight distribution centre in the North east, offering an unusual size provision of up 1 million sq ft (nearly 93,000 sq metres).[44] While there are also road and rail links, and also shipping withTeesport nearby, the DfT Progress Report states that the 80 hectare site is 'for a business and distribution park aimed primarily at business linked to the airport'.[45]

20. Newcastle

2007 785 tonnes

2008 1,938 tonnes (147% increase)

In 2008, Newcastle Airport's freight increased by almost 150 per cent to just under 2,000 tonnes. This includes consolidated freight from Heathrow and Stansted. Inbound includes clothing and electronic goods from Indian sub-continent and China, outbound freight includes machinery and spare parts. Bellyhold in Emirates, Dubai's flag carrier, the airline commenced flights to Newcastle in September 2007 includes lobsters to Hong Kong and chemicals to Dubai. By April 2008 Newcastle Airport reported that cargo in the first six months was 730 tonnes, more than twice the cargo throughput of the entire airport for the entire year before the Emirates service. By Emirates cargo throughput at Newcastle had reached 1,000 tonnes. Over half the air exports from Newcastle on Emirates flights, a daily Airbus 330 with up to 14 tonnes of capacity.[46] Exports include machinery and car parts, imports consumer goods including perishable produce, electronics and clothing.[47] In June 2009, Emirates reported continued recession defying growth in passengers and cargo between Newcastle and Dubai, with cargo including chemicals and lobsters destined for Hong Kong.[48]

Newcastle Airport expects continued freight growth, with no specific forecasts, Masterplan states that freight growth depends on freight operators, with opportunities for large global integrator. Land is available within Freight Village 'opportunities exist to accommodate a large global integrator with direct access to the apron'. Expansion of freight and maintenance facilities will be built on green space, predominantly agricultural land used for cereals, which would disrupt historical field boundaries.[49] Newcastle International Southside Development was announced in July 2008, covering 50 acres to the south of the airport site, a business park with space for warehouses and hangars. Smaller additional development is planned for more offices and parking spaces, and an aviation academy. Developer, UK Land Estates brochure states that Site A contains over 40,000 sq metres of warehouse/distribution and air freight and hangar opportunities adjacent to a serviced apron.[50]

Regional airports freight growth plans

1. Inverness

2007 568 tonnes

2008 526 tonnes (7% decrease)

No dedicated freight facility, one could be developed as Part of Inverness Airport Business Park being developed on 250 hectares of land adjacent to the airfield on the west and south. The outline planning application was submitted in February 2008. 34 per cent of the site is agricultural land used for arable crops, classified as prime agricultural land, and 25 per cent is a coniferous plantation. The Environmental Statement states that a breeding habitat for skylarks and grey partridge, and farmland birds, will be lost with no mitigation. Business premises, multi-modal transport gateway with area earmarked for aviation development. Masterplan up to 2010 includes development of 3,000 m² building with landside access road and rear side access area. 2011 – 2020 further 6,000 m² building together with apron, hard standing and infrastructure expansion.[51] No tonnages given in Masterplan.[52]

2. Bournemouth

2007 253 tonnes

2008 17 tonnes (93% decrease)

The Masterplan anticipates maintaining current freight levels with n o specific air freight growth proposals, In contrast, the website describes Bournemouth Airport as ' fast developing cargo hub'…'With ample room to grow, our thriving cargo facility is expanding to meet the demands of importers and exporters from across the UK. Accommodating a huge variety of freight and passenger aircraft, Bournemouth supports cargo logistics round the clock'. The Aviation Park, covering 80 hectares, is 'Dorset's premier location for technology, industry and freight'.[53]

3. Humberside

2007 144 tonnes

2008 168 tonnes (17% increase)

Humberside Airport's growth has been curtailed by the expansion of nearby Robin Hood (Doncaster Sheffield) Airport which is just over 56 km away. Fish flights in small freighters, B757s from Iceland by Icelandair began in 2003, for processors supplying supermarkets Tesco, Waitrose and Sainsbury's and had built up to daily by 2007. The Masterplan includes freight growth plans, in particular to support perishable food businesses, but with no target tonnage stated. Humberside Airport opened an expanded perishables hub, with investment of £1.6 million and a capacity of 930 sq metres, sufficient for 90 tonnes per week, in November 2008.[54] However, in January 2009 it was reported that the fish flights from Iceland had reduced from five weekly to only one per week, with lack of backhaul cargo apparently a factor for the loss of the flights, so Yorkshire Forward and other agencies were trying to find outgoing cargo, which airport Director Tony Lavan said 'could be flower bulbs, radishes, or whatever we just need to work out what it is'.[55]

4. Southend

2007 134 tonnes

2008 16 tonnes (88% decrease)

Stobart Group acquired Southend Airport in December 2008, and Rochford and Southend Councils approved Stobart's proposed expansion of the airport in February 2009.[56] there have been inconsistent claims on cargo development plans. Andrew Tinkler, Chief Executive of Stobart said that "Acquisition of Southend Airport is a major opportunity for Stobart to advance the implementation of its multimodal strategy. At one stroke, we have found our southern base and greatly enhanced our position as a leading point-to-point service provider for customers in the UK and Europe who require fast and efficient services by air as part of their logistics solutions…Development of Southend Airport as a leading passenger and cargo airport will be excellent news for both Southend and the wider South-East region."[57] In May 2009, Southend Airport boss Alastair Welch stated that the development of the airport would not mean more cargo flights, saying the 'niche role in specialist cargos would not become the main activity at the airport'. In June, Welch reassured residents that Southend Airport will not

be a ‘major lorry depot or delivery centre for bulk freight’. [58] Chief Executive Andrew Tinckler said that they ‘might consider extending the runway which could lead to more cargo flights’.[59]

5. Leeds Bradford

2007 109 tonnes

2008 334 tonnes (206% increase)

A Leeds City Council meeting in April 2009 decision deferred the decision on expansion, following 900 objections.[60] The airports’ expansion plans were then approved in July 2009. Although the airport’s freight volumes are low compared to other airports of a similar size, and freight is not emphasised in the Masterplan, the document highlights the ‘potential for significant increases in cargo throughput’ with the emphasis on ‘niche services’ perishable products and small parcels, but states that ‘flown freight is unlikely to increase substantially unless cargo only operations or mail services are established’. In the past Leeds Bradford has handled a small number of freight only flights of high-value and perishable goods, and the Masterplan entertains the possibility of resuming freight only flights. Possibility of freight only flights from all over world directly into the region. The airport will continue to look for opportunities to increase freight throughput and land is reserved for this purpose with a ‘Proposed Freight Area’ on the North East edge of the airport site.

6. Exeter

2007 68 tonnes

2008 47 tonnes (31% decrease)

The Draft Masterplan does not anticipate that airport will be a major cargo distribution centre but anticipates growth in bellyhold cargo. Draft Masterplan states that ‘appropriate development will take place as demand for air cargo increases, including the provision of transit, storage and distribution facilities that will complement the adjacent Inter Modal Freight exchange to be developed to the north-east of the airport’[61]. ‘Skypark’ is 40 hectares of office development and the Inter-Modal Freight Exchange is warehouses and connections between road and rail, largely built on a disused runway. Not assumed that will become major distribution centre. Appropriate development will take place as demand for air cargo increases. Provision of transit, storage and distribution facilities will complement the Intermodal Freight Exchange to be developed to the north-east of the airport. The M5 widening scheme to four lanes at Junction 30 is for serving Skypark.[62]

7. London Ashford (Lydd)

2007 0 tonnes

2008 0 tonnes

Lydd has a history of air freight of cars between the UK and France in the 1960’s, but recently has been ‘almost dormant’ as a cargo airport. LyddAir, the airport’s resident operator mentions pallets on flights within Europe on DC10’s, but no freight has been reported to the CAA since 1 tonne in 2000. Lydd Siport report *Closer to You, Closer to the Market* states a cargo capacity of nearly 20,000 tonnes, and the potential for freight due to proximity to

Channel Tunnel and being the UK's nearest airport to the continent. Claims freight could be 'big business' for the 'right airline' or perhaps as bellyhold.[63]

8. Carlisle

2007 0 tonnes

2008 0 tonnes

No Masterplan has been published. Stobart stated that its acquisition of the 460 acre site which includes the airport 'offers the Group the opportunity to provide air freight solutions as well as the potential to develop passenger aviation.'

Two matters were highlighted which could delay development of the site, 'determination of the agricultural tenancies on the site' and 'Judicial Review of the planning permission granted by Carlisle City Council to develop the freight storage cross-dock distribution facility.[64] The planning permission was granted by Carlisle City Council in April 2009.

UK airport planned freight growth

	2007 cargo volume	Planned cargo 2015	Planned 2015 cargo increase from 2007	Planned capacity 2030	Planned 2030 cargo increase from 2007
Aberdeen	3,434	7,200	3,766	8,800 “possible”	5,366
Belfast International	38,429	69,000	30,571	109,000 (“high growth” 148,000)	70,571
Birmingham	13,585	Increased bellyhold no tonnage in Masterplan			
Bournemouth	253				
Cardiff	2,391	9,000 (“high” 18,000)	6,609	18,000 (“high” 32,000)	15,609
Carlisle	0				
Coventry	7,469				
Doncaster Sheffield (Robin Hood)	1,602	60,000 (2016)	58,398	120,000	118,398
Durham Tees	780	26,000 “target”	25,220	26,000	25,220
East Midlands	274,753	1,200,000 (2016)	925,247	2,500,000 approx	2,225,247
Edinburgh	19,292	66,700 (2013)	47,408	106, 500 “could be”	87,208
Exeter	68				
Gatwick	171,078	330,000	158,922		158,922

Glasgow	4,276	11,250	6,974	13,000	8,724
Glasgow Prestwick	31,517	50,000 (2018)	18,483	100,000 (2033)	68,483
Heathrow	1,310,917	Bellyhold freight growth anticipated, not quantified.			
Humberside	144				
Inverness	568				
Kent	28,371	400,000 (2016) “could be achieved”	371,629	500,000 (2033)	471,629
Liverpool	3,709	44,000	49,291	220,000	216,291
Luton	38,095				
Manchester	165,366	250,000	84,634		84,634
Newcastle	785				
Newquay Cornwall	0	15	15		60
Southend	134				
Stansted	206,000	650,000	444,000	1,120,000	914,000
TOTALS	N/A	N/A	2,231,197	N/A	4,470,362

UK AIRPORT FREIGHT GROWTH PLANS TO 2015

Total known planned increase from 2007 of 2,231,197 by 2015

Added to 2007 UK airports air freight tonnage 2,325,239

TOTAL projected UK air freight in 2015 = 4,556,436

According to current published Masterplans, air freight at UK airports will almost double from 2007 volumes by 2015, reaching a total of 4,556,436 tonnes. This figure does not include

freight growth at UK airports which have not published a Masterplan, or which have produced Masterplans which do not include a planned freight tonnage increase. Manchester Airport Masterplan does not include a freight projection for 2030 so the 2015 projection was used.

This figure also does not include several UK airports where freight hubs are being developed on, or adjacent to, the airport site, which have stated an intention to increase the airport's freight throughput, but the airport has not published freight growth plans or figures. Business parks are planned and at early stages of development at Bournemouth, Carlisle, Durham Tees, Exeter, Inverness, Newcastle and Southend airports. In instances when airports have given low and high estimates for air freight growth, this figure has been calculated using the lowest stated figure. This table does not include small regional airports with existing volumes of under 1,000 tonnes, and none or minimal known freight growth plans.

UK AIRPORT FREIGHT GROWTH PLANS TO 2030

Total known planned increase from 2007 of 4,470,362 by 2030

TOTAL projected UK air freight in 2030 = 6,795,601

NOTES:

The starting point of 2007 was used for freight statistics, on the presumption that the current recession and declining freight volumes which began to take effect in 2008 is short term.

A few UK airports give growth targets to 2014, 2016 not 2015, and for 2033 not 2030. For the purposes of this report these figures were assumed to refer to the years 2015 and 2030 to harmonise with the recommended Masterplan framework.

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State of the region: Europe

January 2019

Economy

GDP growth, selected countries

% change on a yr ago	2017	Q1 2018	Q2 2018	Q3 2018
Germany	2.5	2.0	1.9	1.2
Russia	-0.2	1.3	1.9	1.5
France	2.3	2.2	1.7	1.4
UK	1.8	1.3	1.4	1.5
Italy	1.6	1.4	1.2	0.7
Spain	3.0	2.8	2.5	2.4
Turkey	7.4	7.2	5.3	1.6
Israel	3.5	4.3	3.5	2.9
Euro zone	2.5	2.4	2.2	1.6
World*	**1.3**	**3.2**	**3.2**	**2.9**

Source: Datastream * Market exchange rate basis † Estimate

Exchange rates

end of period, # per US$	2017	Oct-18	Nov-18	Dec-18
US$ broad index	120.0	126.86	128.31	128.51
European euro (EUR)	0.83	0.88	0.88	0.87
Russian ruble (RUB)	57.57	65.74	66.95	69.37
British pound (GBP)	0.74	0.78	0.78	0.79
Turkish lira (TRY)	3.78	5.60	5.24	5.29
Israeli shekel (ILS)	3.47	3.72	3.73	3.74

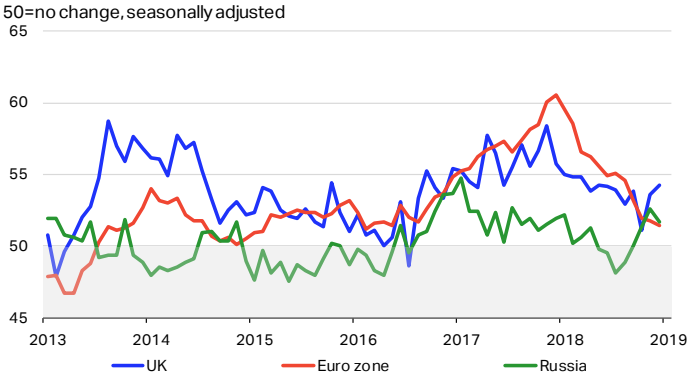
Source: Datastream, XE

World oil and jet fuel price

US$/barrel (period ave.)	2017	Oct-18	Nov-18	Dec-18
Crude oil (Brent)	54.2	81.0	64.8	57.4
Jet fuel	65.6	94.4	81.7	71.2

Source: Platts, EIA Monthly average data

Business confidence - manufacturing PMIs



Source: Markit

- Russia's business confidence ticked down this month, although it remains at elevated levels. In Europe, 'gilets jaunes' unrest in France along with softer growth elsewhere prompted a further fall in sentiment. In contrast, the UK's confidence lifted, notwithstanding the ongoing Brexit uncertainty.
- The US$ rose by 0.2% in Dec, up ~7% over the course of the year. Most of the main regional currencies ended the month lower vs the US$, with the exception of the EUR which gained 1.1% this month.
- Brent crude oil & jet fuel prices plunged in Q4 as market concerns moved to oversupply, but have recovered partially since then amid signs of new supply cuts.

Market

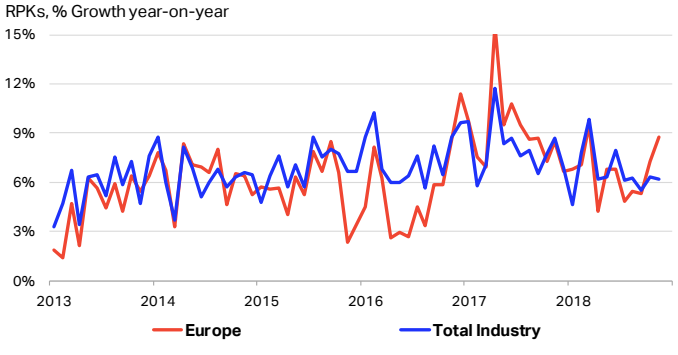
Revenue passenger kilometers (RPKs)

% change on a yr ago	2017	Sep-18	Oct-18	Nov-18
Region (registration basis)				
Europe	9.1	5.3	7.3	8.8
World	8.0	5.5	6.3	6.2
Routes (segment basis)				
Russia domestic	10.4	11.1	11.7	13.8
Within Europe	11.1	7.1	7.9	9.5
Europe - North America	7.1	4.5	8.1	8.5
Europe - Asia	10.5	7.1	7.5	7.6
Europe - Middle East	8.9	0.5	2.9	3.8
Europe - Africa	10.0	6.4	10.0	6.7
Europe - South America	7.0	7.6	6.9	7.2

Source: IATA Statistics Note: historical data may be subject to revision

- Industry-wide revenue passenger kilometers (RPK) grew by 6.2% year-on-year in Nov, a slight deceleration from 6.3% in the previous month. While the result remains above the 10-year average RPK growth rate (6.0%), some slowing is evident in recent months.
- RPK growth for the European carriers showed a clear improvement this month, rising to 8.8%yoy, 2.6pp above the industry-wide outcome.
- Growth in passenger volumes for the Russia domestic market maintained its double-digit pace, rising further to 13.8% in annual terms.
- Of the region's main international markets, Within Europe was the fastest growing, with RPKs 9.5% higher vs a year ago. The larger NthAm & Asia markets also maintained a robust pace this month; 8.5% & 7.6%yoy, respectively.
- The smaller Europe-Africa was the only market where growth eased compared to October, to 6.7%yoy

Growth in air passenger volumes



Source: IATA Statistics

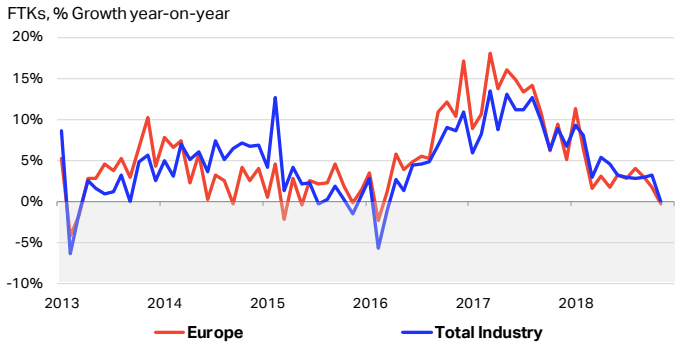
Freight tonne kilometers (FTKs)

% change on a yr ago	2017	Sep-18	Oct-18	Nov-18
Region (registration basis)				
Europe	11.7	2.9	1.7	-0.2
World	9.7	3.0	3.2	0.0
Routes (segment basis)				
Europe - Asia	12.2	0.2	2.0	-1.0
Europe - North America	10.4	4.5	1.7	1.5
Europe - Middle East	12.2	6.6	3.5	4.3
Europe - Africa	2.8	4.7	-3.0	-2.2
Europe - South America	7.3	0.3	-1.0	-0.9
Within Europe	16.4	9.6	16.3	6.1

Source: IATA Statistics Note: historical data may be subject to revision

- Industry-wide FTKs were unchanged in annual terms in Nov, marking the slowest growth rate since early 2016. All told, freight volumes rose by 3.9% year-on-year between Jan and Nov, compared to 10% over the same period a year ago.
- At the regional level, FTK growth fell into negative territory for the first time since early-2016, which corresponds with broader weakness in European manufacturers' export order books, particularly for Germany.
- Freight volumes for Asia, the largest European market, declined this month to -1.0%yoy. In contrast, Nov saw an improved performance for the third largest Europe-Middle East, where FTKs are now up 4.3%yoy from 3.5% in Oct. Annual growth in the Africa & SthAm markets remains in negative territory, at -2.2% & -0.9%, respectively.
- Although smaller, the Within Europe market remains the strongest performer this month with a robust 6.1%yoy growth rate currently.

Growth in air freight volumes



Source: IATA Statistics

Industry

Capacity growth and load factors

ASK/AFTK: %ch on a yr ago, LF: % of ASK/AFTK		2017	Sep-18	Oct-18	Nov-18
Passenger					
Europe	ASK	6.9	5.1	6.8	8.8
	PLF	*83.9*	*86.2*	*84.7*	*81.7*
World	ASK	6.6	5.9	6.3	6.8
	PLF	*81.5*	*81.4*	*81.0*	*80.0*
Freight					
Europe	AFTK	6.7	1.9	2.3	3.1
	FLF	*54.9*	*53.5*	*55.8*	*57.9*
World	AFTK	5.0	4.6	5.5	4.3
	FLF	*49.9*	*49.5*	*50.4*	*51.5*

Source: IATA Statistics. Note: LF=seasonally adjusted load factor. ASK=available seat kilometers. AFTK=available freight tonne kilometers

- The industry-wide passenger load factor eased to 80% in Nov as capacity continues to trend upwards at a faster pace than demand. In contrast, the freight load factor lifted by 1pp to 51.5% this month.
- At the regional level, the European airlines continue to outperform the industry-wide outcome, with a PLF of 81.7% and a FLF of 57.9% this month.
- The final Q3 financial data confirm the squeeze on industry financial performance, with an EBIT margin of 10.7% vs 14.2% a year ago.

Airline operating (EBIT) margins*

% revenues	2016	2017	2017Q3	2018Q3
Europe	6.1	6.8	20.2	17.4
Industry	8.5	7.5	14.2	10.7

Source: Airline Analyst * constant sample basis, not seasonally adjusted

- At the regional level, the EBIT margin also showed a decline to 17.4% vs 20.2% in Q3 2017.
- Across the region's main markets, pax yields remain generally lower vs last year. Most notable is still the Russia domestic market, where yields are currently more than 18% below the levels seen in Nov 2017. Declines are also evident for the SthAm & Asia markets.

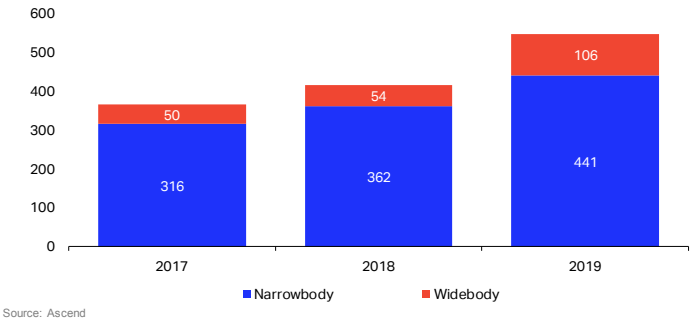
Passenger yields (US$, excl. surcharges & ancillaries)

% change on a yr ago	2017	Sep-18	Oct-18	Nov-18
Russia domestic	12.5	-16.8	-16.2	-18.4
Within Europe	-1.6	-0.3	-1.0	-0.8
Europe - North America	-1.9	5.8	3.0	0.5
Europe - Asia	1.9	-2.7	-1.0	-3.4
Europe - Middle East	-2.3	-4.0	-2.8	-2.7
Europe - Africa	-5.3	1.0	1.1	-1.6
Europe - South America	7.5	-5.2	-7.4	-9.7

Source: IATA PaxIS Note: historical data may be subject to revision

- The latest data indicate a 32% increase in the number of jet aircraft deliveries scheduled for the European carriers in 2019 vs 2018.

Aircraft deliveries to Europe (1Q19 data)



Source: Ascend

Department for Transport

Road goods vehicles travelling to Europe: October 2017 to September 2018

About this release

This statistical release summarises the number of road goods vehicles travelling to Europe. It collects information from roll-on roll-off (also called 'RoRo') ferry operators and Eurotunnel, on the number of powered vehicles and unaccompanied trailers, carried on all the ferry routes from Great Britain and Europe, plus the Channel Tunnel.

Domestic routes within the UK are excluded from the main findings, however information on routes to Northern Ireland is contained in a separate section, on page 4 of this release.

In this publication

3.5 million road goods vehicles travelled from Great Britain to Europe in the twelve months ending September 2018, unchanged from the previous year. This comprised of:

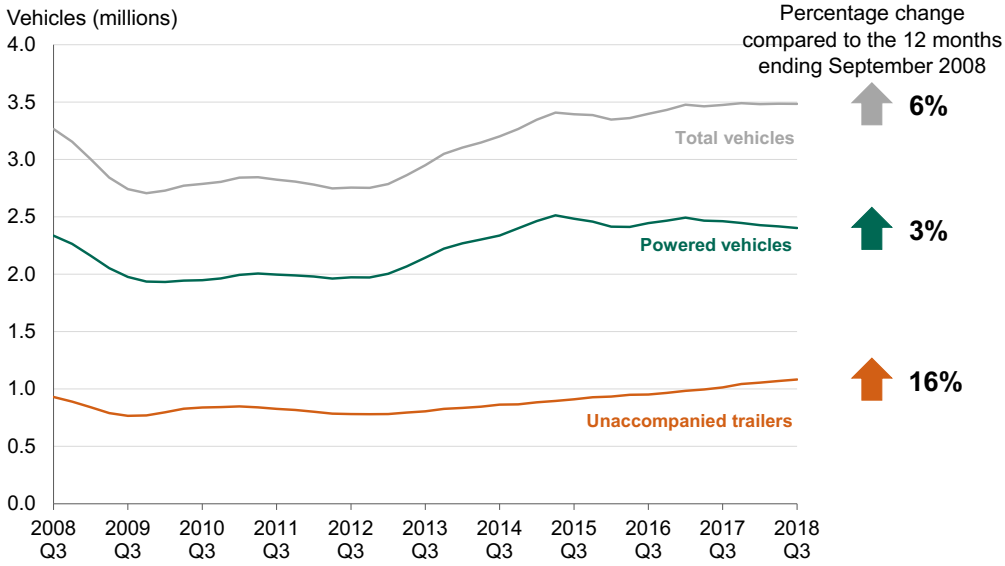
Compared to the 12 months ending September 2017

2.4 million powered vehicles — Powered Vehicles — ↓ 2%

1.1 million unaccompanied trailers — Unaccompanied Trailers — ↑ 7%

The number of road goods vehicles that travelled from Great Britain to Europe in the twelve months ending September 2018 is now 6% higher than the pre-recession levels, 10 years earlier. Over the last 3 years, the number of road goods vehicles travelling from Great Britain to Europe, has been broadly stable at around 3.5 million.

Road goods vehicles travelling from Great Britain to Europe, rolling 12 month totals, September 2008 to September 2018 (Table RORO0101)



Definitions

Powered vehicles (over 3.5 tonnes) includes: Rigid lorries, tractors & trailers (counted as one unit) and tractive units only.

Unaccompanied trailers includes: tow bar trailers and articulated semi trailers, not accompanied on the ferry by a powered unit.

RESPONSIBLE STATISTICIAN: Nayim Ahmed roadfreight.stats@dft.gov.uk

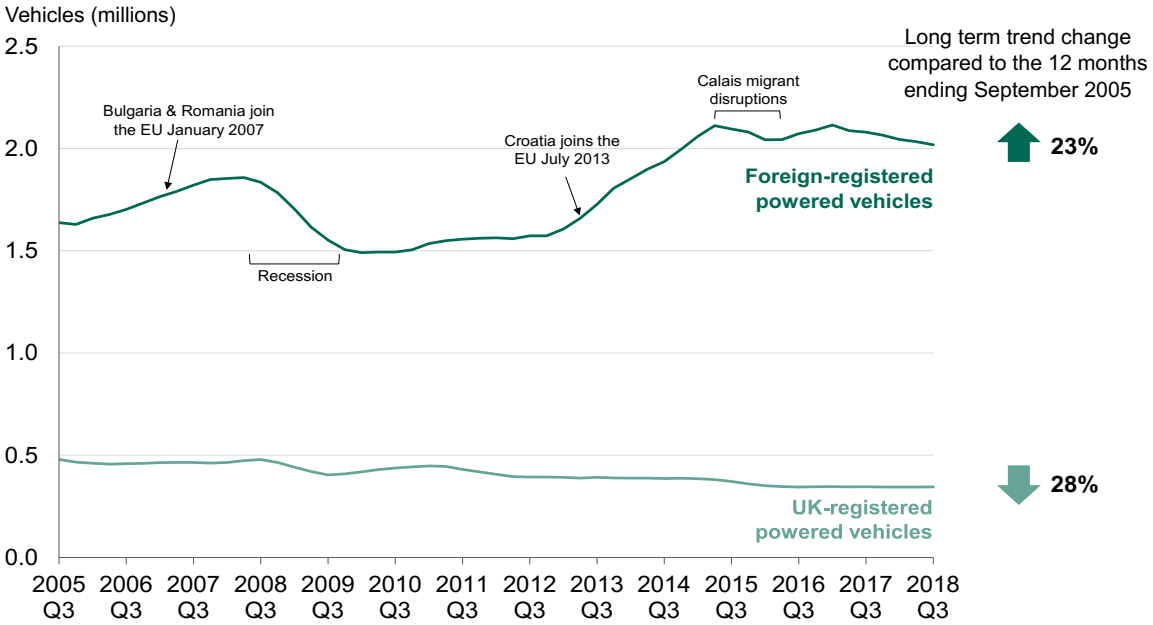
FURTHER INFORMATION: Media: 020 7944 3021 Public: 020 7944 3095

Country of vehicle registration

There have been more **foreign-registered** vehicles travelling from Great Britain to Europe than **UK-registered** vehicles since 1997. In the twelve months ending September 2018, the number of foreign-registered powered vehicles travelling from Great Britain to Europe (2.0 million) decreased by 3% compared to the previous year. The number of UK-registered powered vehicles travelling from Great Britain to Europe (0.3 million) remained unchanged. Note: These figures will not sum to the total number of powered vehicles (2.4 million) given in previous page due to a combination of rounding and the omission of unknown vehicles.

Generally, the number of UK-registered powered vehicles travelling from Great Britain to Europe has been in gradual decline since 2005, while the number of foreign-registered powered vehicles has been steadily increasing with the exception of the recession related fall between 2008 and 2013. However, since 2015, the number of foreign-registered vehicles travelling to Europe has remained between 2.0 and 2.1 million, which reflects the stabilising trend of road goods vehicles travelling to Europe.

Chart 1: UK and foreign-registered powered vehicles travelling from Great Britain to Europe, rolling 12 month totals, September 2005 to September 2018 (Table RORO0601, RORO0701)



**Note: 2005 Q3 is the earliest comparable rolling 12 month total, due to the addition of data on road goods vehicles using Irish Sea ports from 2004 (the first point from which it was collected)*

The proportion of powered vehicles registered to Western European countries such as the **UK**, **Netherlands**, **Germany** and **France** that travelled from Great Britain to Europe has fallen as a result of Eastern European countries such as **Poland** and **Romania** having greatly increased their share since joining the European Union (EU).

The volume of powered goods vehicles registered to **Poland** has increased from when it first joined the EU in 2004 (3%), to 20% in the twelve months ending September 2018 - **the largest share of any country**.

The **UK** was the most prevalent country of vehicle registration ten years ago. However, it is now second with a 14% (0.3 million) share of all powered goods vehicles travelling from Great Britain to Europe.

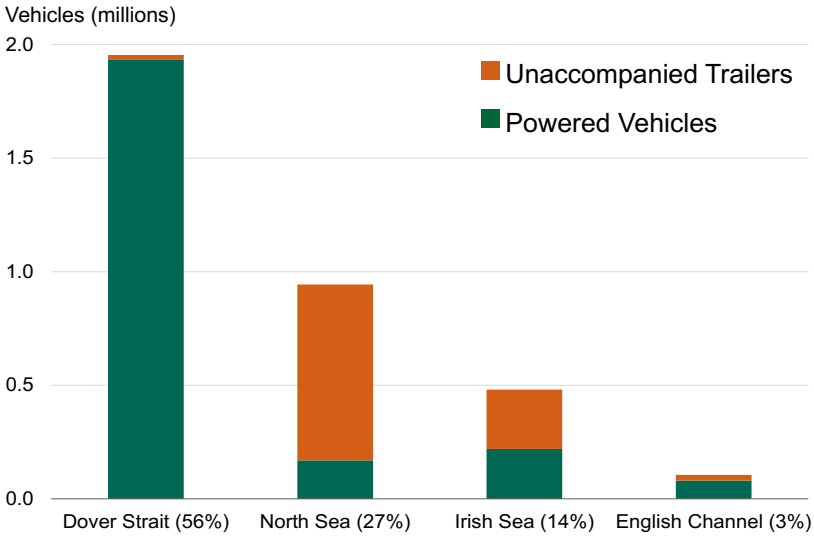
Since **Romania** joined the EU in 2007, its share of powered goods vehicles travelling from Great Britain to Europe has risen from 2% to 10% in the twelve months ending September 2018, making it the third largest country of vehicle registration.

More information on country of vehicle registration for other EU countries can be found in Table RORO0201.

Country of disembarkation

In the twelve months ending September 2018, more vehicles left Great Britain via the Dover Strait port group (56%) than all of the other port groups combined. The majority (80%) of **powered vehicles** travelling to Europe left via the shorter routes on the Dover Strait port group, whereas the majority (72%) of **unaccompanied trailers** travelled via the longer North Sea port group routes.

Chart 2: Road goods vehicles travelling from Great Britain to Europe by port group and type, October 2017 to September 2018 (Tables RORO0401, RORO0501)

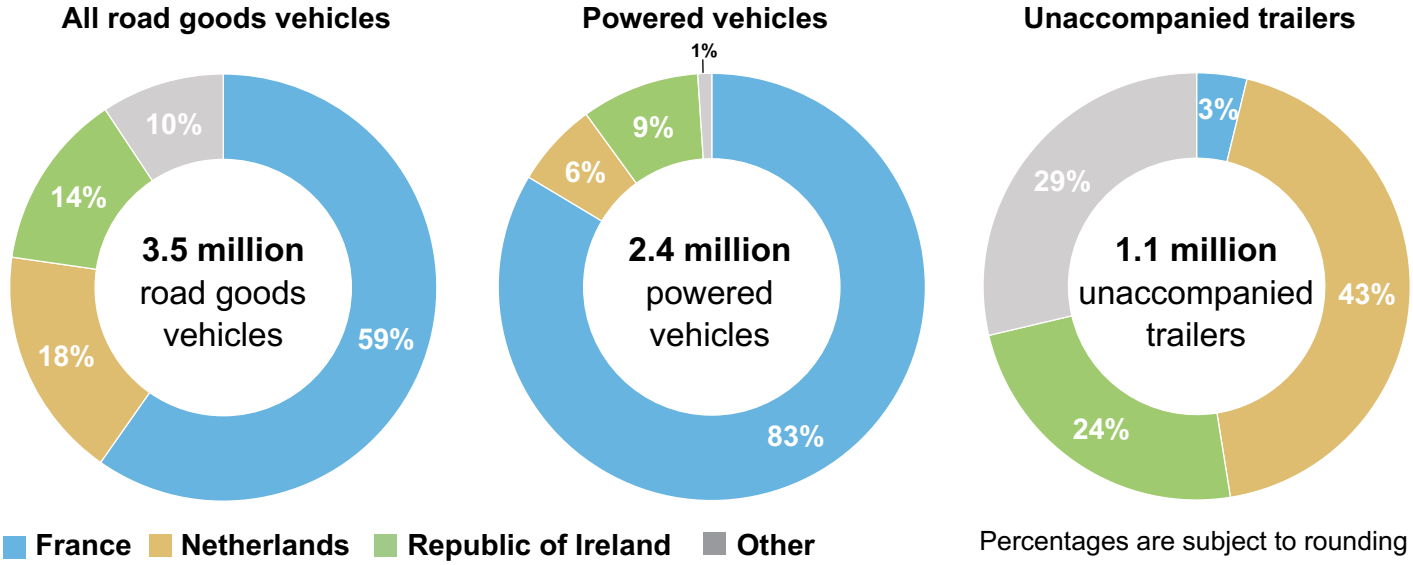


Port Groups

There are four port groups: **Dover Strait** (Ferry routes from Dover, Folkestone and Ramsgate; along with road goods vehicles using the Channel Tunnel), **North Sea** (All ports on the east coast of Great Britain, north of and including the Thames estuary), **Irish Sea** (All ports on the west coast of Great Britain), and **English Channel** (All ports on the south coast of Great Britain, west of Folkestone).

The prevalence of powered vehicles (those accompanied by drivers to allow a continuous, faster journey) on shorter routes is a result of these routes being used to transport more urgent freight such as machine parts or perishable goods. France is the most common country of disembarkation for powered vehicles travelling from Great Britain to Europe, accounting for 83% of all powered vehicles. Freight which is less time critical is often shipped on the longer and slower routes, using unaccompanied trailers which are subject to stoppages in transition. Netherlands is the most common country of disembarkation for unaccompanied trailers travelling from Great Britain to Europe, accounting for 43% of all unaccompanied trailers. Detailed statistics on road goods vehicles travelling to Europe by country of disembarkation and port group can be found here.

Chart 3: Road goods vehicles travelling from Great Britain to Europe by country of disembarkation, October 2017 to September 2018 (Tables RORO0301, RORO0401, RORO0501)



Percentages are subject to rounding

'**Other**' predominantly Belgium, along with Denmark, Estonia, Finland, Germany, Norway, Spain and Sweden.

Island of Ireland

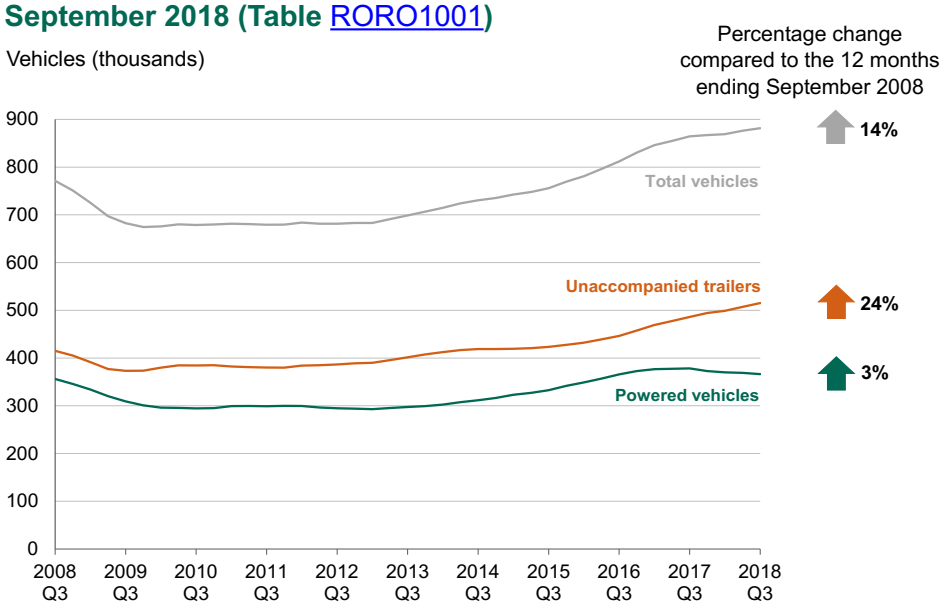
Vehicles travelling on domestic ferry routes from Great Britain to Northern Ireland are not included in the main part of this release; however this section includes statistics on those vehicles in order to give a complete picture of activity travelling from Great Britain to the **island of Ireland**, i.e. both the Republic of Ireland and Northern Ireland combined. Detailed statistics can be found in Table RORO1001.

Overall trends

In the twelve months ending September 2018, a total of 881 thousand road goods vehicles travelled from Great Britain to the island of Ireland, a 2% increase compared to the year ending September 2017, of which:

- 366 thousand (42%) were **powered vehicles**, a 3% decrease compared to the twelve months ending September 2017. Of these, 220 thousand (60%) disembarked in the Republic of Ireland and 146 thousand (40%) disembarked in Northern Ireland.
- 515 thousand (58%) were **unaccompanied trailers**, a 6% increase compared to the twelve months ending September 2017. Of these, 261 thousand (51%) disembarked in the Republic of Ireland and 254 thousand (49%) disembarked in Northern Ireland.

Chart 4: Road goods vehicles travelling from Great Britain to the island of Ireland, rolling 12 month totals, September 2008 to September 2018 (Table RORO1001)



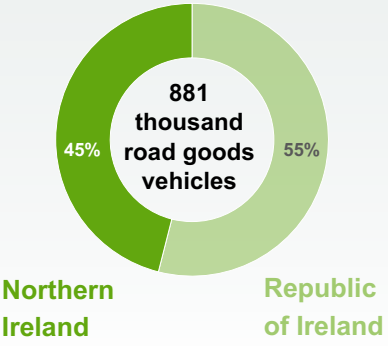
Country of vehicle registration

In the twelve months ending September 2018, powered vehicles travelling from Great Britain to the island of Ireland were predominantly either UK or Irish-registered (79% in total). However, there are stark contrasts in the proportion of UK and Irish-registered powered vehicles travelling from Great Britain to the island of Ireland:

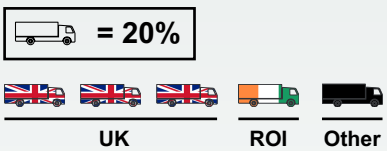
- 146 thousand powered vehicles disembarked in Northern Ireland, of which 90% were UK-registered and 7% were Irish registered.
- 220 thousand powered vehicles disembarked in the Republic of Ireland, of which 38% were UK-registered and 30% were Irish registered.

Note: Remaining proportion of powered vehicles disembarking in Northern Ireland or in the Republic of Ireland were registered elsewhere or unknown

Country of disembarkation for Irish Sea port group, October 2017 - September 2018



Country of vehicle registration to the island of Ireland, October 2017 - September 2018



***ROI = Republic of Ireland**

In the twelve months ending September 2018, powered vehicles travelling to the island of Ireland were predominantly UK-registered (59%), with a further 21% being Irish-registered, and 21% registered elsewhere or unknown.

Strengths and weaknesses of the data

The figures in this release are derived from quarterly returns provided by the roll-on roll-off (also called 'RoRo') ferry operators, who are requested to provide the number of powered vehicles by country of vehicle registration and unaccompanied trailers carried on each ferry route from Great Britain to Europe. Equivalent information for the number of powered vehicles travelling through the Channel Tunnel are provided by Eurotunnel.

Figures for outward traffic only are presented here; up to 1978 inward traffic was also recorded, but as it was similar to outward traffic, the data requirement was discontinued to save respondent effort. Ferry routes to countries outside Europe, such as Morocco, are not included here. A list of active routes recorded since 2004 can be found in Table RORO0901.

Since a data quality review in early 2008, survey returns have been supplied by all roll-on roll-off ferry operators, which has resulted in more complete reporting of the country of vehicle registration. However, while information on the country of registration for powered vehicles is derived by some operators from the vehicle registration mark, others estimate the nationality from the manifest or waybill, or in some cases, use the country of booking as a proxy for the country of registration. This means there may be discrepancies in the reported nationality of powered heavy goods vehicles and their actual nationality of registration. Users should exercise caution if using country of vehicle registration for analysis.

Further information about the statistics and methodology in this report can be found in the Roll-on Roll-off International Freight Statistics notes and definitions.

Background notes

Accompanying data tables which give further detail on the key results presented in this statistical release are available here: https://www.gov.uk/government/collections/road-freight-domestic-and-international-statistics.

Further information such as definitions and background on the statistics can be found in the Roll-on Roll-off International Freight Statistics notes and definitions.

Details of ministers and officials who receive pre-release access to these statistics up to 24 hours before release can be found here: https://www.gov.uk/government/publications/roll-on-roll-off-international-freight-statistics-pre-release-access-list.

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The Quiet Con

'A' Weighted Leqs as the Index of Aircraft Noise Annoyance

Produced for HACAN ClearSkies with the assistance of
FANG (the Federation of Aircraft Noise Groups).

CONTENTS

The Quiet Con

'A' Weighted Leqs as the Index of Aircraft Noise Annoyance

Introduction

> Heathrow has seen a record of continuous long-term improvement in the noise climate with the number of people within its noise 'footprint' reducing from two million to about 300,000 over the past 25 years. This is despite a 70 per cent increase in the number of aircraft taking off and landing.
> *British Airways' High Life Magazine, November 2002*

> Nobody hearing evidence from people living around Heathrow as I have done could fail to appreciate the profound feeling that noise generated by aircraft using the airport has not been controlled in any effective manner.
> *Roy Vandermeer, QC, Terminal Five Inspector's Report*

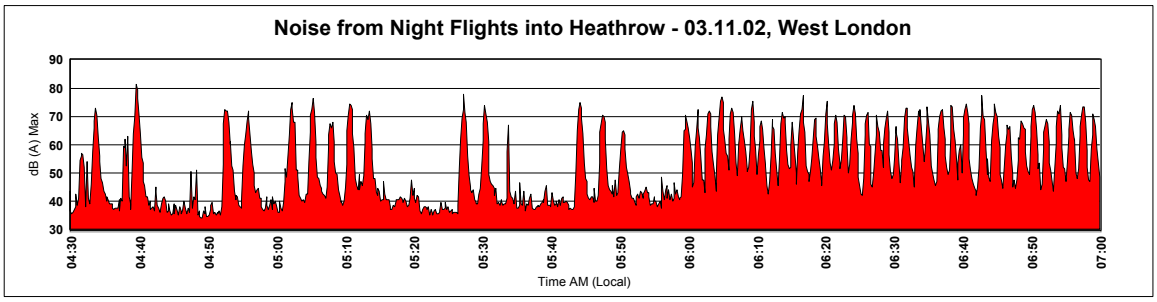
> The evidence confirms the Department's view that the contours are not faultless, and that other factors can and must be taken into account.
> *Roy Vandermeer, QC, Terminal Five Inspector's Report*

These three statements above refer to the same environmental problem, the aircraft noise currently endured by residents across London and the Thames Valley due to the position of Heathrow airport. The difference is that the first statement, written by a company who hope to persuade the Government to approve a third, and then a fourth runway at Heathrow, draws upon the measurement the Government itself currently relies upon, an 'A' weighted Leq. The second statement, on the other hand, is the testament of people actually subjected to that aircraft noise, as summarised by the independent T5 Planning Inspector. This is not a comparison of like with like: a 'profound feeling' is something to be wary of, because it relies on a subjective notion, whereas an Leq is an objective scientific measurement. The third statement, however, recounts an admittance by the Government that the way it currently assesses aircraft noise is faulty.

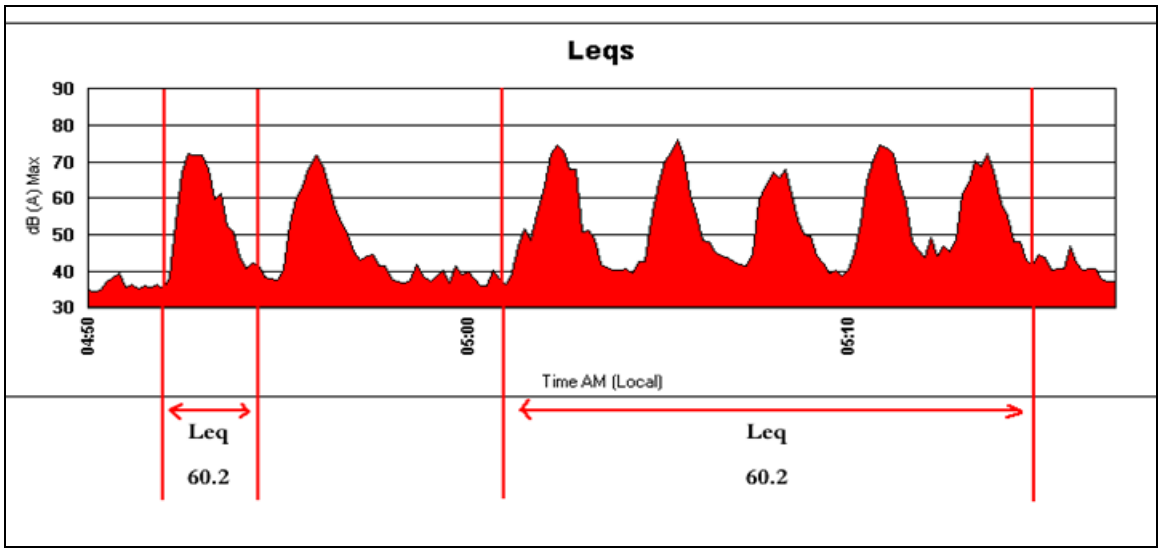
This paper is in two parts. The first part outlines what an Leq is, and looks at the way the Government uses Leq to measure the noise exposure dose of those subjected to aircraft noise. The second part focuses on the significance of the fact that the Leqs used are themselves 'A' weighted. Those already familiar with sound measurement and the arguments over the Government's continued use of Leqs may wish to go straight to Part II, which contains the original material of this paper. It should be noted that this paper has been produced with limited resources, and its limited aim is to persuade those responsible for assessing aircraft noise to use their resources to produce additional indices to 'A' weighted Leqs, sole reliance on which is likely to be distorting the truth.

Part 1: Sound Level Equivalent, Leq

L stands for sound Level, and eq stands for equivalent, and Leq is an average Decibel measurement of sound over time, called a Sound Level Equivalent. The graph below shows how the sound level, L, varies with time as aircraft fly overhead[1].

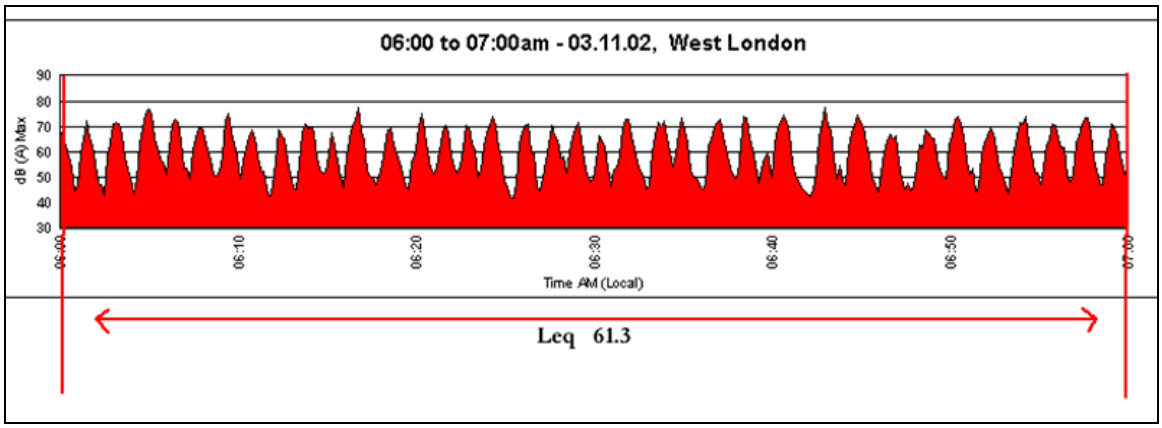


The background noise level is a little under 40 dB, and each time an aircraft flies overhead the sound level rises to around 70 dB. Leq averages out the sound to produce a single dB figure, equivalent to an unvarying level of sound over the same time period. This figure is then used as a measure of noise exposure.



In the above graph, for instance, the sound level starts below 40 dBs, increases to over 70 dBs, then dies away again: the Leq for a single aircraft movement is only 60.2 dB, despite the fact that for 20 seconds the aircraft is producing over 70 dBs. Similarly the Leq for the five aircraft (shown on the right) arriving at Heathrow between 05:00am and 05:20am is also only 60.2 dB, although four out of the five actually produce more than 70 dBs.

[1] All noise measurements in this paper are taken from approaching aircraft approximately 6 miles from the runway threshold, at which point aircraft are descending through 2000ft.

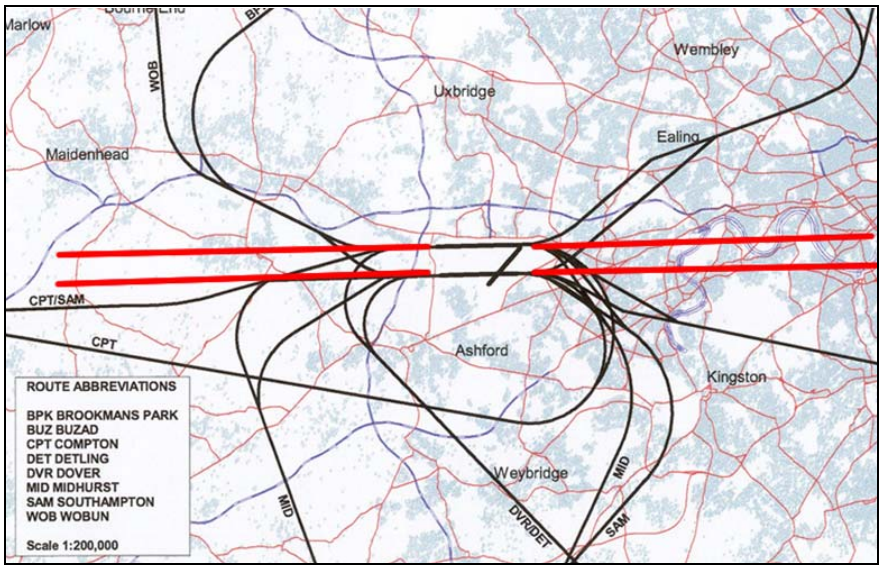


Similarly in the graph above the Leq between 06:00am and 07:00am at Heathrow is 61.3 dB, produced by a background sound level of 40dBs, and 36 peaks of aircraft noise, most of which exceed 70dB. This pattern is reproduced throughout the 16 hour day, the period the Government uses to produce the daytime Leq figures for Heathrow. It is true, as the Government argue, that Leq is a universally recognised metric of noise dosage for near continuous sound over a given time period. However, Leq it is not well-suited to measuring aircraft noise, because, as the above graphs illustrate, aircraft noise is made up of a series of distinct events. These limitations of Leqs when applied to this type of noise hazard are recognised internationally, for instance by the World Health Organisation:

> Where there are no clear reasons for using other measures, it is recommended that LAeq,T be used to evaluate more-or-less continuous environmental noises. However, when there are distinct events to the noise, as with aircraft or railway noise, measures of individual events such as the maximum noise level (LA Max) or the weighted sound exposure level (SEL) should also be obtained in addition to LAeq,T.
> *WHO Guidelines for Community Noise, Executive Summary, p2*

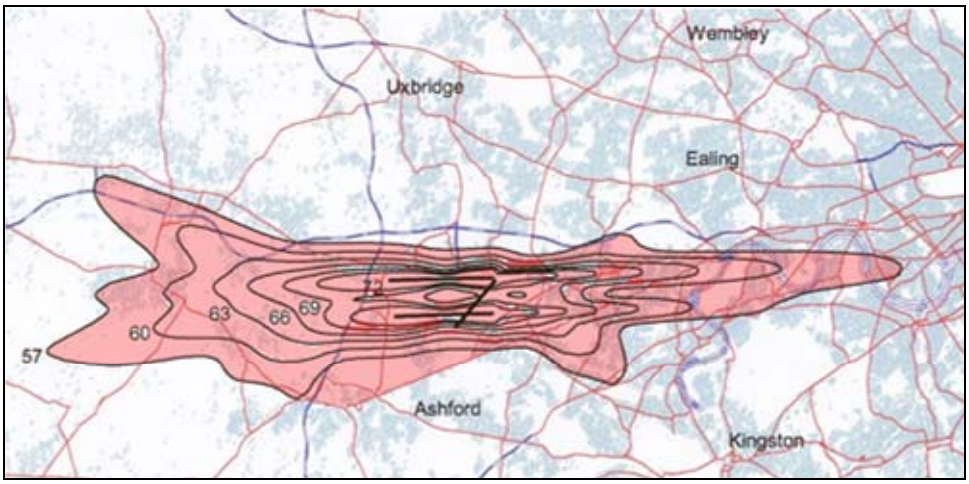
Leq Noise Contours

The approach and departure routes at Heathrow are given in the map below:



Departure (in black) Routes, and Straight-in Approach Paths (in red) for Heathrow

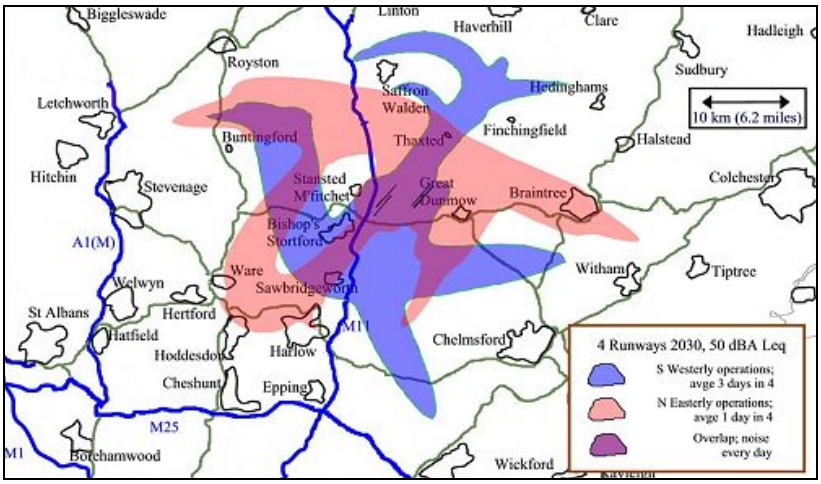
By feeding these routes into a computer and using information about the noisiness of individual aircraft generated by monitors, the Government uses the 16 hour LAeq to produce daytime noise contour maps out to a level of 57 dB.



16 hour Heathrow Noise Contours out to 57dB LAeq, for 2002.

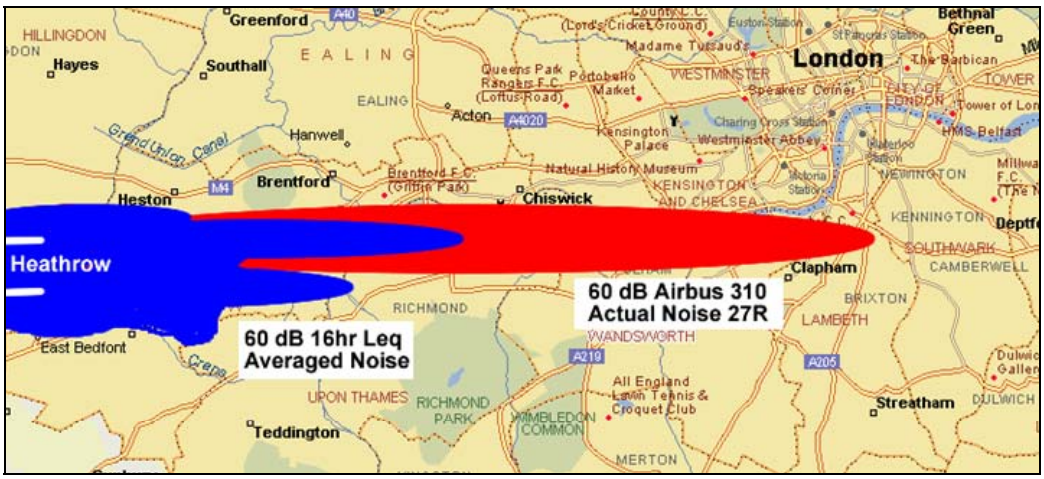
Aircraft need to take off and land into the wind, so westerly winds mean that they approach Heathrow to land over London, heading west, and take off over Windsor, also heading west. This is known as 'westerly operations' or 'westerlies' for short. When the wind is from the east the pattern is reversed, and aircraft approach over Windsor, and take off over west London, heading east. The ratio between westerly and easterly operations at Heathrow is know as the 'modal split'. The prevailing wind over the United Kingdom is from the west, as a result of which for approximately 75% of the time Heathrow is on westerly operations. On easterly operations aircraft turn sharply soon after take off, to avoid the built-up areas straight ahead, instead flying over Ealing to the north, or Twickenham and Wimbledon to the south, giving rise to bumps in the noise contours out towards Ealing and Kingston. On westerly operations the turns are not so tight, spreading the contours over Slough to the North, and to the south east of Windsor to the south. This is partially why, to the east of Heathrow over west London, the contours produce a longer, narrower shape than over Windsor.

There is another reason for the asymmetry in the noise contours, however, which is the way the modal split is incorporated. The approach paths over Windsor are only used 25% of the time, and thus feature less strongly. So not only is the Government using ALeq in a non-standard way because aircraft noise is a series of high noise events rather than near continuous sound, but the resultant inaccuracy is then magnified by including the periods of relief experienced due to altering wind direction. This shrinks the contours and gives a false picture of the extent of aircraft noise. For instance, when Heathrow is on Westerly Operations, which occurs approximately 273 days of the year, a lot more people are living within the 57dB Leq than is suggested by the Government's noise contours. What is needed are separate sets of contours for westerly and easterly operations, together with an indication of the proportional split between the two. An example of this for Stansted with four runways, produced not by the Government but by local individuals, is given overleaf:



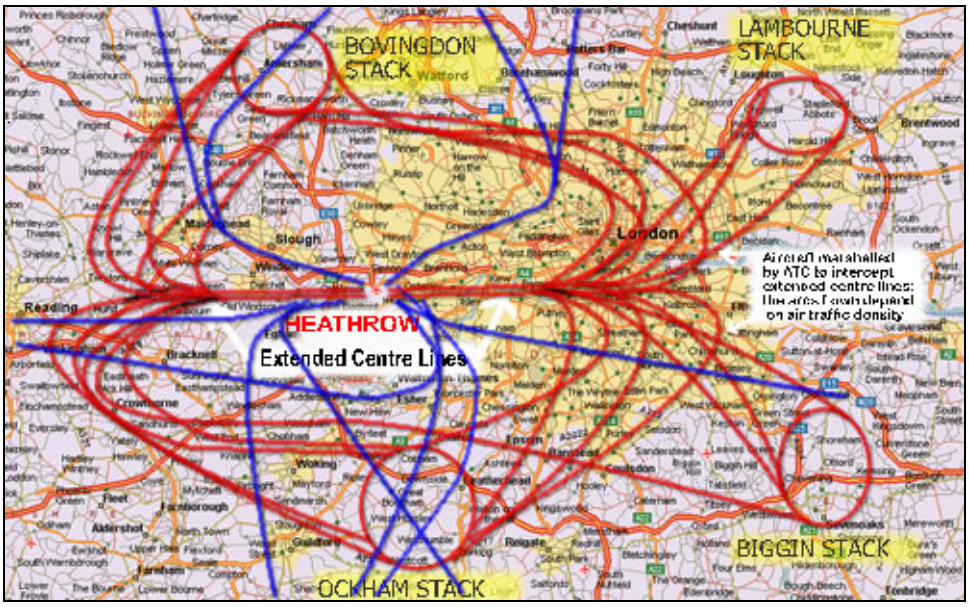
Stansted SERAS projection: Noise Contours showing modal split

The above map uses Leqs as its basic index, but there are other ways in which the extent of noise disturbance can be assessed. The map below, for instance, compares the 60dB LAeq noise contour (in blue, only going as far as north Richmond) with the actual 60dBA noise footprint of an Airbus 310 (in red, stretching out to north Brixton). The red contour shows the extent of people subjected to actual noise above 60dBA whenever an Airbus A310 lands at Heathrow on Westerly Operations. The map assumes a straight in approach, and an Airbus 310 is a short haul QC1 rated (relatively less noisy) aircraft.



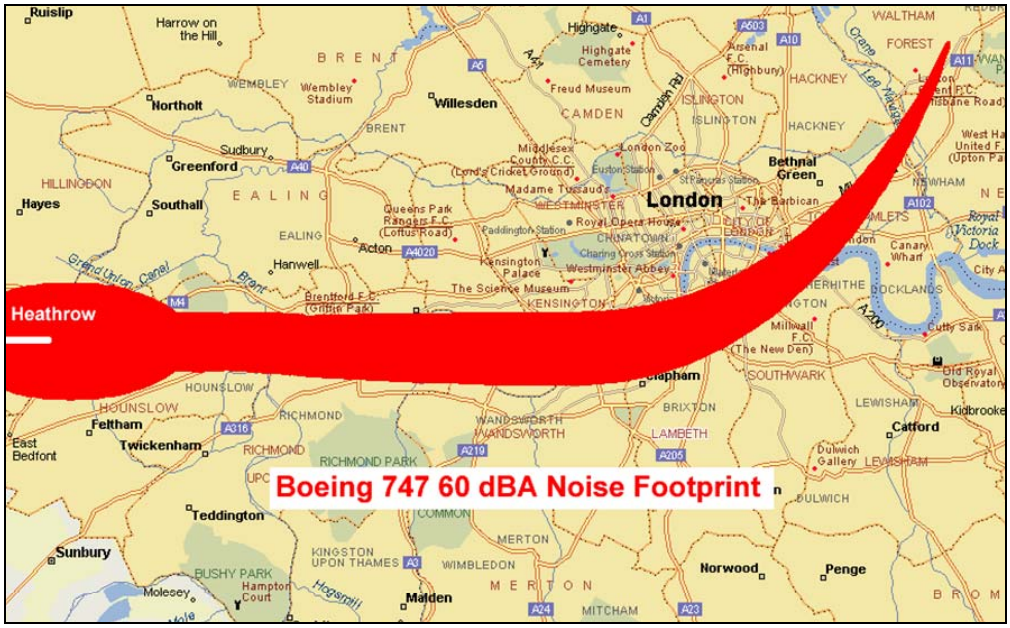
60dB LAeq v. 60db LA Max Noise Footprint for an Airbus 310

The production of noise contours assumes a straight in approach by all aircraft, but this is not what happens in practice. Heathrow is fed with approaching aircraft from four stacks: the overall picture of both arrival and departure tracks, is illustrated in the map below.



London Heathrow - arrival (red) and departure (blue) routes. (The red arrival routes show the variety of flight paths aircraft may take, depending on the volume of traffic. The blue departure routes are fixed - aircraft may not deviate from them below 4000ft unless directed to do so by air traffic control for operational reasons.)

The map below approximates the area of noise produced by a Boeing 747 - 400 coming off the Lambourne stack and turning over Stockwell to line up on Heathrow's northern runway. (Although the Government do not use Leqs to measure night noise exposure, 60dBA, it should be noted, is the level which the WHO experts on the subject agree should not be exceeded at night. A high proportion of the 14-16 aircraft which currently arrive at Heathrow between 04:00 and 06:00 am are Boeing 747s.)



Boeing 747 arrival noise footprint 60dBA (from Lambourne stack) - approximation

To use ALeqs as the sole index of aircraft noise is unsatisfactory not only for the reasons given above, but also because it fails to give adequate weight to the large increase in the numbers of aircraft now using Heathrow. The way sound is perceived in a human mind does not correspond in a linear way to its energy level: to double the amount of energy in a sound wave is not to make the sound twice as loud. The relationship between what is heard and the energy present in the sound wave corresponds instead to a logarithmic scale - thus the Decibel scale is logarithmic. To double the number of aircraft is to increase the Leq by approximately 3 (10 log 2), or, to put it another way, to decrease the average sound of each aircraft by 3 dB enables a doubling of the number of aircraft without increasing the Leq. To understand the mechanism requires mathematical skill, but the effect can be clearly expressed:

> Or again, given that the current number of ATMs at Heathrow (427,000) is roughly equal to the numbers at Gatwick, Stansted and Luton combined, according to the Leq model the population around Heathrow would hardly notice if all the latter flights were transferred to Heathrow. This seems so patently absurd that it calls into question the whole concept of Leq as a tool for quantifying changes in the response of the population over time.
> *Dr Hugh Jones, Imperial College, Proof of Evidence presented to T5 Inquiry*

Another way of illustrating the point is to examine the way Leq is misleading and look at the effect of runway alternation, as was also raised at the T5 Inquiry:

> Suppose that the Government decided that runway 27L would always be used for landing, and runway 27R always for take-off, as indeed was the threat when a third parallel runway was considered at Heathrow. That means that for half the population the numbers [of aircraft] would be roughly doubled, whereas some would have the numbers greatly reduced. Thus at a stroke roughly half the population would be removed from the 57 Leq contour, so that one could claim that "the number of people affected by aircraft noise" had been drastically reduced.
> *Dr Hugh Jones, Imperial College, Proof of Evidence presented to T5 Inquiry*

The way in which the Leq index fails adequately to reflect the distress caused by the increase in number of aircraft using Heathrow is summed up by the T5 Inspector as follows:

> I do not believe that the increase in the number of movements has been adequately reflected in the LAeq 16 hour measure
> *Terminal Five Report, 21.3.52*

This point becomes particularly significant with the retirement of Concorde. With respect to departures, Concorde's contribution to the LAeq was almost the equivalent to that of the rest of the entire fleet put together. Overall Concorde produces as much sound energy as 120 Boeing 757s, so if the Leq scale alone is used as a 'noise cap' (as both British Airways and BAA plc are calling for) Concorde's demise would let in a further 120 Boeing 757s. This is a direct illustration of the inadequacy of Leqs, because four hours worth of non-stop noise from Boeing 757s at a rate of one every two minutes, is very much worse to have to endure than two minutes of one extremely loud Concorde, followed by 3 hours 58 minutes relief. Unfortunately, however, the Government have chosen to use noise contours which include Concorde as a base from which to measure any deterioration in the noise climate should a third runway be built at Heathrow. With regard to Terminal Five, the Inspector warned against this:

> I have grave doubts as to the validity of using the potential benefits of phasing out Concorde as a justification for permitting Terminal Five.
> *T5 Summary Document, 88, p16*

Using such an index the number of noise events over 70dBA, as used by Sydney International Airport (see Appendix III), overcomes the way Leqs mask the number of aircraft involved.

There is also the fundamental point that the figure of 57dBLAeq, chosen by the Government to be the 'onset of community annoyance', is two decibels higher than the international figure used by the WHO, which acknowledges that serious annoyance commences at 55 dBLAeq. The Government's rationale for adding two decibels to the figure is as follows:

> Because most aircraft noise originates from above, contours include the effect of ground reflection (see Note 2)
>
> Note 2: Aircraft noise: daytime values accord with the contour values adopted by the DfT which relate to levels measured 1.2m above open ground. For the same amount of noise energy, contour values can be up to 2dBA higher than those of other sources because of reflection levels.
> *Planning Policy Guidance (PPG24): Planning and Noise, June 1997*

There is no scientific justification for this: what needs to be measured is what actually affects people, and this includes any inevitable ground reflection. A person comparing 57dB's worth of experienced car noise with 57dB's worth of experienced aircraft noise, is going to be subjected to the same level of noise, and is not going conclude that the aircraft is in fact 2 Decibels less noisy because the noise comes from above and is more prone to ground reflection - but that is how the DfT attempt to justify their reduction of the threshold. It has been claimed that there is a statistical correlation of the onset of annoyance with the 57 dBAleq contour, but the scientist called on behalf of the Government at the T5 inquiry was forced to admit that the Government's own press release on the subject was misleading, and that this correlation is in fact statistically weak.

> The expert witness for the Department did not attempt to hide the deficiencies of LAeq measures in general and the LAeq 16hour in particular. He accepted that the relationship between LAeq and community annoyance was statistically weak and that the ANIS report had not found a rapid increase in disturbance at 57dB LAeq as the press notice issued at the time had suggested.
> *Terminal Five Inquiry Report, 21.3.32*

It should also be noted that even 55 dB LAeq may be too high a figure, because the World Health Organisation figure for the onset of annoyance (as opposed to serious annoyance) is a full five decibels lower, at 50 dB LAeq. To use the example of Stansted again, if the 50 dB contour is plotted against the official 57 dB contour, its area is almost 2.5 times larger.

Stansted: WHO compared with D/T

Factors such as these (although he did not have access to the Stansted produced contour maps) all contributed to the highly critical way in which the Terminal Five Inspector, after listening not only to the Government, but also to independent witnesses, came to regard Leq.

> I do not, however, believe that it is right to rely entirely upon the single measure of LAeq 16hour. As I have already pointed out this suffers from a number of deficiencies which, in my judgement, limits its value as a true and complete reflection of the impact of aircraft noise on those living around Heathrow.
> *Terminal Five Inquiry Report, 21.3.38*

To appreciate the full weight of the Terminal Five Inspector's criticisms please see Appendix II.

Even the Secretary of State for Transport was forced to take notice of these independent criticisms of the Leq, although his mentality as revealed by his use of the word 'adequacy' when the topic to be addressed is clearly inadequacy.

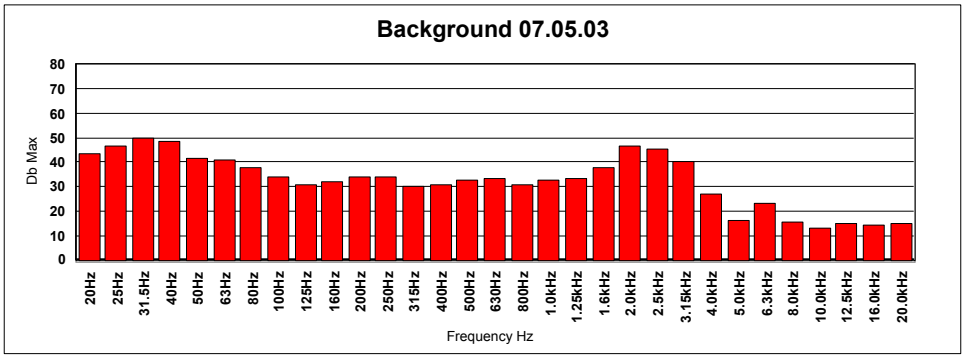
> 60. In the light of the Inspector's views on the adequacy of the Leq index, the Secretary of State thinks it right to adopt a precautionary approach.
> *T5 Acceptance Letter, 20th November 2001*

The Government themselves, therefore, when for the first time really put under the pressure of an independent examination, agreed that Leq fails to provide a robust measurement of aircraft noise exposure. However, the inadequacies referred to above all come into play before any consideration is given to whether 'A' or 'C' weighting used.

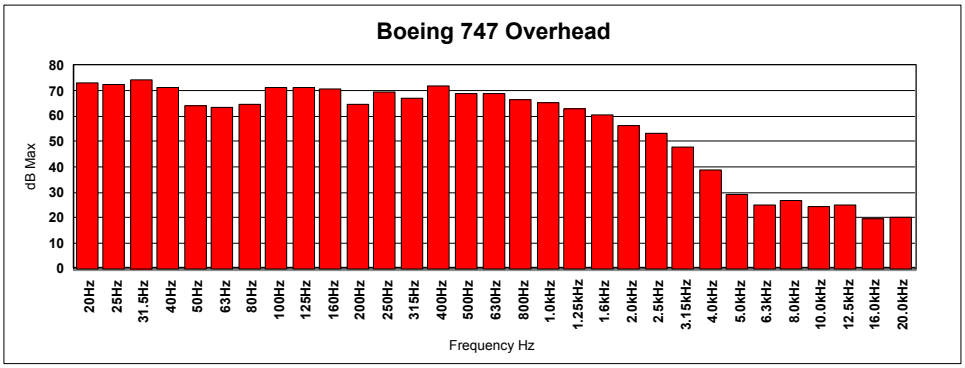
Part II: The Use of 'A' and 'C' Weighting

The next time you hear a bird singing, try blocking your ears, and you'll find that you can hardly hear the bird. Try the same thing when an aircraft flies overhead, and you'll find that despite blocking your ears a lot of the noise still gets through. This is partially because the aircraft is louder, but also because, unlike the bird song, a lot of the aircraft's noise occurs at low frequency. Low frequency sound travels further and has greater penetrative power than medium or high frequency sound, to the extent that when you hear the aircraft noise with your ears blocked, much of the sound is being transmitted by your skull.

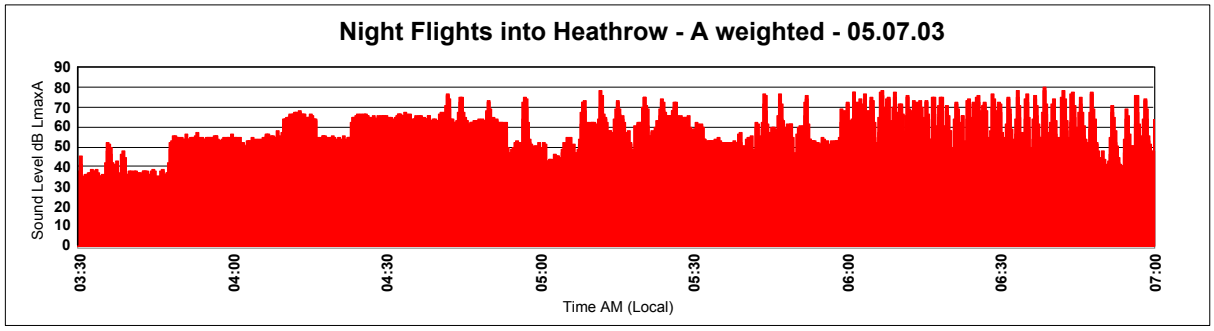
The human mind does not hear sound in a uniform way: it is more sensitive to sound at medium and high frequencies than to low frequencies. To reflect this fact in a way which allows sound to be measured 'as heard' an 'A' weighting filter can be applied to the level of sound as measured by a meter. 'A' weighting largely discounts sound below 200 Hz, and at low and medium volumes of sound this gives an accurate picture of the way sound is perceived. In the graph below, which breaks down sound into its different frequencies, the peak at 2.0kHz is a nearby blackbird singing. The rest of the sound is the kind of background hum to be heard in a city back garden - mainly distant road traffic, a rumble which does have a relatively large low frequency component. At low overall levels of sound, generally speaking the low frequency component is not distressing.



In the next graph a Boeing 747 passes overhead: the blackbird is drowned out by the whine of the turbines, and the characteristic low frequency roar takes over, as indicated by the large amount of high readings at and below 200 Hz. This graph goes down to 20 Hz, which is roughly the lowest note which a human ear hears. However, if an 'A' weighting is applied to the sound level measurement most of the noise between 200Hz and 20Hz, a large proportion of the total noise caused by aircraft is discounted.

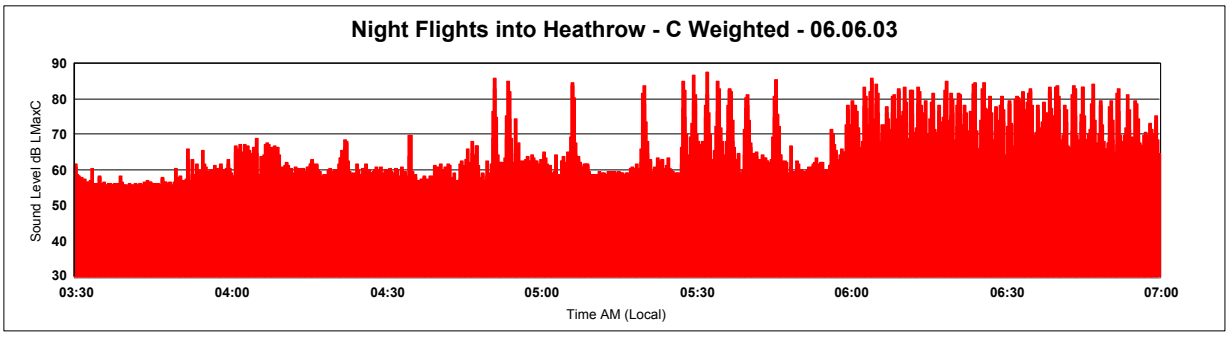


The effect of this when measuring aircraft noise can be illustrated by a direct comparison of early morning night flights into Heathrow.



5th July 2003 was a clear morning, and the increase in background sound level, starting a little before 04:00am and peaking just after, is the dawn chorus. The sound level initially begins below 50dBA, and then increases when the birds start singing to reach a level in the high 60s from just before 04:30am. At around 04:40am the first aircraft arrives, peaking at 78dBA. What is significant, however, is that using 'A' weighting, the noise of the first aircraft appears to be only slightly louder than the bird song. This runs contrary to the way the noise from the aircraft drowns out the bird song: experientially, the bird song and the aircraft noise are very different categories.

'A' weighting is not the only weighting that can be applied to a sound measurement to ensure that it accurately reflects what it heard. 'C' weighting is used when the noise is loud, and especially when there is a large low frequency component. If we now take a look at another morning when the birds sang and night flights came in, a different picture emerges.



The background sound level (the rumble of distant traffic) has increased from around 40 dBs to the high 50s. The dawn chorus is much less marked and peaks at below 70 dB (the same as with the 'A' weighted measurement, because birds cannot physically produce low level sound) and then the first aircraft comes in, just before 05:00am, at 86 'C' weighted decibels. This gives an accurate indication of the full spectrum of noise produced by a modern airliner, something which is particularly important when considering sleep disturbance (as in the above graph, at around 5am in the morning).

The World Health Organisation acknowledge the significance of low frequency sound:

> Special attention should also be given to: noise sources in an environment with low background sound levels; combinations of noise and vibrations; and to noises with low-frequency components.
> *Guidelines for Community Noise, Exec Summary 3.10 - World Health Organisation [WHO]*

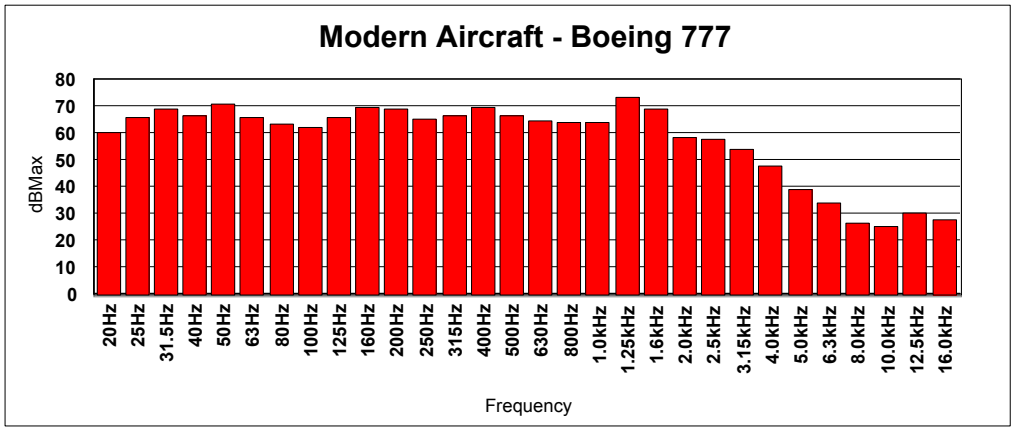
The European directive on the assessment and management of environmental noise also refers to the low-frequency component:

> 3. Supplementary noise indicators
> In some cases, in addition to Lden and Lnight and where appropriate Lday and Levening, it may be advantageous to use special noise indicators and related limit values. Some examples are given below:
> - the low-frequency content of the noise is strong.
> *EC Directive 2002/49/EC Annex 1.3*

Unfortunately, the UK Government continues to refuse to acknowledge the significance of the large low frequency component of aircraft noise:

> On the question of aircraft noise measurement weighting, there are no plans to depart from the use of A weighted decibels...
> *Written Response from the DfT, 27th March 2003*

There is much talk of 'sustainability' in the run up to the forthcoming White Paper on aviation, and how it will be possible to manage aircraft noise to achieve this. However, massaging the way the noise is assessed is not an honest start to managing it. It is true that aircraft have become quieter, but a lot of the improvements have been in the mid to higher frequencies (the characteristic whine of a jet engine). A large aircraft needs to generate a lot of power to remain airborne, even in the landing phase, giving rise to the characteristic highly penetrative roar/rumble (not unlike hearing thunder in the distance). Even the most modern large 'quiet' aircraft, the Boeing 777, puts out a lot of low frequency sound. This aircraft is classified QC1 or even, depending on the engines fitted, QC 0.5 for approaches (ratings which under the current regime allow a large number of these aircraft to land at Heathrow between 23:30 and 06:00), but the graph below indicates that despite these ratings there is a large output of noise below 200 Hz, the part of the noise spectrum discounted by the use of 'A' weighting.



Conclusion

The continued sole reliance on 'A' weighted Leq as the index of aircraft noise annoyance by the UK Government is masking the true extent of the aircraft noise. The Government needs to acknowledge that aircraft noise consists of a series of discreet loud events, and has a large low frequency component, and should therefore be assessed using additional parameters, as recommended by both the World Health Organisation and the European Union. The Government's continued sole reliance on 'A' weighting may partially explain the discrepancy between objective 'scientific' claims that the number of people affected by aircraft noise has diminished considerably, and the subjective observations of those who actually have to endure the noise, particularly those living outside the official noise contours.

The UK Government, which has already agreed that the way it currently measures aircraft noise is flawed, is about to publish a White Paper on the future of aviation in the UK over the next thirty years. This is likely to propose that new runways are necessary despite the environmental problems they cause. The way the Government currently assesses aircraft noise, however, fails to provide an adequate picture of the problem of aircraft noise. Instead, the parameters used by the Government are likely to underestimate significantly the levels of noise residents living up to 20 miles away from major airports are forced to endure. The public's confidence in the forthcoming White Paper, and possibly also its legal standing, are likely to be compromised unless the Government can demonstrate that, in order to assess accurately and honestly the true extent of the environmental degradation caused by aircraft noise, it is prepared to adopt more objective indices of aircraft noise measurement than 'A' weighted Leq.

References

WHO Guidelines for Community Noise, Executive Summary

Directive 2002/49/EC

Status of Low-Frequency Aircraft Noise Research and Mitigation - Wyle Report WR 01-21

Validity of Leq, Proof of Evidence, T5 Inquiry, Dr Hugh Jones

Terminal Five Report, Roy Vandermeer QC

D/T Noise Contours

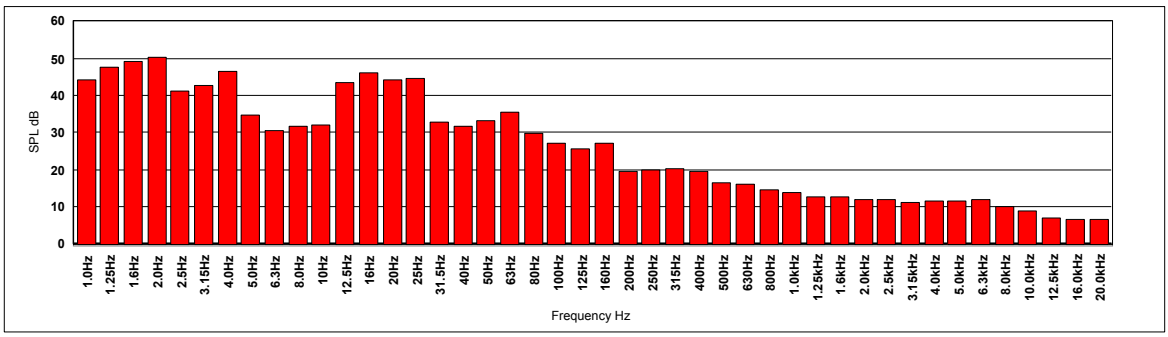
Stansted Noise Contours - Stop Stansted Expansion

Appendix I

Infra-Noise

In addition to the problem of low frequency noise (200 Hz down to 20 Hz), there is also the problem of 'infra-sound'. This is caused by very low frequency 'sound' waves below the hearing threshold of most human beings. They can however be felt (typically in the chest, or through the feet) and at high levels they are liable to cause vibration inside houses (because their penetrative power is very great) - loose fittings, cups and glasses, etc. may rattle. A graph showing the whole frequency range output of a modern jet liner indicates a large infra-sound component:

Complete Frequency Spectrum of an Aircraft Overhead



It should be noted that all the above measurements relate to approaching aircraft, using lower throttle settings. On take off, with much higher throttle settings, the low frequency problem is more acute, with those people behind the aircraft most susceptible. In the United States this problem is caused 'back blast', and the Wyle Report WR 01-21 (see bibliography) is largely dedicated to it.

Appendix II

Extract from the Terminal Five Inquiry - The Inspector's criticisms of Leq

My Conclusions

21.3.29 In assessing the effect of Terminal 5 on the overall noise climate I must first consider the manner in which that climate is measured. I accept the Department's view that any noise index must be reliable, robust, realistic and sensitive. However, I am not convinced that the LAeq 16hour index used by the Department meets all of those criteria. It was criticized by all the main parties opposing Terminal 5 as failing to reflect the actual experience of those living around Heathrow. To some degree such criticisms would be inevitable whatever the form of index adopted. The evidence of those individuals who appeared at the inquiry or made written representations confirms responses to noise vary widely. Consequently any index which attempts to translate this into an average representation of annoyance across the community as a whole must by definition fail to reflect the extremes at either end.

21.3.30 The criticisms of LAeq 16hour go further and deeper than this, however. Although the ANCOM 1 model which is used to generate the LAeq 16hour contours attempts to reflect actual experience in that it uses noise measurements taken from aircraft operating at the London airports, it cannot take into account the

effect of different weather conditions. More significantly it was accepted that it does not reflect the use of runway alternation. Since it is based on average conditions, those affected by runway alternation experience noise levels some 3dB higher while the flight path they live under is in use and 3dB lower when it is not. This is such a fundamental feature of operations at Heathrow that I believe any index which fails to reflect it must be open to question.

21.3.31 Equally LAeq 16hour does not indicate the maximum noise of individual events so that it cannot indicate how many times conversation is interrupted in a particular location whether it be a school, a major public space such as Kew Gardens or a private house or garden. Since these are the very factors which cause annoyance, I can understand why many argued that LAeq 16hour failed to reflect the concerns felt by local residents. I shall consider the impact of Terminal 5 on noise at night in the next part of this Chapter but I should note at this point that the LAeq 16hour measure by definition excludes the night period. Although the Department and BAA argued that it was a good proxy for a 24 hour LAeq, the Department also accepted that this could change if there were a substantial shift in the balance of traffic between night and day.

21.3.32 The expert witness for the Department did not attempt to hide the deficiencies of LAeq measures in general and the LAeq 16hour in particular. He accepted that the relationship between LAeq and community annoyance was statistically weak and that the ANIS report had not found a rapid increase in disturbance at 57dB LAeq as the press notice issued at the time had suggested. I am in no position to investigate the events which took place in 1982 but, on the evidence placed before me, it does seem likely that the weight attached to the 57dB LAeq by the Department as the measure of the overall noise climate is greater than the original research would support. 21.3.33 The greatest single criticism of the LAeq approach was that it failed to give adequate weight to the number of aircraft movements. As the Department accepted, the addition of a further 400 movements by light Chapter 3 aircraft would increase the LAeq 16hour by only 1dB. As the Department acknowledged even a difference of half a decibel could be significant and the area enclosed by a contour would increase by 15-20% for each 1dB increase in the LAeq level. To this extent the LAeq is influenced by the number of events. The issue is whether that influence is sufficient to reflect the experience of those affected. In this context I am concerned by the evidence that for departures, Concorde's contribution to the LAeq 16hour was almost equivalent to that of the rest of the fleet put together. This reflects the claim that Concorde produces as much noise energy as 120 Boeing 757's or 35 Boeing 747-400's.

21.3.34 In fact, many of those appearing at the inquiry told me that the noise climate had deteriorated and that this was largely due to the increase in the number of movements. They were unconvinced by claims based on LAeq 16hour that the noise climate had improved. While I recognise that the sample of people canvassed by HACAN might not be representative I do accept that many of those living around the airport believe that the noise climate has got worse over the last 5-10 years. A substantial number genuinely find the existing noise levels distressing and unacceptable. Since there is no dispute that individual aircraft have become quieter in that period (by a factor of 3.3 according to BAA) I am satisfied that their perceptions must be based on the substantial increase in the number of movements. I also conclude that this is not truly reflected in the LAeq 16hour index.

21.3.35 This brings me on to another criticism of LAeq. It was pointed out that the original study which led to its adoption had taken place in 1982 at a time when Heathrow had been handling some 220,000 movements a year. It is now handling over 440,000 movements (para 8.2.56) and people's perceptions of noise may well have changed in the 18 years since the ANIS report was produced. The Department recognised that it was very difficult to establish the true underlying relationship between the noise of individual events and their number and accepted that it would have been useful if further social surveys had been carried out. I strongly endorse this view. If parties are to have confidence on the indices used to measure the noise climate they need to be founded on a sound basis of up-to-date research. Unfortunately the Department 's own evidence suggests that this does not apply to the use of LAeq, in spite of their argument that research had guided the choice of noise indices since 1967.

21.3.36 Having identified and accepted many of the criticisms of the LAeq system in general and the LAeq 16hour index in particular, it is fair to record that it was presented to the inquiry only as a means of indicating those areas in which various levels of annoyance were likely to occur. There was no suggestion either that everybody within the 57dB LAeq 16hour contour would be annoyed or that nobody outside it would be annoyed by aircraft noise. Indeed the Department accepted that many complaints came from people living outside the area exposed to 55 dB.

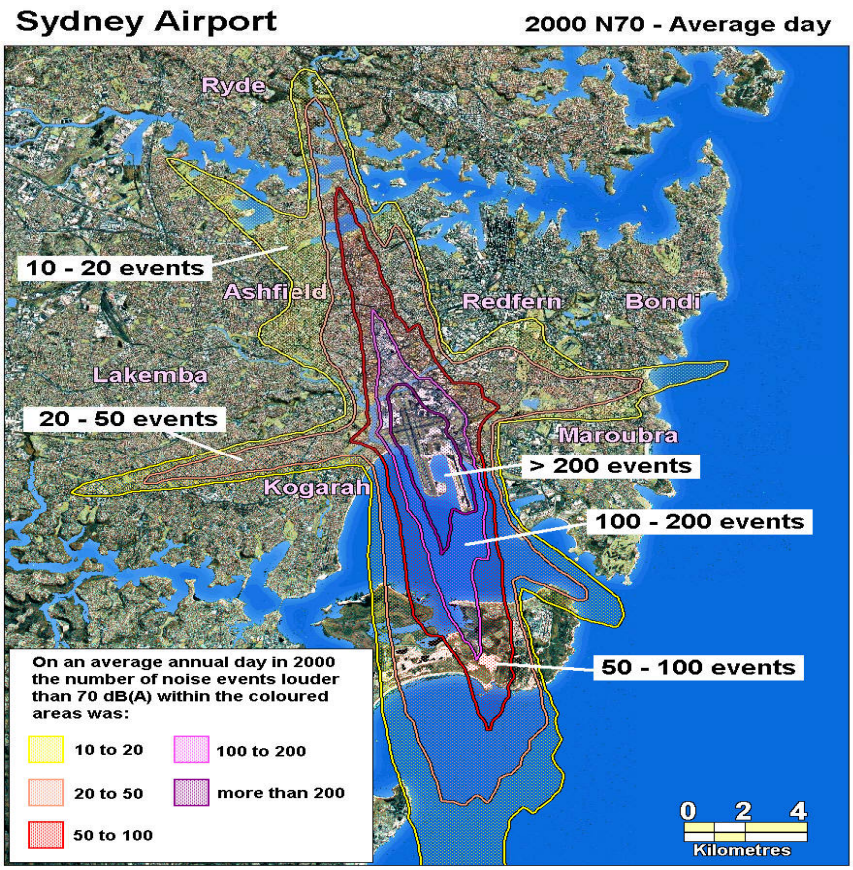
21.3.37 With all its limitations the LAeq system remains the means adopted by the Department to measure changes in noise exposures and to forecast the degree of community annoyance likely to result. It is used throughout PPG 24 the most recent policy advice on the subject and is specifically applied to aircraft noise in that guidance. On that basis, it should be applied as part of the test of the effects to Terminal 5 although not in the form of the noise exposure categories in PPG 24 since these do not apply to new noise sources such as Terminal 5.

21.3.38 I do not, however, believe that it is right to rely entirely upon the single measure of LAeq 16hour. As I have already pointed out this suffers from a number of deficiencies which, in my judgement, limit its value as a true and complete reflection of the impact of aircraft noise on those living around Heathrow. Consequently, I have some sympathy with the approach adopted by LAHT5 and Hillingdon in examining the impact of Terminal 5 on particular locations and under different headings. I believe that this work illustrates the importance of a more detailed assessment than that provided simply by the LAeq 16hour contours. I have recorded the Department's view that it would be wrong of me to judge the effects of Terminal 5 solely by use of the LAeq 16hour contour alone (para 21.3.4). That is a view to which I would have come in any event on the basis of the evidence I heard. I am, however, grateful that the Department made such a concession particularly against the background of a number of assertions by Government that the noise climate around Heathrow was improving based purely on the LAeq 16hour contour. The evidence confirms the Department's view that the contours are not faultless, and that other factors can and must be taken into account.

Appendix III

An Alternative to Leq

Sydney airport, similar to Heathrow because it is cited so that approaching aircraft overfly the city, does not rely on Leqs to indicate the extent of the noise problem. Instead, maps are produced showing the density of air traffic, and also maps giving information such as the number of noise events above 70 dB A on an average day, as below:



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