From:	[redacted]
To:	Manston Airport
Subject:	Manston DCO
Date:	08 February 2019 13:38:01
Attachments:	Document 1 - Main Submission Document.pdf Document 2 - CAA Heathrow Noise Study.pdf Document 3 - Noise Monitoring at Manston.pdf Document 4 - Photos and Map.pdf

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I attach my submission with respect to the deadline of 15 February 2019.

The submission consists of the following documents;

1. Main Submission Document
2. Document for CAA Noise study at Heathrow
3. Document showing noise monitoring data for Manston Airport
4. Document showing photos of airplanes over Ramsgate with a map detailing locations and local schools.

The main submission document covers the following key areas:

1. Basis of stated support for the project
2. TDC objectivity in light of clear independent evidence
3. Night flights
4. Funding inadequacy
5. Other alternatives to Manston airport
6. Noise assessment, monitoring, mitigation and blight

Yours faithfully

Adem Mehmet

Support for the Project

Supporters of an airport at Manston claim that it has overwhelming support from the local population. **However, those who have garnered support for the project have done so by asking questions like "would you rather have an airport or a slum housing estate", "if you don't want more houses you need to support an airport at Manston" and "There will be no night flights". All of these concepts were designed to either scaremonger, play on the fear of local residents who object to more housing (as residents across the country generally do) or mislead people that there would be no night flights.**

On housing, the proposition that it's either houses or an airport is untrue. The housing quota is set completely independently from whether there is an airport or not, the only question is where those houses will be built, at Manston or elsewhere in Thanet. The claims that pro supporters have made are therefore false and their support must therefore be questioned.

On night flights the public have consistently been told that there will be no night flights (see section on Night Flights below) and continue to be told so by RSP, pro airport support groups, Roger Gale MP and Craig Mackinlay MP. We were all told at the consultations that there would be no night flights. I was told this to my face by Tony Freudmann and George Yerrall. Pro airport groups have said from the start that there would be no night flights and that they would not support night flights as have both MPs. **Support claimed is therefore based on the premise that there will be no night flights but we now see from the most recent DCO submission that night flights at a high level are now proposed. Support claimed must therefore be questioned, especially as we know that night flights have not been welcomed in the past. When Infratril proposed night flights under a S106 agreement, thousands of residents attended meetings arrange by the No Night Flights Group. Indeed, when night flights were seen in the recent documents a meeting was called with one day's notice and over 400 people attended in opposition.**

Thanet District Council ("TDC") – Lack of Objectivity despite clear evidence

Previous airport operations at Manston have always failed. **TDC have commissioned a number of reviews of the airport feasibility including during the process with RSP. All evidence has concluded that an airport at Manston is unlikely to be viable and this is borne out by the lack of interest by any party with aviation experience during the many years it was being offered for sale by Price Waterhouse Coopers on behalf of the then owners Infratril.**

Dr Sally Dixon's claims that a cargo operation at Manston is viable have been discredited by York Aviation whose data she used incorrectly to support her case. The examiners should be aware that Dr Dixon is not acting in an independent capacity but has been enaged by RSP to prove their case. Dr Dixon has also worked closely with Tony Freudmann in the past when she was Head of Strategic Information at Planestation and he was CEO. The Planestation operation failed like all the others at Manston. Dr Dixon's avaiation experience seems very limited with 2 years at Planestation, which failed, from 2000-2002. In 2002 she set up Azimuth and her only client since then was in 2015 where she worked for Ricardo developing their aviation business but only for 6 months. Since 2015 there is no aviation or other experience until this current relationship with RSP and Tony Freudmann. Against Falcon, Avia and York Aviation, Dr Dixon's experience is not comparable and on that basis the conclusions from Falcon, Avia and York, that aviation is not viable at Manston should be relied upon.

The examiners will also have been provided with an extensive critique of Dr Dixon's work by No Night Flights which I have read and support.

TDC, despite the clear evidence above, has a group of pro airport supporters who have been able to dominate the council over a number of years. This group has been able to bring down councils that have decided on the basis of clear independent evidence that they will seek alternative uses for the site in line with the plans currently proposed by Stonehill Park who own the site. The labour council was brought down on this basis when they sought to remove aviation from the site as a result of the Falcon report and because Riveroak Investment Corporation had failed to meet the test to qualify as a CPO indemnity partner. UKIP, having had another feasibility report done by Avia, was brought down despite again giving Riveroak the opportunity to prove themselves suitable as an indemnity partner at which they failed again. The council is now controlled by the Conservatives who are being directed by Sir Roger Gale MP, a dogged supporter of Riveroak having had previous relationships with Tony Freudmann, and who is also working generally on parliamentary committees to promote aviation at any cost it would seem in the UK.

TDC is one of a number of councils that does not have a local plan and which is being overseen by national government on this issue with letters recently being sent by James Brokenshire which I assume you have seen. The local plan process has been stalled principally because of the airport issue. Despite the clear evidence on viability from reports commissioned and paid for by TDC, the council members, despite advice from officers, are still seeking to maintain an aviation designation on the Manston site. The abject failure to deal with the airport issue based on evidence is likely to result in the local plan being rejected by national government as having no legal basis.

TDC council members and local politicians have acted on a number of occasions solely in the interests of RSP. Craig Mackinlay stated for instance that the key objective in turning down the change of use requests from the current owners was to keep the land value low for RSP. Bob Bayford, the current leader of the council, wrote to PINS at the insistence of RSP, telling them to ignore evidence in the representations put forward by council officers with respect to RSP's DCO plans. Of most concern recently is the fact that TDC have commissioned a company called Ricardo to advise it on noise issues. Ricardo's aviation business was set up and run in 2015 by Dr Sally Dixon of Azimuth who has produced the noise date for RSP. There is a clear and obvious conflict of interest in this arrangement (in addition to the competence concerns outlined earlier).

<u>Night Flights</u>

RSP have publicly said at consultations that night flights will not be required but are specifying a quota count system in their submitted documentation which would, if adopted, effectively mean flights of aircraft throughout the entire night time period. The position on night flights therefore remains unclear other than the obvious fact that they would be devastating for the densely populated towns of Ramsgate and Herne Bay over which planes fly at very low altitude, a matter of a few hundred feet. Historically when planes flew over the town of Ramsgate it was impossible to have a conversation, have a business meeting or teach a class of children. Clarification of the true intention regarding night flights should therefore be sought by the inspector on this crucial point. We continue to be told by pro airport groups and both of our MPs that night flights are not proposed, please see correspondence attached from both of them on this point.

What is clear, however, is the common position of all interested parties whether they are for or against the airport. SMAA, SUMA, NNF, Craig Mackinlay MP and Sir Roger Gale MP have all clearly and publically stated they are against night flights with Sir Roger Gale, a key and very high profile supporter of the RSP plans, confirming only this week that RSP do not require night flights. Given the complete objection to night flights from all sides of the airport debate, and the fact that national policy is set to demand that night flights are banned as they will be at Heathrow, it would seem appropriate as a condition of the DCO for night flights to also be banned at Manston.

Funding Statement

I note that the planning inspectorate has reservations regarding the RSP funding statement which I share. I also note that RSP have failed to meet the deadline for disclosing answers to questions the examiners have already raised on a number of occasions. The inspector may wish to note that RSP attempted, with the support of both Labour-led and UKIP-led councils, to become an indemnity partner for CPO purposes with Thanet District Council but could not fulfil the basic requirements to qualify on either occasion and it is for this reason they were persuaded by Sir Roger Gale to seek a DCO. The main issue for both the Labour and UKIP administrations was the unwillingness of Riveroak to disclose the names of its investors so they could be verified and credit checked and the inability, given the non-rated nature of these individuals, to provide any letter of comfort or letter of credit from a suitably rated commercial bank. It would seem the same issues remain with the DCO application.

The DCO process is not meant to support speculative commercial activity where a sponsor applies for a DCO and once approved then seeks to secure funding for it, as RSP are attempting to do. A DCO should only be and has only historically been awarded when an inspector is certain at the outset that funding is in place and is absolutely certain without any reasonable doubt that the sponsor has the expertise and track record to ensure the project as described will be delivered.

RSP's funding statement appears to rely on an undisclosed number of private individual investors, see Funding Statement, Capital Funding Item 12, who at the time of enquiry by PWC had a certain level of funds available to them, circa £15m to pay an initial compensation payment claimed by RSP on advice from CBRE to be in the order of £7.5m, Blight Claims of £0.5m and Noise Mitigation measures of £5.6m all as detailed in Funding Statement, Summary Item 27. These items total £13.6m. There is not much flexibility in the funding arrangement to cope with any increase in these amounts. I would expect the inspector to stress the cost assumptions when assessing whether RSP have the required funding in place. What if the compensation amount for the land is £10m, £15m or £20m? What if the blight claims are £5m and the noise mitigation measures cost £10m? As it stands they would not have sufficient funds to settle on this basis. With respect to the land compensation amount, I think the inspector needs to hear from CBRE the basis upon which they have concluded on the £7.5m amount and whether, as I would expect, they have provided either a range within which the payment could reasonably fall or have specified a best, worst and average case value.

Funding Statement, Capital Funding Item 12 states that £15m has been committed by investors. There is no legal commitment letter or agreement from these individuals provided within the Funding Statement, and even if there were, it would have no substance as commitments from individuals with no corporate credit rating are of no value, are unlikely to be legally enforceable and there is no prospect of remedy for breach of the commitment. Whilst these individuals at the time of

enquiry by PWC had some funds, those funds could have been spent the very next day on another project. There is therefore no certainty of funding in this arrangement.

Turning to plans to build 19 stands, hangars, tear down facilities, passenger lounges etc, we have seen sums mentioned of around £500m although the DCO documents Funding Statement, Project Cost, Item 15 now estimate this to be £300m. What does not appear to be apparent is any certainty as to where this funding will come from. RSP have no balance sheet, no assets, no experience or track record of raising these sorts of funds for an aviation project and certainly do not have the experience to operate an airport successfully. Tony Freudmann from Riveroak and Sally Dixon from Azimuth were both employed by a previous company that failed at Manston. This is not what we see in the majority of DCO cases where entities like the Highways Agency can demonstrate the ability historically to finance and deliver projects on a regular basis. I would ask the inspector to consider these issues very carefully as they call in to question the ability of RSP to finance and deliver a project of this scale that a seasoned airport operator would struggle to deliver.

RSP have in Funding Statement, Annex 1 cited examples of provisions regarding funding from other DCOs. However when we look at the nature of these companies we can see they have long term experience of successful operation in their chosen fields. Companies like Covanta and Able have years of significant experience of raising funding and delivering projects of national importance and therefore the degree of scrutiny and requirement in their funding statement is naturally much less than we must expect for RSP which has no experience of successfully funding or operating an airport, no balance sheet or other assets and does not generate any income.

The Rookery South (Resource Recovery Facility) Order 2011 (SI203/680)

The Undertaker for this project is Covanta Rookery South Limited. Covanta has a credit rating of Ba3 from Moody's and BB- from Standard and Poor's; the two most prestigious rating agencies globally. Covanta is a quoted company on the New York Stock exchange with a share price of $17.55 and market capitalisation of $2.5bn. Covanta is an established waste management company which has been in existence since the 1980's. It has demonstrated its track record in this industry and successfully invested in a number of projects around the UK. In Cheshire it invested £300m, in Bedfordshire £425m, Leicestershire £300m and Dublin Euro 550m. It has raised debt on its balance sheet in the order of $2.5bn. It has successfully raised long term senior debt, has a revolving credit facility, a term loan and corporate bonds. Its full year earnings before interest and tax in 2017 were $408m. In addition, Covanta is partnering with Veolia on this project which is another very experienced and well financed company also rated by Moody's Baa1, Standard and Poor's BBB and Fitch BBB.

The Able Marine Energy Park Development Consent Order 2104 (SI2014/2935)

The sponsor for this DCO was Able Humber Ports Limited. Able is a privately owned and very successful business started in 1966. Able is rated Investment Grade by Bloomberg. Able is a major player across a number of sectors including demolition, decommissioning, site reclamation, property and ports development. It operates 4 ports, and 3 land sites. Total assets on the group balance sheet in accounts for 2016 show £500m and a consolidated profit of £45m.

The Swansea Bay Tidal Generating Station Order 2015 (SI2015/1386)

The Swansea Bay Tidal Lagoon is being developed by Tidal Lagoon (Swansea Bay) PLC which has as part of its funding a loan from the Welsh Government of £1.25 in addition to £35m of committed funding from major institutional investors Mark Shorrock, Infracapital (the infrastructure fund arm of Prudential Plc), Infrared Capital Partners, David & Heath Stevens, Good Energy Plc a number of other corporates and more than 360 private investors. In addition to the various projects that are being planned in the UK the company has international ambitions in France, Canada, Mexico and India, some of which appear in advanced stages of discussion. The company develops, owns and operates tidal lagoons for the generation of renewable energy. Clearly this is a new technology, currently in a more embryonic stage of its development than commercial freight development and therefore expectations for track record would be considered in this context.

The road infrastructure around the site will not support the construction that RSP are planning and certainly not the proposed operation of the site. The road infrastructure will therefore need to be enhanced prior to the start of construction and prior to the opening of even phase one of the airport. No provision for funding of these improvements has been made in the initial funding calculation or included in the £13.6m cost schedule.

The amount required for compensation purposes does not include funds required to buy the Jentex site which is to be used for fuel storage purposes - this is purported to be in the region of £2-3m. Given this site has planning permission for housing, the amount is likely to be significant. RSP are seeking to buy this site by agreement with the owners but have not concluded the purchase. As the funding for this will come from their existing investors the £15m stated as available for the DCO will need to be reduced by whatever the agreed purchase price for Jentex is (£2-3m), this will mean that there is not sufficient funding for the items RSP have identified totalling £13.6m.

RSP's submission also does not quantify, or include compensation, which will be due to the residents in Cliffsend whose property values will be affected due to the large number of fuel trucks driving past their homes on a regular basis. Nor does it address the additional risk factors that surveyors will be required to detail when carrying out house purchase surveys for potential property buyers and lenders which will affect saleability of these properties.

Lastly I think the inspector must question the need for an offshore financing arrangement based in Belize. Although this is now subject to change, there still appears to be a relationship between Helix with owners being registered in Panama. We need to know exactly why this is necessary. Is it to avoid the identity of investors being disclosed? Is it being used to avoid money laundering regulations in the U.K.? Is it being used to strip profit from the U.K. based operating company to avoid any corporation tax being paid in the U.K.? If any of these reasons prove to be even remotely suspected it cannot surely be right that compulsory purchase powers should be awarded.

Other alternatives for RSP plans

In the Manston Airport DCO EIA Volume 1 RSP, in the Section on Strategic Alternatives to Manston Airport, make various statements regarding the suitability of Stansted, Heathrow, Gatwick, Luton and Southend which do not appear to be backed up by verified evidence. The statements also seem to be at odds with public statements made by some of these airports regarding their plans for the future. I think the inspector should hear directly from each of these major and experienced airport operators concerning the assertions made by RSP about their plans and capabilities.

RSP also consider alternative airports in the South East in Table 2.1 of Volume 1 but some of their assertions seem inconsistent with their plans. For instance, with respect to Farnborough they refer to restrictions on aircraft movements of 50,000 although their plans are forecast at only 30,000. They also refer to Farnborough having a restriction on night flights – I am not sure why this should be relevant when RSP has repeatedly said publically that they do not need night flights and which all parties pro and against the airport have stated they would not support (including Sir Roger Gale MP a very prominent supporter of an airport at Manston but not with night flights).

RSP seem to focus on facilities only in the South East but there are successful freight airports that are not in the South East like East Midlands. RSP do not appear to have considered other airports that are currently operational and for sale like Mildenhall and Lakeneath from which cargo operations could easily be operated. . The inspector should consider fully whether RSPs plans could be delivered at a facility currently for sale before authorising the compulsory purchase of land owned by another entity.

With respect to RSP's claim that they need the entire Manston site, I note from RSPs submission that they seem to be claiming that with the number of stands they are providing could support over 83,000 movements, way in excess of the additional 10,000 over whatever the existing capacity of the previous airport was. However their very ambitious and somewhat discredited business plan indicates a maximum number of around 30,000 movements. On this basis they should be able to achieve their business plan with about a third of the stands they propose and on that basis do not need the entire site. This seems to be in breach of the requirement for them to modify and moderate their plans such that they only need to compulsorily purchase land required to deliver their business plan.

Lastly the inspector should be aware that Tony Freudmann, a Director and shareholder of RSP, approached Thanet District Council shortly after the site was acquired by Anne Gloag to discuss the possible building of 1000 houses on an area of the site called the Northern Grasses. The selling of airport land for housing is an activity that Mr Freudmann carried out when operating the airport for other owners in the past. When questioned on this point at consultation RSP denied that any houses would ever be built on the site and that the entire site was required for aviation purposes. On that basis the inspector should consider putting a prohibition on the building of houses anywhere on the entire site or a provision that either any land designated for housing and not required for aviation be returned at a price pro rata to the compensation paid, to SHP the current legal owners of the site or that any proceeds from the sale of any land to any other third party should revert back to the original owners of the site.

Noise Assessment Monitoring, Noise Mitigation and Blight

RSP document 5.24 Environmental Statement Volume 4 Figure 9.5 indicates noise levels of 54db over Ramsgate however this seems inconsistent with evidence on Thanet District Council's website of the noise levels recorded during operation of the airport on a much smaller scale. In addition, it seems inconsistent with evidence from the CAA which carried out noise measurement of the first 17 months of Boeing 787 operations at Heathrow Airport; CAA document CAP1191 refers and is attached. St Lawrence, a highly populated area, is 1.6km from the end of the runway at Manston, central Ramsgate is 3.2km and Ramsgate coast is 4 km from the end of the runway. It is evidenced in this document that noise levels, SEL, dBA were recorded at Heathrow as follows at 3.8km:

Boeing 787-8 91.4

Boeing 767-300 95.6

Boeing 767-400 98.4

Airbus A330-200 97.0

There are no recordings of below 90.0 for any aircraft monitored in the study and this is at 3.8km so the noise levels over St Lawrence at 1.6km and central Ramsgate at 3.2km would be much higher. These results from the CAA are consistent with evidence from the monitoring of Manston Airport when it was open which are attached. TDC have acted to remove the noise monitoring data from their public website and now claim following a FOI request no longer to hold it.

When the airport was last open, planes flew very low over Ramsgate and were deafening. I attach a document with a number of photos so the examiners can get a feel for how low the planes were and additionally how many schools will be seriously affected by noise.

To the lay person, there seems to be a lot of different guidance from which RSP and their consultants have derived their LOAEL / SOAEL DB levels for daytime and night time. The Inspector should confirm that these levels are appropriate as these then flow into the levels at which compensation / insulation has been set.

I believe Heathrow has set a 55dB contour for qualification for its insulation scheme - RSP have only applied this level for night time qualification, with 63dB as the qualifying level for daytime noise, significantly higher than for Heathrow.

Heathrow literature describes 57dB as the level at which significant impacts are likely to be experienced derived from EU guidance. This has translated into Heathrow setting the 55dB contour as that qualifying for their insulation scheme. RSP have only applied this level for night time qualification, with 63dB as the qualifying level for daytime noise, significantly higher than for Heathrow. Text from CAA website:

“Noise is regulated to some extent at all UK airports. This can include noise limits and restrictions on operations. The specific restrictions will differ from airport to airport, reflecting the types of aircraft that operate there, how busy the airport is and what flight paths are.

Although maximum noise limits are set for occupational noise exposure, there is no limit defined for environmental noise, including aviation noise. However, in order to assess the significance of aircraft noise in the UK, it is generally assumed that if the average noise level in an area from 7.00am to 11.00pm is more than 57dBA L eq , it will be "significantly annoying" to the community that live and work there. The EU has established a corresponding policy threshold of 55 dB L den , resulting in two different measures being used to inform policy at present.

This doesn't mean that noise above these levels will not be allowed. But it does mean that noise will be an important factor in planning decisions within that area (for example, about airport expansion), and that there may be support available for noise mitigation (such as double-glazing).”

I would note that the ES figures don't include the 55dB contour for daytime. Neither do they show the full extent of the 50dB contour, so as to allow readers to get a feel for the likely impact for locations between 50 and 63dB contours. The "number of events" over x dB figures are also misleading. A contour line must by definition represent a single number of events, with the area between contours illustrating the range.

RSP should confirm which contour is to form the basis for qualification for insulation, especially given the phased approach to development between the first opening year in Year 2 and the maximum level of operation in Year 20, as well as how the contours will be reviewed after opening. Also the timing of insulation works - i.e. will it be put in place in advance, as is reasonable in the case of a known impact.

Do part 1 claims apply to this development in relation to aircraft noise? No reference is made in the literature to confirm one way or the other. Part 1 claims appear to be applicable in the cases of Stansted and Southend airports. Are RSP expecting the CAA to place an Order exempting them from such claims? What assumption has been made in budget estimates?

The quota levels for night-time flights for Manston are very high with only quota 8 and 16 craft banned from operating at night. According to the current Heathrow operations manual their quota count has / is being reduced from 9180 to 5150. The proposals for Manston seem disproportionately high given the relative number of movements of the two airports. It should also be noted that Heathrow have also banned quota 4 craft from being scheduled during the night-time period. It seems that RSP could be much more ambitious in their approach to mitigating the impacts of this.

In terms of future noise monitoring it would seem that RSP propose to have a monitor at 6.5km from the airport which is in the sea off the coast of Ramsgate. This seems a clear attempt to avoid taking into account noise over Ramsgate where the planes will be at their lowest and over densely populated areas. Surely it would be more appropriate to have monitors along the flight path at St Lawrence, Nethercourt, Ramsgate and finally perhaps on the Albion Hotel which is the last building before the sea.

Environmental Research and Consultancy Department

Civil Aviation Authority

Noise data for the first 17 months of Boeing 787 operations at Heathrow airport

CAP 1191

Heathrow
Making every journey better

The work reported herein was carried out under a contract placed on 9 December 2013 by Heathrow Airport Limited.

Enquiries regarding the content of this publication should be addressed to:
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The latest version of this document is available in electronic format at www.caa.co.uk/publications, where you may also register for e-mail notification of amendments.

Contents

Summary

This report presents summary information on monitored departure and arrival noise levels for the first 17 months of operation of the Boeing 787 Dreamliner. The report was commissioned by Heathrow Airport Limited, as part of an undertaking set out in their Noise Action Plan to assess the noise performance of all new types introduced at Heathrow airport. Data from the Boeing 787 are compared to the Boeing 767 and Airbus A330, whose operations are most likely to be replaced by the 787 in the coming years.

At the monitor locations around Heathrow, the analysis has shown that the Boeing 787 is significantly quieter than the 767 and A330. The 787 is on average up to 7 dB quieter on departure than the 767, and up to 8 dB quieter than the A330 aircraft. The results also confirm that the 787 is up to 3 dB quieter on arrival than the aircraft types it is intended to replace.

CHAPTER 1

Introduction

The Boeing 787 Dreamliner is a long-range, wide-bodied, twin-engine aircraft which entered scheduled airline service at Heathrow airport with Qatar Airways on 13 December 2012. Over the following 18 months several other airlines also introduced the aircraft into regular service, including British Airways which commenced long haul 787 operations on 1 September 2013 and is now the largest operator of the type at Heathrow.

As a result of advanced engine and airframe technologies, including the use of composite materials to reduce weight, the 787 has been designed to be 20 percent more fuel efficient and significantly quieter than similarly sized aircraft. Boeing provides a choice of two engines on the 787, the GEnx-1B from GE Aviation or the Trent 1000 from Rolls-Royce.

The 787-8 is the first variant of the 787 to be produced and is intended to replace existing 200-250 seat aircraft such as the Boeing 767 and Airbus A330, although some airlines have introduced the 787-8 on routes previously flown by larger aircraft such as the 300 seat Boeing 777. Current production variants of the 787 meet the London airports' QC/0.5 night noise classification on departure, compared to QC/1 or QC/2 for the 767 and A330. On arrival the 787 is classified as QC/0.25 whilst the 767 and A330 can be classified as QC/0.5 or QC/1.

A stretched 787-9 variant entered worldwide airline service in July 2014 and Virgin Atlantic will be the first European airline to receive the new variant when it takes delivery of its first Dreamliner later in the year. A further stretched 787-10 variant is currently in development with first deliveries expected in 2018.

This report presents information and analysis on monitored noise levels of the Boeing 787-8 during both departure and arrival, and compares them to other aircraft types of similar size operating at Heathrow airport. An analysis of flight tracks and height profiles is also provided.

This report was commissioned by Heathrow Airport Limited, as part of an undertaking set out in their Noise Action Plan to assess the noise performance of all new types introduced at Heathrow airport.

CHAPTER 2

Data collection

For this study, noise measurements and radar data were extracted from the Heathrow Noise and Track Keeping (NTK) System for the period 1 December 2012 to 30 April 2014.

Noise data were taken from both fixed and mobile noise monitors that were deployed during the study period. As well as presenting results for the Boeing 787, data have also been extracted and analysed for variants of the Boeing 767 and Airbus A330, as summarised below.

Aircraft type	Maximum take-off weight (tonnes)*
Boeing 787-8	227.9
Boeing 767-300	186.9
Boeing 767-400	204.1
Airbus A330-200	238.0
Airbus A330-300	235.0

*Data taken from European Aviation Safety Agency (EASA) Type Certificate Data Sheet for Noise database (TCDSN), Jets Issue 17

Figure 1 and Table 1 provide information on the noise monitors deployed during the study period. The fixed monitors identified were all deployed for the full 17 month period. The months a particular mobile monitor was deployed is also indicated in Table 1.

Mobile monitors are normally deployed during the summer months, although some are sometimes deployed at other times of the year. Note that some noise monitor results have been excluded from this assessment since they are considerably to the side of the flight paths used by the Boeing 787. This is to enable a more robust comparison to be made between 787 monitored data and other aircraft types.

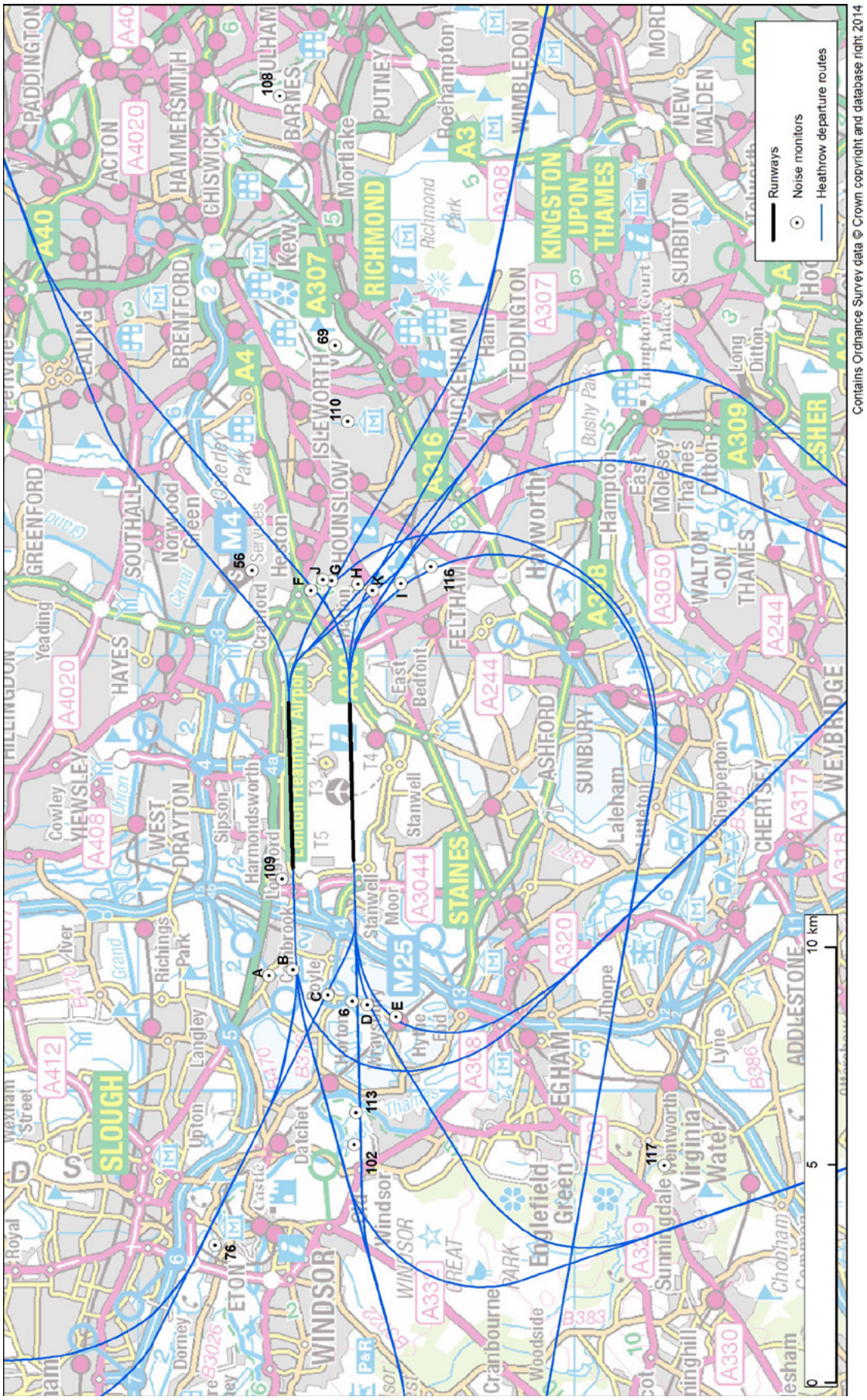
Approximately 15 percent of all noise measurements were rejected due to unacceptable weather conditions, i.e. wind speeds greater than 10 m/s (20 kt) or during periods of precipitation, in accordance with recommended international guidance[1] on aircraft noise monitoring.

1 ISO 20906:2009, Acoustics - Unattended monitoring of aircraft sound in the vicinity of airports

Table 1 Noise monitoring sites

Site		Type	Period of deployment	Distance from start of roll (km)		Distance to touchdown (km)	
				Runway 27L / 27R	Runway 09R	Runway 27L / 27R	Runway 09L / 09R
6	Thames Water, Wraysbury	Fixed	-	6.6 / -	-	-	- / 3.8
A	Colnbrook	Fixed	-	- / 6.0	-	-	-
B	Poyle	Fixed	-	- / 5.9	-	-	2.8 / -
C	Horton	Fixed	-	6.6 / 6.8	-	-	-
D	Coppermill	Fixed	-	6.7 / -	-	-	-
E	Wraysbury Reservoir (South)	Fixed	-	7.3 / -	-	-	-
F	Hounslow West	Fixed	-	-	6.3	-	-
G	Hounslow Cavalry Barracks	Fixed	-	-	6.2	-	-
H	Hounslow Heath	Fixed	-	-	6.2	-	-
I	East Feltham	Fixed	-	-	6.6	-	-
J	Hounslow Cavalry Barracks North	Fixed	-	-	6.3	-	-
K	Hounslow Heath Golf Course	Fixed	-	-	6.1	-	-
56	Berkeley School	Mobile	Dec-12 to Apr-14	-	7.4	-	-
69	Richmond	Mobile	Dec-12 to Sep-13	-	-	8.5 / -	-
76	Eton	Mobile	Jun-13 to Sep-13	12.9 / 12.6	-	-	-
102	Old Windsor	Mobile	Jun-13 to Sep-13	9.9 / 10.1	-	-	- / 7.1
108	Barnes	Mobile	Jun-13 to Sep-13	-	-	- / 14.2	-
109	Longford	Mobile	Dec-12 to Apr-14	- / 3.8	-	-	-
110	Isleworth	Mobile	Dec-12 to Apr-13	-	-	6.8 / -	-
113	Old Windsor	Mobile	Dec-12 to Mar-13	- / 9.4	-	-	-
116	Feltham	Mobile	Aug-13 to Apr-14	-	7.4	-	-
117	Wentworth Golf Course	Mobile	Sep-13 to Apr-14	-	23.4	-	-

Figure 1 Noise monitor locations



CHAPTER 3

Departure noise monitor data

The departure noise monitor data have been separated by runway as in some cases, the distance the aircraft has travelled from the start of roll (SOR) position differs slightly depending on the runway used.[2] The average distance from SOR to each noise monitor has been calculated using radar data extracted from the NTK system.

Table 2 presents data for the Boeing 787 and 767 aircraft in terms of the Sound Exposure Level (SEL) metric. Note that the data have been separated by engine type, although this was not necessarily in anticipation of any expected noise differences between the two 787 variants. The noise monitor data have been sorted in terms of distance from SOR; distance increases as one moves from left to right through the tables. Table 3 presents equivalent departure noise data for the Airbus A330 aircraft.

The SEL metric takes into account both the level of a noise event and the duration of the event. Thus if the level of two events were the same, but one were to last twice as long as the other, the SEL level would increase by 3 dB. SEL is important since it is the 'building block' of overall noise indexes such as L_{eq} and L_{den}.

Data for the simpler L_{max} metric are also provided for information in Tables 4 and 5. The L_{max} metric takes account of the peak level only and not the duration of the event. Typically an SEL value is approximately 10 dB higher than the corresponding L_{max} for the same event. However, nearer the airport where the aircraft are lower and thus the durations shorter, the difference will be slightly less than 10 dB. Conversely further away from the airport where aircraft are higher and durations longer, the difference will be slightly more than 10 dB.

SEL (and L_{max}) are measured and reported on a logarithmic scale. An average SEL value can be calculated on both an arithmetic basis and a logarithmic average basis.
A logarithmic average gives greater weight to higher noise levels and is the calculation method used when generating L_{eq} and L_{den} noise contours. Table 2 gives both logarithmic and arithmetic average SEL values at each monitor location, along with the standard deviation and 95 percent confidence interval (CI) of the mean level.

The reliability of the measured noise levels for each aircraft type can be expressed as a 95 percent confidence interval. This is the interval around the sample mean within which it is reasonable to assume the 'true' value of the mean lies. Due to the relatively large sample sizes obtained, the 95 percent confidence intervals of the departure noise levels in the majority of cases are very small, i.e. less than 0.5 dB.

2 Data for 09L departures were not analysed due to low sample sizes.

Table 2 SEL departure noise levels for the Boeing 787 and Boeing 767

		SEL, dBA										
	Monitor site	**109**	**B**	**A**	**K**	**H**	**G**	**F**	**J**	**I**	**6**	**C**
	Runway	**27R**	**27R**	**27R**	**09R**	**09R**	**09R**	**09R**	**09R**	**09R**	**27L**	**27L**
Aircraft Type	**Dist. from SOR (km)**	**3.8**	**5.9**	**6.0**	**6.1**	**6.2**	**6.2**	**6.3**	**6.3**	**6.6**	**6.6**	**6.6**
Boeing 787-8 (GE GEnx-1B engines)	Log Avg	91.4	88.9	85.2	85.9	85.1	84.0	85.1	84.7	83.5	85.0	84.2
	Mean	91.2	88.7	84.9	84.8	84.5	83.2	83.1	83.2	82.9	84.6	82.9
	Std Dev	1.4	1.5	1.6	3.5	2.4	2.7	4.4	3.7	2.1	1.8	3.4
	Count	362	398	401	235	283	252	254	268	164	359	362
	95% CI	0.1	0.1	0.2	0.4	0.3	0.3	0.5	0.4	0.3	0.2	0.3
Boeing 787-8 (RR Trent 1000 engines)	Log Avg	89.6	87.5	83.8	85.7	83.5	81.3	84.5	84.0	84.6	85.1	82.6
	Mean	89.3	87.3	83.5	85.3	82.7	80.2	82.9	80.8	84.0	84.2	82.1
	Std Dev	1.6	1.5	1.7	2.1	2.6	3.1	3.9	4.2	2.4	3.1	2.1
	Count	232	261	264	118	161	125	77	108	104	250	255
	95% CI	0.2	0.2	0.2	0.4	0.4	0.5	0.9	0.8	0.5	0.4	0.3
Boeing 767-300 (GE CF6-80C2 engines)	Log Avg	95.6	92.2	89.9	89.6	88.0	86.9	86.7	87.0	89.1	89.6	88.7
	Mean	95.2	91.9	89.6	88.7	87.5	85.6	85.1	85.6	87.6	89.2	88.3
	Std Dev	1.9	1.8	1.6	3.1	2.3	3.3	3.7	3.5	4.4	2.0	2.1
	Count	1158	1276	1257	1097	1125	1068	1061	1084	1081	1260	1240
	95% CI	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.3	0.1	0.1
Boeing 767-300 (PW PW4000 engines)	Log Avg	97.1	93.5	90.9	91.3	89.7	88.5	88.2	88.6	90.6	91.0	90.0
	Mean	96.8	93.2	90.6	90.5	89.2	87.2	86.3	87.1	89.3	90.8	89.5
	Std Dev	1.6	1.4	1.7	2.9	2.2	3.2	4.0	3.5	4.0	1.5	2.3
	Count	1130	1256	1243	1096	1118	1068	1062	1084	1114	1180	1161
	95% CI	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1
Boeing 767-300 (RR RB211-524 engines)	Log Avg	96.1	92.7	89.4	90.2	88.3	86.5	88.4	86.3	89.4	90.3	88.8
	Mean	95.9	92.4	89.2	88.1	87.2	85.8	85.5	85.1	87.7	89.8	87.8
	Std Dev	1.5	1.5	1.6	5.0	3.4	2.6	5.2	3.2	4.8	2.1	3.1
	Count	3163	3469	3464	2628	2823	2703	2722	2787	2095	3060	3028
	95% CI	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.1
Boeing 767-400 (GE CF6-80C2 engines)	Log Avg	98.4	93.9	90.9	91.5	89.4	87.1	86.0	86.8	90.7	90.7	89.1
	Mean	98.1	93.6	90.7	90.8	88.9	85.9	84.2	85.4	89.9	90.4	88.7
	Std Dev	1.5	1.7	1.3	2.6	2.1	2.9	3.6	3.2	3.2	1.6	1.9
	Count	817	912	896	838	848	812	799	835	850	870	862
	95% CI	0.1	0.1	0.1	0.2	0.1	0.2	0.2	0.2	0.2	0.1	0.1

Table 2 SEL departure noise levels for the Boeing 787 and Boeing 767 (continued)

		SEL, dBA										
	Monitor site	**D**	**C**	**E**	**56**	**116**	**113**	**102**	**102**	**76**	**76**	**117**
	Runway	**27L**	**27R**	**27L**	**09R**	**09R**	**27R**	**27L**	**27R**	**27R**	**27L**	**09R**
Aircraft Type	**Dist. from SOR (km)**	**6.7**	**6.8**	**7.3**	**7.4**	**7.4**	**9.4**	**9.9**	**10.1**	**12.6**	**12.9**	**23.4**
Boeing 787-8 (GE GEnx-1B engines)	Log Avg	85.3	84.1	84.8	81.0	80.3	78.8	80.1	78.9	79.3	79.0	-
	Mean	84.6	83.9	84.3	80.6	79.1	78.6	79.8	77.7	79.1	78.9	-
	Std Dev	2.8	1.3	2.3	2.1	3.1	1.4	1.9	3.4	1.4	1.3	-
	Count	364	395	225	120	95	10	15	47	22	22	-
	95% CI	0.3	0.1	0.3	0.4	0.6	1.0	1.1	1.0	0.6	0.6	-
Boeing 787-8 (RR Trent 1000 engines)	Log Avg	84.3	82.0	78.7	80.0	83.6	-	82.4	81.1	76.0	75.9	71.8
	Mean	83.3	81.7	78.3	79.6	82.7	-	82.2	80.9	75.8	75.4	71.5
	Std Dev	3.3	1.7	1.8	2.0	3.4	-	1.5	1.1	1.3	2.2	1.8
	Count	248	262	161	42	104	-	11	13	8	11	13
	95% CI	0.4	0.2	0.3	0.6	0.7	-	1.0	0.6	1.1	1.4	1.1
Boeing 767-300 (GE CF6-80C2 engines)	Log Avg	89.1	89.0	85.5	84.8	87.8	84.6	84.4	84.7	83.4	83.0	76.1
	Mean	88.8	88.7	84.5	84.0	86.5	83.9	83.0	83.2	83.1	82.6	75.3
	Std Dev	1.9	1.7	3.3	2.7	4.2	2.8	4.2	4.2	2.0	2.1	2.7
	Count	1269	1234	1127	301	341	229	296	282	92	101	47
	95% CI	0.1	0.1	0.2	0.3	0.5	0.4	0.5	0.5	0.4	0.4	0.8
Boeing 767-300 (PW PW4000 engines)	Log Avg	90.8	90.9	87.5	86.0	88.9	86.3	85.6	86.4	85.2	84.8	77.2
	Mean	90.6	90.7	86.2	84.4	87.4	85.8	84.3	85.2	85.0	84.6	76.2
	Std Dev	1.5	1.5	3.8	4.3	4.5	2.1	3.9	3.7	1.8	1.4	3.1
	Count	1192	1232	1123	280	448	173	250	244	100	88	93
	95% CI	0.1	0.1	0.2	0.5	0.4	0.3	0.5	0.5	0.4	0.3	0.6
Boeing 767-300 (RR RB211-524 engines)	Log Avg	90.2	88.4	86.9	87.3	87.3	84.0	85.5	84.7	84.0	83.5	76.0
	Mean	89.5	88.1	84.9	86.8	86.2	82.7	82.3	82.0	83.4	83.0	75.3
	Std Dev	2.5	1.5	4.5	2.3	3.4	3.6	6.3	5.4	2.3	2.0	2.6
	Count	3082	3422	2371	1064	709	453	386	679	337	336	39
	95% CI	0.1	0.0	0.2	0.1	0.2	0.3	0.6	0.4	0.2	0.2	0.8
Boeing 767-400 (GE CF6-80C2 engines)	Log Avg	90.0	89.5	85.8	84.0	88.8	85.7	86.0	86.3	84.9	84.3	77.1
	Mean	89.7	89.3	85.2	82.3	87.7	85.5	85.3	85.1	84.7	84.2	76.0
	Std Dev	1.6	1.4	2.7	4.4	4.1	1.4	3.2	4.0	1.1	1.3	3.2
	Count	877	894	808	132	320	126	219	219	53	43	70
	95% CI	0.1	0.1	0.2	0.8	0.4	0.3	0.4	0.5	0.3	0.4	0.8

Table 3 SEL departure noise levels for the Airbus A330

		SEL, dBA										
	Monitor site	**109**	**B**	**A**	**K**	**H**	**G**	**F**	**J**	**I**	**6**	**C**
	Runway	**27R**	**27R**	**27R**	**09R**	**09R**	**09R**	**09R**	**09R**	**09R**	**27L**	**27L**
Aircraft Type	**Dist. from SOR (km)**	**3.8**	**5.9**	**6.0**	**6.1**	**6.2**	**6.2**	**6.3**	**6.3**	**6.6**	**6.6**	**6.6**
Airbus A330-200 (GE CF6-80E1 engines)	Log Avg	97.0	92.7	89.2	90.9	88.1	84.3	83.1	83.2	90.8	87.9	85.2
	Mean	96.5	92.4	89.0	90.4	87.8	83.8	81.6	82.4	90.6	87.6	84.3
	Std Dev	2.0	1.6	1.5	2.5	1.6	1.9	3.3	2.6	1.5	1.6	2.6
	Count	191	203	202	174	173	168	144	177	171	197	193
	95% CI	0.3	0.2	0.2	0.4	0.2	0.3	0.5	0.4	0.2	0.2	0.4
Airbus A330-200 (PW PW4000 engines)	Log Avg	97.6	93.2	90.4	90.3	89.1	87.4	87.0	87.4	88.4	90.1	87.9
	Mean	97.3	92.9	90.1	89.9	88.6	85.9	85.0	85.5	87.7	89.7	86.8
	Std Dev	1.6	1.6	1.8	1.9	2.1	3.6	4.0	4.1	3.0	1.9	3.1
	Count	276	295	290	179	183	179	165	183	183	218	213
	95% CI	0.2	0.2	0.2	0.3	0.3	0.5	0.6	0.6	0.4	0.3	0.4
Airbus A330-200 (RR Trent 700 engines)	Log Avg	97.7	92.8	90.7	90.5	89.9	88.3	88.1	88.4	87.5	89.8	88.0
	Mean	97.3	92.4	90.3	89.9	89.5	87.4	86.2	87.1	86.8	89.4	86.9
	Std Dev	2.0	1.9	1.9	2.5	1.9	2.7	3.7	3.2	2.8	1.9	2.9
	Count	836	905	897	776	787	751	788	787	791	853	848
	95% CI	0.1	0.1	0.1	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2
Airbus A330-300 (GE CF6-80E1 engines)	Log Avg	97.9	93.0	89.0	91.2	88.1	84.1	83.6	83.3	91.0	87.8	84.9
	Mean	97.5	92.7	88.7	91.0	87.9	83.4	81.5	82.3	90.6	87.5	83.8
	Std Dev	1.9	1.8	1.8	1.6	1.5	2.3	3.8	2.8	2.3	1.4	2.6
	Count	211	224	225	187	190	186	141	191	189	215	215
	95% CI	0.3	0.2	0.2	0.2	0.2	0.3	0.6	0.4	0.3	0.2	0.3
Airbus A330-300 (PW PW4000 engines)	Log Avg	98.7	94.3	91.8	90.7	88.9	87.2	87.8	86.4	90.1	91.1	90.1
	Mean	98.5	94.0	91.6	89.2	88.1	86.2	85.5	85.5	88.3	90.7	89.7
	Std Dev	1.1	1.9	1.2	4.1	2.6	2.8	4.6	2.7	4.8	2.0	1.8
	Count	220	251	249	204	208	196	194	204	200	222	219
	95% CI	0.2	0.2	0.2	0.6	0.4	0.4	0.7	0.4	0.7	0.3	0.2
Airbus A330-300 (RR Trent 700 engines)	Log Avg	97.8	93.8	90.8	90.9	89.6	87.9	87.8	87.9	89.5	90.9	88.6
	Mean	97.6	93.5	90.5	90.1	89.1	86.6	85.2	86.1	88.1	90.5	87.7
	Std Dev	1.4	1.8	1.7	3.0	2.2	3.3	4.6	3.8	4.1	1.8	2.8
	Count	1804	1970	1956	1662	1676	1584	1565	1656	1653	1830	1812
	95% CI	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1

Table 3 SEL departure noise levels for the Airbus A330 (continued)

		SEL, dBA										
	Monitor site	**D**	**C**	**E**	**56**	**116**	**113**	**102**	**102**	**76**	**76**	**117**
	Runway	**27L**	**27R**	**27L**	**09R**	**09R**	**27R**	**27L**	**27R**	**27R**	**27L**	**09R**
Aircraft Type	**Dist. from SOR (km)**	**6.7**	**6.8**	**7.3**	**7.4**	**7.4**	**9.4**	**9.9**	**10.1**	**12.6**	**12.9**	**23.4**
Airbus A330-200 (GE CF6-80E1 engines)	Log Avg	87.8	91.4	87.8	88.6	88.4	82.5	85.3	86.6	-	-	-
	Mean	87.4	90.9	87.3	85.4	88.3	80.5	82.2	86.1	-	-	-
	Std Dev	1.7	2.6	2.4	7.7	1.2	3.8	6.6	2.5	-	-	-
	Count	194	202	185	7	73	25	6	11	-	-	-
	95% CI	0.2	0.4	0.3	7.1	0.3	1.6	6.9	1.6	-	-	-
Airbus A330-200 (PW PW4000 engines)	Log Avg	90.0	89.0	87.4	84.8	85.4	83.3	78.9	83.9	85.6	85.8	-
	Mean	89.7	88.8	86.3	84.1	85.1	82.3	77.7	81.4	85.5	85.8	-
	Std Dev	1.6	1.3	3.4	2.2	2.2	3.0	2.8	5.0	0.8	0.5	-
	Count	218	285	207	35	70	42	33	80	49	11	-
	95% CI	0.2	0.2	0.5	0.8	0.5	0.9	1.0	1.1	0.2	0.4	-
Airbus A330-200 (RR Trent 700 engines)	Log Avg	90.5	89.8	89.2	86.0	84.3	84.0	78.7	85.9	85.6	85.9	-
	Mean	90.1	89.6	88.0	84.7	83.5	82.8	77.8	82.9	85.3	85.8	-
	Std Dev	2.1	1.8	3.9	4.2	2.9	3.3	2.5	5.8	1.8	1.2	-
	Count	861	822	799	192	263	163	64	82	34	38	-
	95% CI	0.1	0.1	0.3	0.6	0.4	0.5	0.6	1.3	0.6	0.4	-
Airbus A330-300 (GE CF6-80E1 engines)	Log Avg	87.4	91.8	87.8	89.2	88.5	80.5	84.1	85.0	-	-	-
	Mean	87.2	91.3	87.3	87.3	88.3	79.5	83.3	84.9	-	-	-
	Std Dev	1.4	2.5	2.5	6.1	1.5	2.5	3.8	1.2	-	-	-
	Count	218	222	194	8	69	27	8	10	-	-	-
	95% CI	0.2	0.3	0.4	5.1	0.4	1.0	3.1	0.8	-	-	-
Airbus A330-300 (PW PW4000 engines)	Log Avg	90.4	89.9	85.6	89.6	89.3	86.6	86.6	86.9	85.9	85.1	78.3
	Mean	89.9	89.7	84.6	88.9	87.8	86.3	84.9	84.9	85.8	84.9	77.8
	Std Dev	2.2	1.5	3.5	3.4	3.1	1.9	4.9	5.3	1.4	1.4	2.4
	Count	223	241	195	50	70	18	64	63	21	19	21
	95% CI	0.3	0.2	0.5	1.0	0.7	1.0	1.2	1.3	0.7	0.7	1.1
Airbus A330-300 (RR Trent 700 engines)	Log Avg	90.9	89.9	87.9	84.7	87.2	85.4	86.4	85.5	84.8	85.4	78.2
	Mean	90.5	89.6	86.4	83.5	85.7	84.6	84.2	83.2	84.5	85.1	77.1
	Std Dev	1.9	1.9	3.8	3.7	4.1	2.8	5.4	5.2	1.9	1.8	3.3
	Count	1847	1932	1669	360	582	288	251	335	133	111	93
	95% CI	0.1	0.1	0.2	0.4	0.3	0.3	0.7	0.6	0.3	0.3	0.7

Table 4 L_{max} departure noise levels for the Boeing 787 and Boeing 767

		L_{max}, dBA										
	Monitor site	**109**	**B**	**A**	**K**	**H**	**G**	**F**	**J**	**I**	**6**	**C**
	Runway	**27R**	**27R**	**27R**	**09R**	**09R**	**09R**	**09R**	**09R**	**09R**	**27L**	**27L**
Aircraft Type	**Dist. from SOR (km)**	**3.8**	**5.9**	**6.0**	**6.1**	**6.2**	**6.2**	**6.3**	**6.3**	**6.6**	**6.6**	**6.6**
Boeing 787-8 (GE GEnx-1B engines)	Mean	83.1	81.0	75.6	76.1	74.7	73.4	73.7	74.1	73.1	74.6	72.9
	Std Dev	1.7	2.3	2.0	4.0	2.9	3.3	4.6	4.2	2.5	2.2	3.5
	Count	362	398	401	235	283	252	254	268	164	359	362
Boeing 787-8 (RR Trent 1000 engines)	Mean	80.8	79.2	73.7	76.2	72.5	70.3	73.1	71.7	74.7	73.9	71.2
	Std Dev	1.9	2.0	1.7	2.4	2.7	3.1	4.0	4.2	2.9	3.3	2.5
	Count	232	261	264	118	161	125	77	108	104	250	255
Boeing 767-300 (GE CF6-80C2 engines)	Mean	86.8	83.7	80.6	79.2	77.5	75.6	75.5	76.1	78.0	78.7	77.5
	Std Dev	2.6	2.6	2.5	3.5	2.6	3.6	3.7	3.7	4.8	2.2	2.5
	Count	1158	1276	1257	1097	1125	1068	1061	1084	1081	1260	1240
Boeing 767-300 (PW PW4000 engines)	Mean	89.2	85.0	81.8	81.5	79.8	77.8	77.4	78.2	80.2	81.0	79.2
	Std Dev	2.1	2.1	2.5	3.4	2.5	3.5	4.1	3.8	4.6	1.9	2.8
	Count	1130	1256	1243	1096	1118	1068	1062	1084	1114	1180	1161
Boeing 767-300 (RR RB211-524 engines)	Mean	87.9	83.9	79.8	79.1	77.6	75.8	76.1	75.3	78.2	80.5	77.8
	Std Dev	2.2	2.1	2.0	5.4	3.8	2.9	5.8	3.5	4.8	2.7	3.3
	Count	3163	3469	3464	2628	2823	2703	2722	2787	2095	3060	3028
Boeing 767-400 (GE CF6-80C2 engines)	Mean	90.3	85.6	81.6	81.5	79.2	76.1	75.1	76.1	80.7	79.9	77.8
	Std Dev	1.8	2.6	2.1	3.1	2.6	3.2	3.7	3.5	3.7	1.9	2.2
	Count	817	912	896	838	848	812	799	835	850	870	862

Table 4 L_{max} departure noise levels for the Boeing 787 and Boeing 767 (continued)

		L_{max}, dBA										
	Monitor site	**D**	**C**	**E**	**56**	**116**	**113**	**102**	**102**	**76**	**76**	**117**
	Runway	**27L**	**27R**	**27L**	**09R**	**09R**	**27R**	**27L**	**27R**	**27R**	**27L**	**09R**
Aircraft Type	**Dist. from SOR (km)**	**6.7**	**6.8**	**7.3**	**7.4**	**7.4**	**9.4**	**9.9**	**10.1**	**12.6**	**12.9**	**23.4**
Boeing 787-8 (GE GEnx-1B engines)	Mean	74.5	73.3	74.0	70.4	68.9	67.8	69.5	67.6	68.0	68.0	-
	Std Dev	3.3	1.5	2.4	2.1	3.2	1.5	1.8	2.8	1.3	1.1	-
	Count	364	395	225	120	95	10	15	47	22	22	-
Boeing 787-8 (RR Trent 1000 engines)	Mean	73.2	70.9	68.6	68.8	73.1	-	71.9	70.5	66.0	65.7	61.4
	Std Dev	3.2	1.8	1.6	1.8	3.5	-	1.4	1.0	1.5	1.4	1.4
	Count	248	262	161	42	104	-	11	13	8	11	13
Boeing 767-300 (GE CF6-80C2 engines)	Mean	78.5	78.4	74.2	73.4	76.5	73.1	72.6	73.0	72.2	72.0	64.4
	Std Dev	2.1	2.0	3.1	2.5	4.1	2.9	3.8	4.0	2.0	2.0	2.5
	Count	1269	1234	1127	301	341	229	296	282	92	101	47
Boeing 767-300 (PW PW4000 engines)	Mean	80.8	81.1	76.3	74.9	77.9	75.4	74.0	75.1	74.7	74.2	65.7
	Std Dev	1.9	2.0	3.7	3.8	4.5	2.4	3.9	3.9	1.7	1.6	2.7
	Count	1192	1232	1123	280	448	173	250	244	100	88	93
Boeing 767-300 (RR RB211-524 engines)	Mean	80.1	77.3	74.7	76.6	76.2	72.1	72.7	72.1	73.4	73.1	64.6
	Std Dev	3.2	1.7	4.6	2.5	3.7	3.7	6.3	5.1	2.7	2.3	2.2
	Count	3082	3422	2371	1064	709	453	386	679	337	336	39
Boeing 767-400 (GE CF6-80C2 engines)	Mean	79.3	78.9	74.7	72.5	78.0	74.4	74.7	74.8	73.7	73.4	65.1
	Std Dev	1.9	1.7	2.5	3.5	3.8	1.6	2.8	3.9	1.0	1.5	2.6
	Count	877	894	808	132	320	126	219	219	53	43	70

Table 5 L_{max} departure noise levels for the Airbus A330

		L_{max}, dBA										
	Monitor site	**109**	**B**	**A**	**K**	**H**	**G**	**F**	**J**	**I**	**6**	**C**
	Runway	**27R**	**27R**	**27R**	**09R**	**09R**	**09R**	**09R**	**09R**	**09R**	**27L**	**27L**
Aircraft Type	**Dist. from SOR (km)**	**3.8**	**5.9**	**6.0**	**6.1**	**6.2**	**6.2**	**6.3**	**6.3**	**6.6**	**6.6**	**6.6**
Airbus A330-200 (GE CF6-80E1 engines)	Mean	88.2	84.1	79.8	81.0	77.2	73.1	71.6	72.3	81.6	77.3	74.4
	Std Dev	2.9	2.5	2.1	2.9	1.9	2.1	3.2	2.5	2.4	1.8	2.3
	Count	191	203	202	174	173	168	144	177	171	197	193
Airbus A330-200 (PW PW4000 engines)	Mean	88.6	83.7	80.5	79.8	77.6	74.9	74.4	75.1	77.1	78.6	75.6
	Std Dev	2.1	2.6	2.4	2.4	2.5	4.0	4.4	4.3	3.3	2.2	3.2
	Count	276	295	290	179	183	179	165	183	183	218	213
Airbus A330-200 (RR Trent 700 engines)	Mean	88.6	83.0	80.8	79.7	78.7	76.3	75.5	76.6	75.8	78.4	76.0
	Std Dev	2.6	2.7	2.6	3.1	2.4	3.3	4.1	3.8	2.7	2.3	3.1
	Count	836	905	897	776	787	751	788	787	791	853	848
Airbus A330-300 (GE CF6-80E1 engines)	Mean	89.6	84.8	79.6	82.0	77.5	72.9	71.6	72.4	82.0	77.8	74.4
	Std Dev	2.4	2.6	2.2	2.0	2.0	2.7	3.7	2.9	3.0	1.5	2.4
	Count	211	224	225	187	190	186	141	191	189	215	215
Airbus A330-300 (PW PW4000 engines)	Mean	90.0	84.9	82.2	79.3	78.0	76.3	76.2	75.7	78.8	79.5	78.4
	Std Dev	1.7	2.7	2.2	4.3	3.2	2.7	4.1	2.8	4.8	2.4	2.2
	Count	220	251	249	204	208	196	194	204	200	222	219
Airbus A330-300 (RR Trent 700 engines)	Mean	89.1	84.8	80.7	80.3	78.8	76.3	75.3	76.2	78.2	80.0	76.8
	Std Dev	1.9	2.8	2.5	3.5	2.6	3.7	4.8	4.3	4.5	2.4	3.3
	Count	1804	1970	1956	1662	1676	1584	1565	1656	1653	1830	1812

Table 5 L_{max} departure noise levels for the Airbus A330 (continued)

		L_{max}, dBA										
	Monitor site	**D**	**C**	**E**	**56**	**116**	**113**	**102**	**102**	**76**	**76**	**117**
	Runway	**27L**	**27R**	**27L**	**09R**	**09R**	**27R**	**27L**	**27R**	**27R**	**27L**	**09R**
Aircraft Type	**Dist. from SOR (km)**	**6.7**	**6.8**	**7.3**	**7.4**	**7.4**	**9.4**	**9.9**	**10.1**	**12.6**	**12.9**	**23.4**
Airbus A330-200 (GE CF6-80E1 engines)	Mean	77.5	81.1	76.9	76.4	78.4	69.7	72.3	75.5	-	-	-
	Std Dev	1.9	3.0	2.5	6.1	1.9	4.0	5.5	2.6	-	-	-
	Count	194	202	185	7	73	25	6	11	-	-	-
Airbus A330-200 (PW PW4000 engines)	Mean	78.8	77.4	75.1	72.4	73.6	71.0	66.6	70.2	74.0	-	-
	Std Dev	2.0	1.6	3.1	2.5	2.3	3.1	2.6	4.6	1.1	0.8	-
	Count	218	285	207	35	70	42	33	80	49	11	-
Airbus A330-200 (RR Trent 700 engines)	Mean	79.2	77.9	76.8	73.5	72.2	71.7	66.8	72.0	73.6	74.4	-
	Std Dev	2.5	1.8	3.8	3.0	2.8	3.4	2.1	5.8	1.9	1.4	-
	Count	861	822	799	192	263	163	64	82	34	38	-
Airbus A330-300 (GE CF6-80E1 engines)	Mean	77.7	81.8	77.5	77.7	78.9	68.9	73.5	74.6	-	-	-
	Std Dev	1.5	2.9	2.7	5.3	2.4	3.2	3.7	1.3	-	-	-
	Count	218	222	194	8	69	27	8	10	-	-	-
Airbus A330-300 (PW PW4000 engines)	Mean	78.9	78.8	73.9	78.4	77.6	75.0	74.2	74.6	74.4	73.9	66.6
	Std Dev	2.6	1.9	2.9	2.9	3.0	2.3	4.2	4.7	1.5	1.6	3.0
	Count	223	241	195	50	70	18	64	63	21	19	21
Airbus A330-300 (RR Trent 700 engines)	Mean	80.1	78.5	75.7	72.8	75.3	73.6	74.3	72.9	73.8	74.6	66.4
	Std Dev	2.4	2.2	3.6	3.0	4.3	3.1	5.0	5.0	2.5	2.1	3.2
	Count	1847	1932	1669	360	582	288	251	335	133	111	93

Figure 2 plots the Boeing 787 noise measurement data against the most common 767-300 variant (with RR RB211-524 engines[3]) at Heathrow, and also the larger 767-400. Figure 3 plots the same 787 data against the most common Airbus A330-200 and A330-300 variants (both fitted with RR Trent 700 engines).

The results indicate that the 787, despite having a higher maximum take-off weight, is on average up to 7 dB quieter on departure than the 767, although there is some variation by engine type and from monitor to monitor. The results also indicate that the 787 is on average up to 8 dB quieter than the A330 aircraft. In Figures 2 and 3, the largest average differences between the 787 and the 767 and A330 are 9 dB and 10 dB respectively, both occurring at monitor 76, which is located approximately 13 km from SOR.

Noting that the 787s on departure are classified as QC/0.5 compared to QC/1 or QC/2 for the 767 and A330, and that the midpoints of successive QC bands are 3 dB apart, the measured differences are in general agreement with the differences in QC classification.[4]

3 It should be noted that British Airways operates some RR-powered 767-300s on relatively short 'shuttle' routes between Heathrow and other UK airports, as well as to other destinations such as Frankfurt. As a result these departures will tend to be proportionally lighter, and therefore quieter, than similar 767-300s flying much longer distances.

4 Note, it was not the objective of this study to confirm the QC classification of the Boeing 787, which would have required analysis of EPNL (Effective Perceived Noise Level) measurements.

Figure 2 Comparison of Boeing 787 and Boeing 767 departure SEL noise measurements

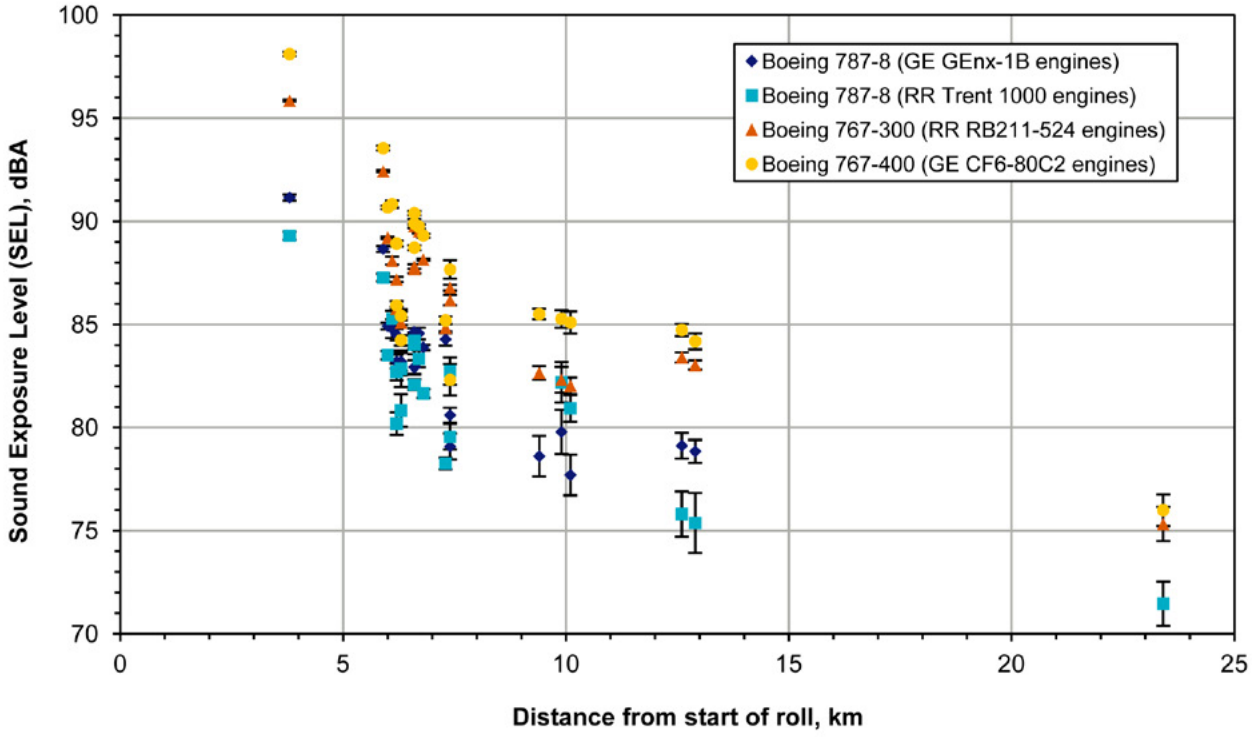
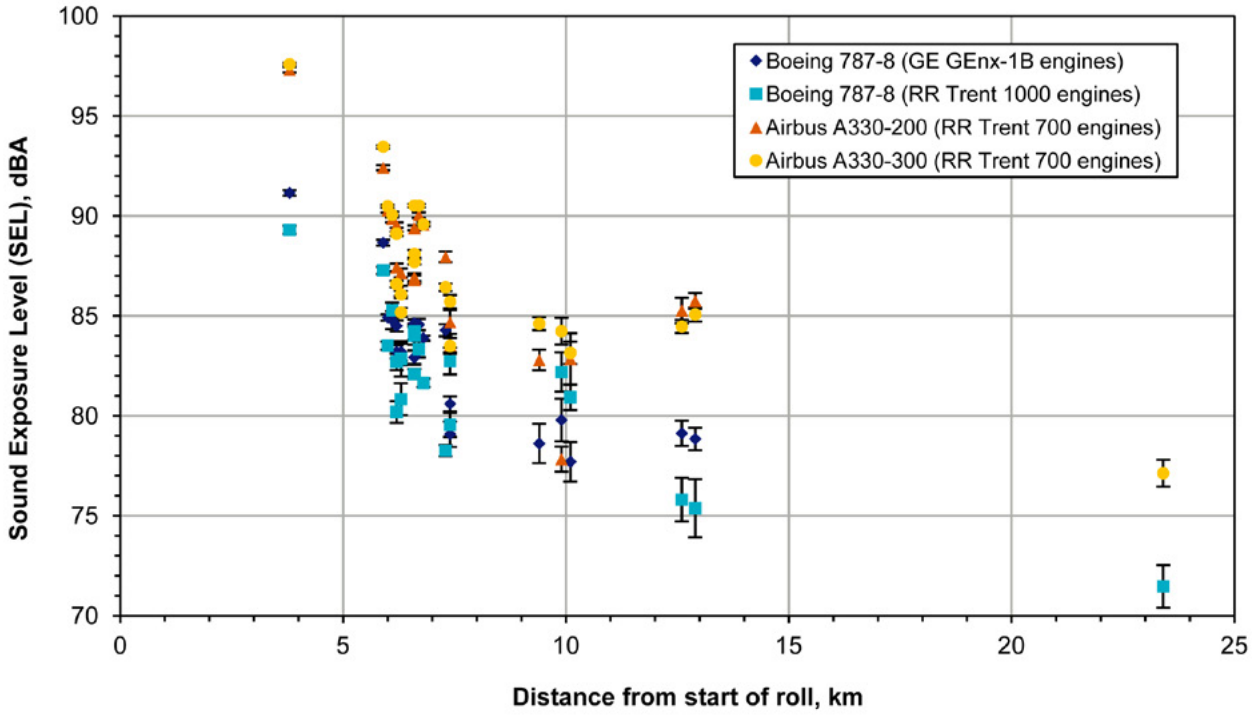


Figure 3 Comparison of Boeing 787 and Airbus A330 departure SEL noise measurements



CHAPTER 4

Arrival noise monitor data

Table 6 presents the SEL arrival data for the Boeing 787 and 767 aircraft. Table 7 presents equivalent data for the Airbus A330 aircraft. The corresponding L_{max} data is also provided for information in Tables 8 and 9.

Figure 4 plots the 787 arrival noise data against the most common 767-300 variant and also the larger 767-400. Figure 5 plots the same 787 data against the most common A330-200 and A330-300 variants.

The results indicate that the 787 is on average up to 3 dB quieter on arrival than the 767 and the A330, although again there is some variation by engine type and from monitor to monitor. In Figure 4, the largest average difference between the 787 and 767 is 4.4 dB at the closest monitor to touchdown (site B, 2.8 km). In Figure 5, the largest average difference between the 787 and A330 is 6.1 dB at the furthest monitor to touchdown (site 108, 14.2 km).

Noting that the 787s on arrival are classified as QC/0.25 compared to QC/0.5 or QC/1 for the 767 and A330, the measured differences are in general agreement with the QC classifications.

Table 6 SEL arrival noise levels for the Boeing 787 and Boeing 767

		SEL, dBA					
	Monitor site	**B**	**6**	**110**	**102**	**69**	**108**
	Runway	**09L**	**09R**	**27L**	**09R**	**27L**	**27R**
Aircraft Type	**Dist. to touchdown (km)**	**2.8**	**3.8**	**6.8**	**7.1**	**8.5**	**14.2**
Boeing 787-8 (GE GEnx-1B engines)	Log Avg	90.4	90.1	85.8	84.7	84.4	79.3
	Mean	90.4	90.0	85.8	84.6	84.3	78.3
	Std Dev	0.8	0.9	0.4	0.7	1.1	3.1
	Count	226	64	10	20	152	97
	95% CI	0.1	0.2	0.3	0.3	0.2	0.6
Boeing 787-8 (RR Trent 1000 engines)	Log Avg	90.1	90.2	-	-	84.5	76.6
	Mean	89.9	90.1	-	-	84.4	76.0
	Std Dev	1.4	1.2	-	-	1.0	2.3
	Count	135	36	-	-	30	21
	95% CI	0.2	0.4	-	-	0.4	1.1
Boeing 767-300 (GE CF6-80C2 engines)	Log Avg	92.9	92.1	87.2	85.3	84.7	78.6
	Mean	92.6	91.9	87.0	85.0	84.3	77.9
	Std Dev	1.8	1.3	1.3	2.1	2.0	2.2
	Count	992	133	248	27	599	343
	95% CI	0.1	0.2	0.2	0.8	0.2	0.2
Boeing 767-300 (PW PW4000 engines)	Log Avg	92.9	92.2	86.6	85.7	84.6	77.5
	Mean	92.8	92.1	86.4	85.5	84.2	76.9
	Std Dev	1.1	1.2	1.3	1.6	2.0	2.2
	Count	856	222	232	31	552	249
	95% CI	0.1	0.2	0.2	0.6	0.2	0.3
Boeing 767-300 (RR RB211-524 engines)	Log Avg	94.6	94.0	87.5	87.2	85.8	77.7
	Mean	94.3	93.8	87.3	87.1	85.7	77.5
	Std Dev	1.7	1.4	1.7	0.8	1.0	1.4
	Count	2981	60	562	17	1517	907
	95% CI	0.1	0.3	0.1	0.4	0.1	0.1
Boeing 767-400 (GE CF6-80C2 engines)	Log Avg	93.7	93.6	87.7	87.1	86.2	79.2
	Mean	93.5	93.3	87.5	86.7	85.8	78.0
	Std Dev	1.5	1.7	1.8	2.1	2.1	3.1
	Count	420	408	209	73	565	172
	95% CI	0.1	0.2	0.3	0.5	0.2	0.5

Table 7 SEL arrival noise levels for the Airbus A330

		SEL, dBA					
	Monitor site	**B**	**6**	**110**	**102**	**69**	**108**
	Runway	**09L**	**09R**	**27L**	**09R**	**27L**	**27R**
Aircraft Type	**Dist. to touchdown (km)**	**2.8**	**3.8**	**6.8**	**7.1**	**8.5**	**14.2**
Airbus A330-200 (GE CF6-80E1 engines)	Log Avg	92.3	91.8	87.6	86.2	86.2	82.1
	Mean	92.0	91.6	87.4	86.0	85.9	81.9
	Std Dev	1.4	1.3	1.3	1.2	1.9	1.4
	Count	133	54	47	7	99	37
	95% CI	0.2	0.3	0.4	1.1	0.4	0.5
Airbus A330-200 (PW PW4000 engines)	Log Avg	91.7	91.3	86.2	85.4	85.7	81.4
	Mean	91.4	91.1	86.0	85	85.4	81.1
	Std Dev	1.4	1.4	1.2	0.9	1.5	1.9
	Count	207	23	44	6	140	72
	95% CI	0.2	0.6	0.4	1.0	0.2	0.4
Airbus A330-200 (RR Trent 700 engines)	Log Avg	91.8	91.0	87.1	86.1	86.1	82.4
	Mean	91.6	91.0	87.0	86.0	85.9	82.1
	Std Dev	1.5	0.8	1.2	1.2	1.3	1.8
	Count	593	200	201	31	459	200
	95% CI	0.1	0.1	0.2	0.4	0.1	0.2
Airbus A330-300 (GE CF6-80E1 engines)	Log Avg	92.5	91.8	87.6	86.7	86.5	81.5
	Mean	92.3	91.7	87.3	86.4	86.2	81.3
	Std Dev	1.2	1.0	1.6	1.7	1.6	1.5
	Count	136	55	43	7	111	57
	95% CI	0.2	0.3	0.5	1.6	0.3	0.4
Airbus A330-300 (PW PW4000 engines)	Log Avg	92.6	93.1	87.0	-	86.0	82.0
	Mean	92.4	93.0	86.9	-	85.9	81.7
	Std Dev	1.5	1.0	1.2	-	1.2	1.6
	Count	198	5	29	-	96	78
	95% CI	0.2	1.2	0.5	-	0.2	0.4
Airbus A330-300 (RR Trent 700 engines)	Log Avg	92.3	91.7	87.4	86.9	86.5	82.4
	Mean	92.2	91.6	87.2	86.8	86.3	82.0
	Std Dev	1.2	0.9	1.3	0.9	1.5	1.8
	Count	1596	105	345	17	834	471
	95% CI	0.1	0.2	0.1	0.5	0.1	0.2

Table 8 L_{max} arrival noise levels for the Boeing 787 and Boeing 767

		L_{max}, dBA					
	Monitor site	**B**	**6**	**110**	**102**	**69**	**108**
	Runway	**09L**	**09R**	**27L**	**09R**	**27L**	**27R**
Aircraft Type	**Dist. to touchdown (km)**	**2.8**	**3.8**	**6.8**	**7.1**	**8.5**	**14.2**
Boeing 787-8 (GE GEnx-1B engines)	Mean	83.0	81.5	74.7	73.9	73.7	67.2
	Std Dev	1.0	0.7	0.5	0.8	1.2	2.9
	Count	226	64	10	20	152	97
Boeing 787-8 (RR Trent 1000 engines)	Mean	82.4	81.0	-	-	73.3	65.1
	Std Dev	1.5	1.3	-	-	1.0	2.1
	Count	135	36	-	-	30	21
Boeing 767-300 (GE CF6-80C2 engines)	Mean	84.8	83.2	76.6	74.5	73.7	67.6
	Std Dev	2.1	1.5	1.8	2.0	2.0	2.5
	Count	992	133	248	27	599	343
Boeing 767-300 (PW PW4000 engines)	Mean	85.1	83.2	75.8	74.9	73.6	66.1
	Std Dev	1.3	1.2	1.4	1.7	2.0	2.1
	Count	856	222	232	31	552	249
Boeing 767-300 (RR RB211-524 engines)	Mean	87.2	85.5	76.8	77.3	74.9	66.3
	Std Dev	2.0	1.7	1.6	1.4	1.1	1.5
	Count	2981	60	562	17	1517	907
Boeing 767-400 (GE CF6-80C2 engines)	Mean	86.0	85.0	76.8	76.3	75.1	67.0
	Std Dev	1.7	1.9	1.7	2.3	2.3	2.8
	Count	420	408	209	73	565	172

Table 9 L_{max} arrival noise levels for the Airbus A330

		L_{max}, dBA					
	Monitor site	**B**	**6**	**110**	**102**	**69**	**108**
	Runway	**09L**	**09R**	**27L**	**09R**	**27L**	**27R**
Aircraft Type	**Dist. to touchdown (km)**	**2.8**	**3.8**	**6.8**	**7.1**	**8.5**	**14.2**
Airbus A330-200 (GE CF6-80E1 engines)	Mean	84.4	82.8	76.9	76.1	75.1	70.5
	Std Dev	1.7	1.7	1.6	1.3	2.1	1.6
	Count	133	54	47	7	99	37
Airbus A330-200 (PW PW4000 engines)	Mean	83.9	82.6	75.4	74.6	74.6	69.8
	Std Dev	1.4	1.3	1.7	0.8	1.7	1.9
	Count	207	23	44	6	140	72
Airbus A330-200 (RR Trent 700 engines)	Mean	84.4	82.4	76.9	75.9	75.1	71.0
	Std Dev	1.8	1.1	2.3	2.3	1.7	2.2
	Count	593	200	201	31	459	200
Airbus A330-300 (GE CF6-80E1 engines)	Mean	84.8	82.8	76.8	76.7	75.6	70.0
	Std Dev	1.4	1.1	2.1	3.0	2.4	1.8
	Count	136	55	43	7	111	57
Airbus A330-300 (PW PW4000 engines)	Mean	84.6	84.1	76.5	-	75.3	70.4
	Std Dev	1.7	1.2	1.5	-	1.3	1.6
	Count	198	5	29	-	96	78
Airbus A330-300 (RR Trent 700 engines)	Mean	85.0	83.0	77.1	76.3	75.6	71.0
	Std Dev	1.4	1.2	2.1	1.2	1.9	2.1
	Count	1596	105	345	17	834	471

Figure 4 Comparison of Boeing 787 and Boeing 767 arrival SEL noise measurements

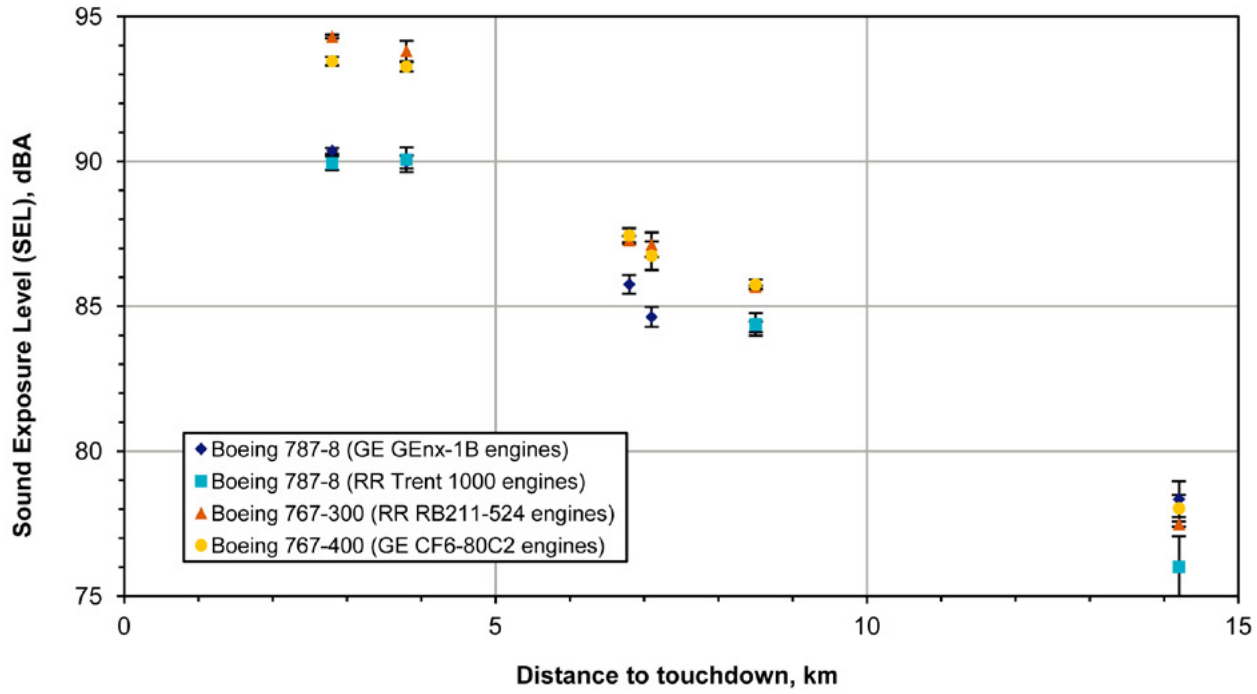
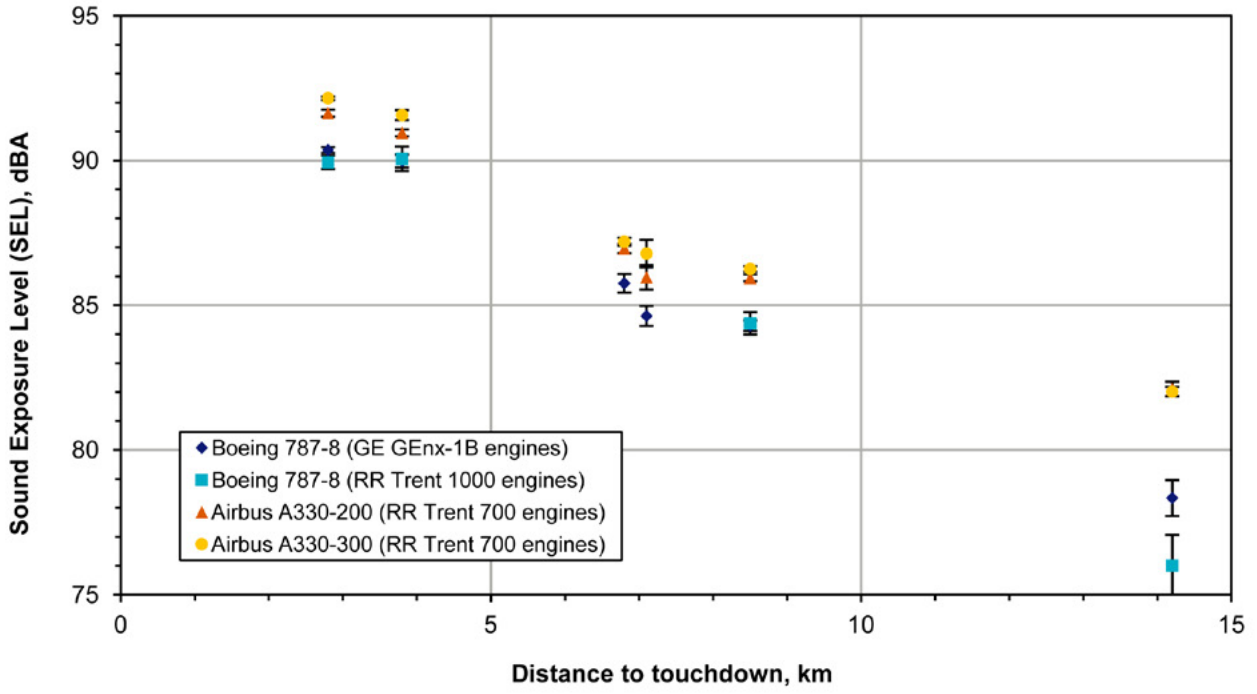


Figure 5 Comparison of Boeing 787 and Airbus A330 arrival SEL noise measurements



CHAPTER 5

Flight tracks and profiles

Departure and arrival tracks

Figure 6 shows the 787 departure flight tracks for the period 12 December 2012 to 30 April 2014, with the significant majority of departures using one of three Standard Instrument Departure (SID) routes and the associated Noise Preferential Routes (NPRs). The SID used on departure is largely dictated by the destination, with departures to North America tending to use Compton (CPT) and departures to Africa, Asia and the Middle East tending to use either Brookmans Park (BPK) or Dover (DVR).

Figure 7 shows the 787 arrival flight tracks over the same monitoring period, where the proportion of arrivals joining the extended runway centrelines from the north and the south is approximately equal.

Figure 6 Boeing 787 departure tracks

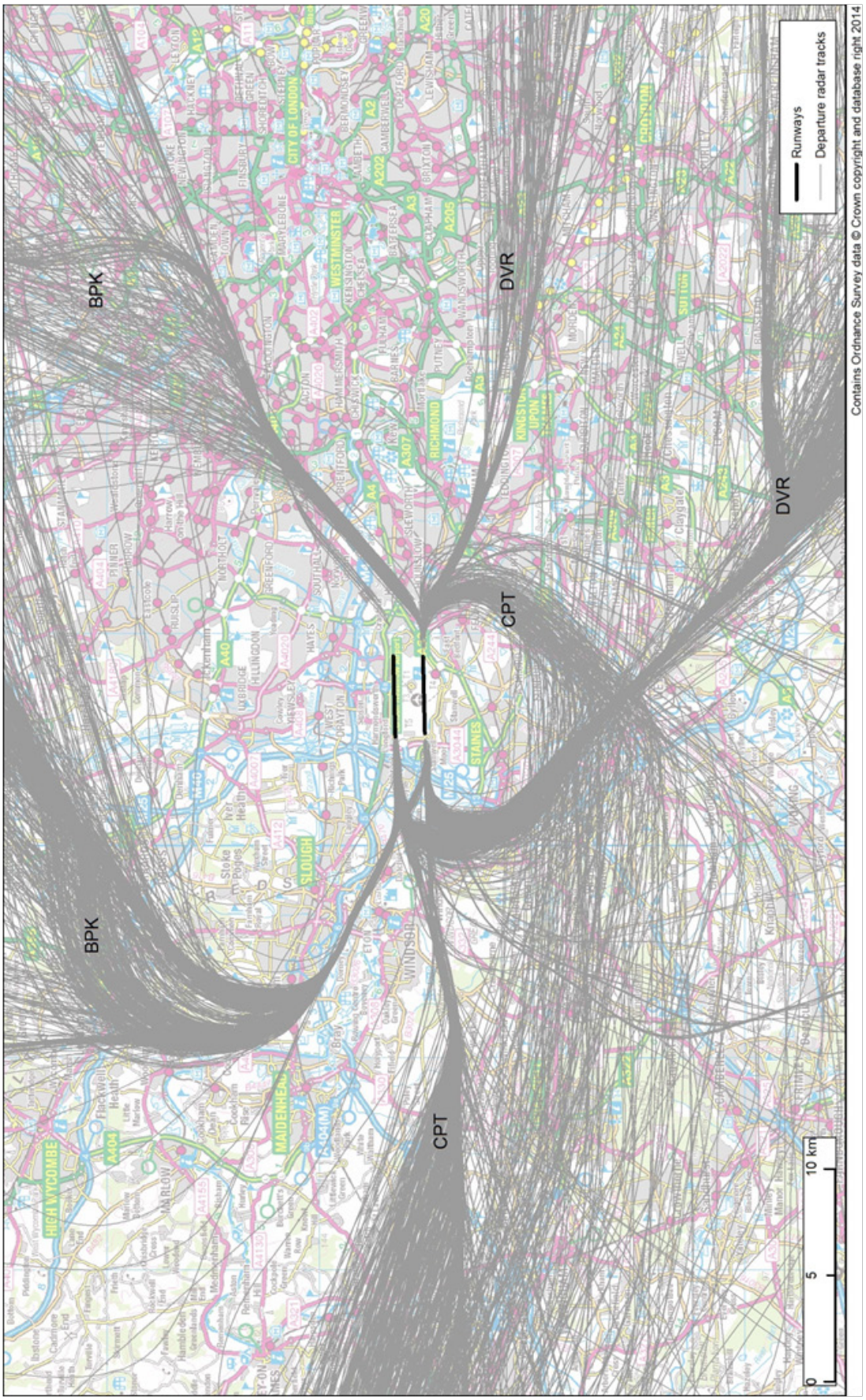
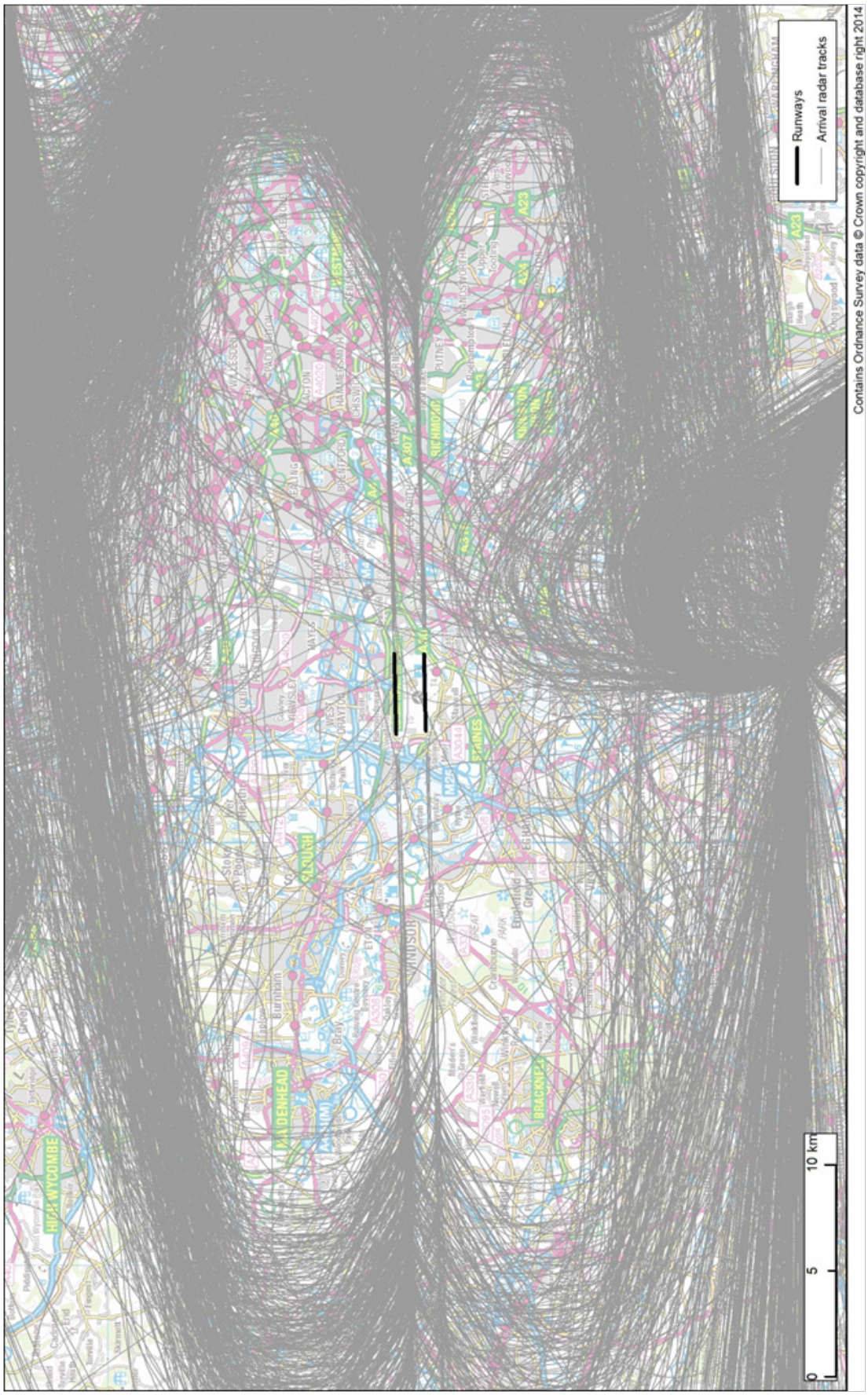


Figure 7 Boeing 787 arrival tracks



Departure profiles

Departure operating procedures can vary significantly between operators of similar aircraft types. Important factors are the engine thrust and flap settings during take-off and initial climb, which together can have a major effect on the aircraft height. All other things being equal, the departure climb gradient decreases as the take-off weight increases. Airline operators will take into account the need to balance reductions in noise, engine wear and fuel consumption amongst other factors.

The International Civil Aviation Organization (ICAO) recommends two types of Noise Abatement Departure Procedure; a close-in procedure (NADP1) designed to mitigate noise at relatively shorter distances and a further-out procedure (NADP2) to mitigate noise at relatively greater distances from the airport. One procedure does not necessarily have a better overall noise impact than another. Instead, changing from one procedure to another tends to redistribute noise from one location to another, including both underneath and to the side of the flight track, resulting in both noise decreases and noise increases. As a general rule however, an NADP2 procedure requires less fuel to reach the cruise altitude compared to NADP1.

Figure 8 compares the average departure height profiles for the 787, 767 and A330. The 787 and 767-300 show very similar flight profiles up to about 15 km from SOR, whereas the 767-400 profile is slightly higher between 7 and 13 km from SOR. The A330 profiles on the other hand are slightly lower than the 787 beyond about 7 to 10 km from SOR. However it should be remembered that each aircraft type shown in Figure 8 represents a number of different operators. Therefore any differences in height profiles may be more reflective of operator differences or differences in the average distance flown[5] (stage length) rather than fundamental differences in aircraft performance.

Figure 9 compares the average departure height profiles for the Boeing 787 separated by airline operator. Results are shown for Air India (AIC), British Airways (BAW), China Southern Airlines (CSN), Ethiopian Airlines (ETH), Qatar Airways (QTR), Royal Brunei Airlines (RBA) and United Airlines (UAL).[6]

Comparisons of the mean profiles indicate that British Airways is implementing an NADP2-type departure procedure that results in a markedly different height profile compared to the other 787 operators, which all appear to be implementing variations of an NADP1-type procedure.

The mean British Airways profile is lower between about 7 and 17 km from SOR, whereas the profiles for Air India and Ethiopian Airlines are slightly higher than the other airlines between 10 and 17 km. Beyond approximately 20 km from SOR the British Airways profile then becomes higher than several of the other height profiles.

5 Aircraft flying longer distances will be proportionally heavier due to the additional fuel carried.

6 Results for LOT Polish Airlines and Aeroméxico are not shown due to low samples sizes.

The mean profile for China Southern Airlines, which operates the 787 on the longest route currently flown by any of the 787 operators at Heathrow (to Guangzhou Airport in China, a distance of 5,100 nautical miles), sits approximately in the middle of the group. It should be noted however that the 787 has a maximum range of up to 8,200 nautical miles. Flight profiles for 787s flying closer to the maximum range may therefore show different trends.

The similarity between the initial flight profiles shown in Figure 9, up to a height of approximately 1000-1500 ft, suggests that all the 787 operators are optimising take-off thrust settings in order to reduce engine wear and associated maintenance costs.

Figure 8 Comparison of average departure height profiles by aircraft type

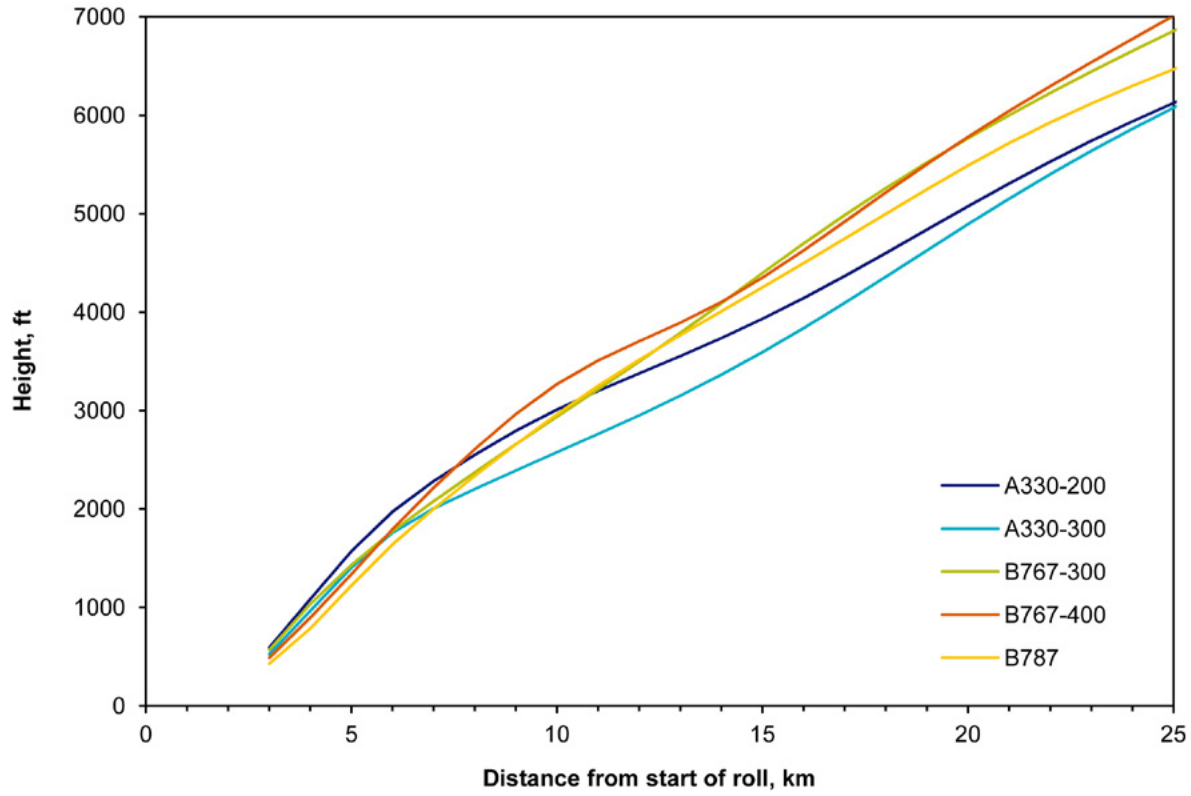
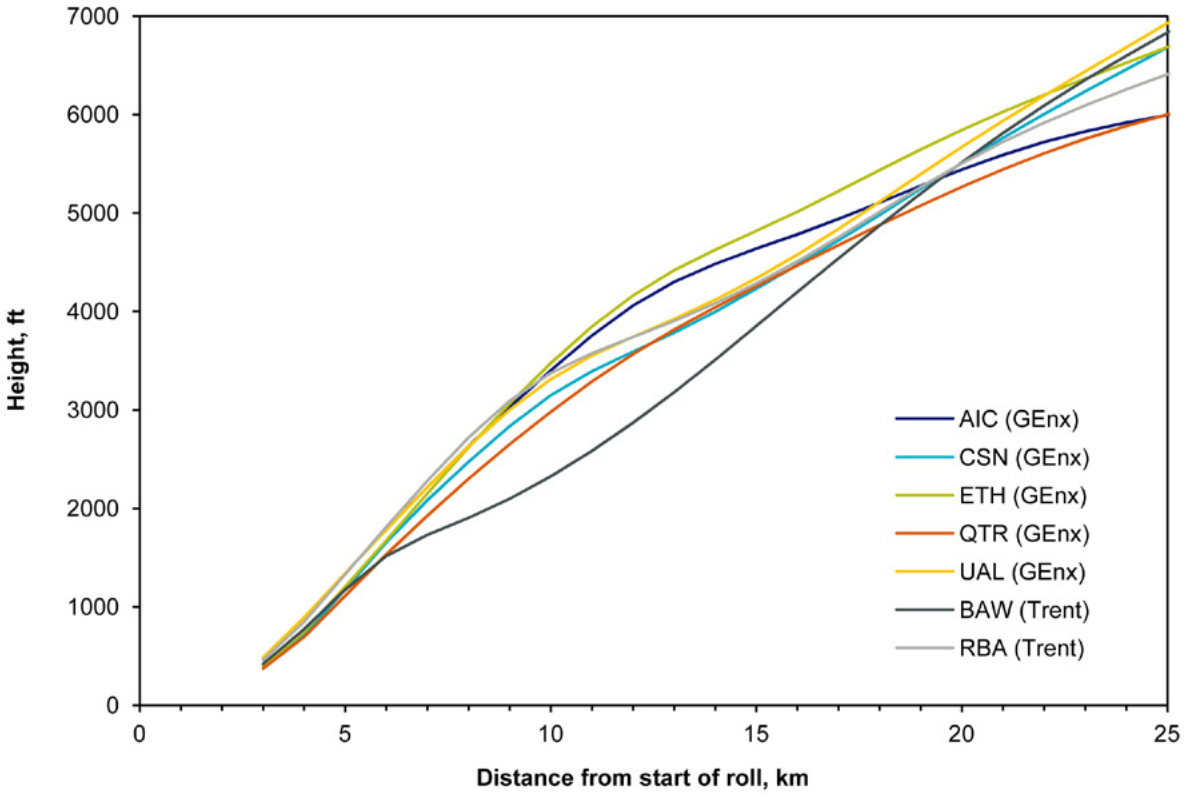


Figure 9 Comparison of average 787 departure height profiles by airline



CHAPTER 6

Conclusions

This report presents summary information on monitored noise levels for the Boeing 787 during the first 17 months of its operation at Heathrow airport. Data have been compared to the Boeing 767 and Airbus A330, whose operations are most likely to be replaced by the 787 in the coming years.

The noise measurement data confirms that the Boeing 787 is significantly quieter than the 767 and A330. The 787 is on average up to 7 dB quieter on departure than the 767, and up to 8 dB quieter than the A330 aircraft. The results also confirm that the 787 is up to 3 dB quieter on arrival than the aircraft types it is intended to replace.

An analysis of radar data has confirmed that across all airline operators, the average departure height profile for the 787 is comparable to the average profiles for the 767 and A330. A comparison of the mean profile for each 787 operator confirms that, as expected, departure operating procedures can vary significantly between different airlines, resulting in markedly different height profiles for the same aircraft type.

Glossary

dB

Decibel units describing sound level or changes of sound level. It is used in this report to define differences measured on the dBA scale, which incorporates a frequency weighting approximating the characteristics of human hearing.

L_{den}

Equivalent sound level of aircraft noise in dBA for the 24-hour annual average period, with 5 dB weightings for evening and 10 dB weightings for night.

L_{eq}

Equivalent sound level of aircraft noise in dBA, often called 'equivalent continuous sound level'.

L_{max}

The maximum sound level measured during an aircraft event.

NPR

Noise Preferential Route. The preferred route for aircraft to fly in order to minimise their noise profile on the ground in the immediate vicinity of the airport.

NTK

Noise and Track Keeping monitoring system. The NTK system associates air traffic control radar data with related data from both fixed (permanent) and mobile noise monitors at prescribed positions on the ground.

QC

Quota Count. The basis of the London airports' night restrictions regime.

SEL

The Sound Exposure Level generated by a single aircraft at the measurement point. This accounts for the duration of the sound as well as its intensity.

SID

Standard Instrument Departure. A designated instrument flight rule (IFR) departure route linking the aerodrome or a specified runway of the aerodrome with a specified significant point, normally on a designated air traffic service route, at which the en-route phase of a flight commences.

2.2 Monthly Data

July 2012							
Date	**Time**	**LAmax (dB)**	**SEL (dB)**	**LAeq (dB)**	**Dur (s)**	**Airport log**	**Airline**
01/07/12	14:00	94.4	101.1	87.2	24		
01/07/12	16:02	84.8	91.7	80.0	14	C152	
02/07/12	10:35	92.0	99.1	86.0	20		
03/07/12	17:59	94.4	101.3	87.5	23		
04/07/12	10:41	81.8	92.5	77.9	28		
04/07/12	15:10	91.2	97.2	84.6	18		
05/07/12	11:39	83.1	91.7	77.01	28	C152	
06/07/12	10:02	94.6	101.4	87.8	22		
06/07/12	11:42	91.3	93.2	80.2	19		
07/07/12	07:06	81.4	73.9	91			
07/07/12	11:39	88.8	96.0	83.0	19		
07/07/12	12:21	75.3	83.3	72.7	11		
07/07/12	12:38	82.4	89.8	79.3	11		
07/07/12	13:06	84.0	93.9	80.5	21		
09/07/12	08:02	96.3	102.5	89.4	20		
09/07/12	12:04	93.3	100.1	86.5	22		
09/07/12	15:00	77.6	86.1	72.3	23		
09/07/12	15:37	86.4	93.2	77.5	36		
09/07/12	18:36	87.8	97.7	79.5	63		
09/07/12	22:58	90.0	97.4	84.7	18		
09/07/12	23:38	86.6	93.0	80.7	16		

10/07/12	12:24	94.3	101.0	88.1	19	P28A	
10/07/12	16:24	95.1	101.3	88.0	21		
10/07/12	19:31	79.0	88.6	75.0	22		
11/07/12	17:14	95.5	101.1	87.7	21		
12/07/12	04:11	78.1	87.7	73.7	24		
12/07/12	10:37	93.8	100.4	87.1	21		
13/07/12	07:51	73.1	82.1	71.5	11		
14/07/12	11:28	92.7	100.0	86.2	23		
15/07/12	02:05	86.9	93.5	81.9	14		
15/07/12	08:41	88.1	100.1	82.0	62		
15/07/12	13:18	93.8	100.6	87.3	20		
16/07/12	10:59	86.3	94.0	81.8	16		
16/07/12	20:43	93.8	100.9	87.4	22	B744	ACX
17/07/12	10:07	92.2	100.1	86.0	25		
17/07/12	17:28	93.0	100.2	86.6	22	R44	
19/07/12	08:50	94.3	101.3	87.2	25		
20/07/12	04:23	79.9	90.9	76.2	29		
20/07/12	09:14	92.8	100.1	86.2	24	B744	CLX
20/07/12	10:05	82.1	91.5	78.0	22	R22	
20/07/12	11:36	83.7	92.8	78.8	24		
21/07/12	13:55	83.2	91.7	78.6	20		
21/07/12	17:00	90.7	99.1	80.3	73	C152	
22/07/12	07:06	82.3	89.7	76.2	21		
22/07/12	16:53	81.0	91.2	77.7	22	C152	

27/09/12	09:06	93.3	100.4	86.5	24		
28/09/12	11:35	94.0	101.2	88.3	19		
29/09/12	06:42	86.0	95.0	78.1	47	B744	ACX
29/09/12	13:08	92.6	99.7	85.9	23		
29/09/12	13:13	86.4	93.0	80.8	16		
30/09/12	09:06	86.7	95.2	83.6	14		
30/09/12	13:52	95.4	102.4	88.7	22		

There were 173 noise events were recorded of which 26 corresponded with movements at Manston airport.

There are a number of things that could have triggered the noise monitor to record a noisy event for example a motorbike passing, machinery, engine or thunder.

The aircraft which triggered the noise monitor to record include:

- B744 - a long range high capacity wide body airliner
- B733 - a long range high capacity wide body airliner
- A306 – long range wide body airliner
- C152 - a primary and aerobatic capable trainer
- R44 – light helicopter
- PA28 – a small light aircraft
- R22 – twin bladed, single engine light utility helicopter
- J328 – turboprop airliner
- FA50 – long range mid sized corporate jet
- GLEX – Ultra long range high speed corporate jet
- B06 – two bladed single engine helicopter
- DC10 – long range airliner/freighter
- A124 – Heavylift freighter.

The airlines that these were associated with included Cargolux (CLX), Air Charters (ACX), Sun Air of Scandinavia (SUS), City Jet (BCY), Trans Mediterranean Airlines (TMA), Virgin Islands Shuttle (VSS), Small Planet Airlines (LLC), Avient Aviation (SMJ) and Air Atlanta Icelandic (ABD).


Flete
Manston Rd
A256
Rumfields Rd
A255
Broadstairs
B2053
Bromstone Rd
Foreland Fields School
Dumpton Park Dr
Margate Rd
The Davenport School
Manston Rd
St Ethelbert's Catholic Primary School
Canterbury Rd W
A299
Chilton Primary School
Chatham & Clarendon Grammar School
The Old Priory School
Cliffsend
Sandwich Rd
London Rd
Cottington Rd
1.
2.
3.
4.
5.
6.
7.
8.


1. Albion Hotel, Albion Place, Ramsgate

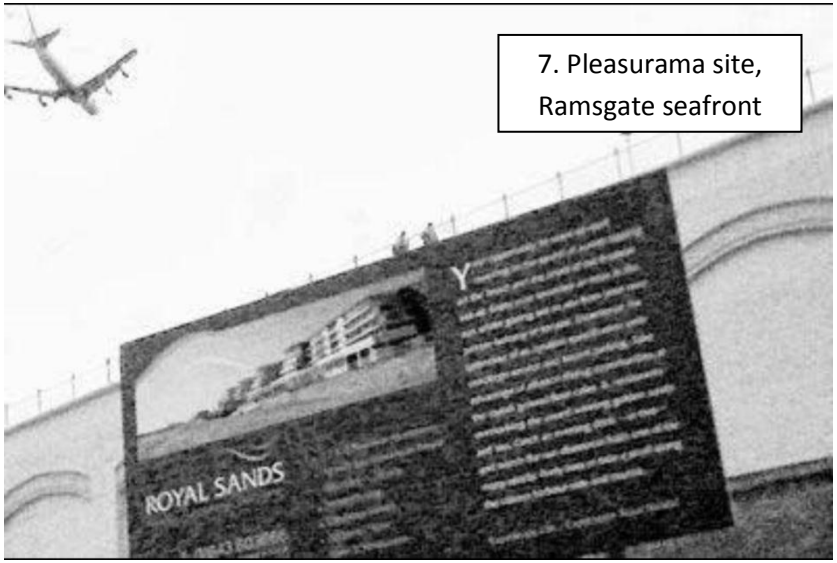

2. Pegwell Bay


3. Nelson Crescent, Ramsgate


4. Wellington Crescent, Ramsgate

5. Ramsgate Marina

6. Flats off King Street, Ramsgate



7. Pleasurama site, Ramsgate seafront

8. Lift from Madeira Walk to Pleasurama site, Ramsgate seafront

From: [redacted]
To: manstonairport@pins.gsi.gov.uk
Subject: Riveroak DCO - Manston Airport
Date: 13 February 2019 09:21:01

Further to my recent detailed submission I have just heard that the sponsor is claiming to have spent £9m on this proposal to date together with a further £2.3m on the acquisition of the Jentex site where it proposes to site a fuel storage facility. This is a total of £11.3m. In the application documentation currently being examined the sponsor states that investors have a total of £15m in order to cover an estimated £13.6m of obligations for compulsory purchase, compensation and blight (a figure which I dispute as being a massive underestimate). Given the sponsor claims to have spent £11.3m of the £15m of investor funds there is now only £3.7m remaining to support the £13.6m of obligations estimated, even if they were realistic.

Turning to the claim to have spent £9m and the £2.3m I have been through the accounts of all the companys owned or associated with the sponsor and I can find no evidence of these amounts being accounted for. Perhaps the ExA has seen evidence which perhaps could be shared or if not perhaps the ExA could make detailed enquiries of the sponsor.

Adem Mehmet

Tony Freudmann [redacted]

Anthony “Tony” Freudmann was a solicitor with the firm of Wace Morgan in Shrewsbury, Shropshire. In 1991, the other partners at Wace Morgan discovered that over a period of years, Mr Freudmann [redacted]

In 1992 he was brought in front of the Solicitors’ Disciplinary Tribunal facing allegations (from the partners in his own firm) that [redacted].

Mr Freudmann had been given the trusted position of managing partner, which gave him the access to the client accounts. [redacted] ***“had undertaken a misappropriation of client funds over a long period of time. The number of payments had been on a large scale and had been taken clandestinely”***, and that he ***“had indulged in a deliberate and deceitful course of conduct over a long period of time”***.

Mr Freudmann’s submission to the Tribunal is a cringe-making stream of “poor me” excuses – paragraphs 27 to 64 in the document. Poor Tony was working SO hard, and had difficult clients, and the other partners didn’t work as hard as he did (which made him resentful), and he was only [redacted], and it was only a little bit at a time, and so on. As a result of this, ***“he behaved in a way which he found difficult to understand”***… FOR YEAR AFTER YEAR.
His partners were cross with him, very cross.

- They let down the tyres of his leased car and took his car keys (presumably to safeguard the car) and frog-marched him out of the building.
- They cancelled his petrol account at the local garage, cancelled his life insurance and cancelled his wife’s car insurance.
- They grassed him up to the Lord Chancellor’s Department, who suspended him as a Deputy District Judge.
- They grassed him up to the Chief Executive and Chairman of the County Council, and the County solicitor, which cost him his position as Leader of the County Council.
- They grassed him up to the Crown Prosecution Service, so he was no longer able to work as an Agent for the CPS.
- They grassed him up to the local press.
- They grassed him up to potential clients.

All of this caused Tony ***"considerable embarrassment, alarm and distress"***. I think that may have been the point.

The Tribunal found ***"the allegation to have been substantiated"*** – bang to rights, in English. Even though they described Tony as ***"ambitious, dominating and aggressive"***, they fell for his sob story, saying ***"the Tribunal has in these exceptional circumstances decided to treat him with an unusual degree of leniency"***, and fined him £5,000. Not everyone thought this was the correct judgement, but it wasn't any of his victims or even his ex-partners who appealed against the decision, because the (then) Solicitors Complaints Bureau beat them to it. Well done, SCB.

As you can see in the hand-written addition to the front page of the document: ***"The Tribunal's decision was quashed on appeal to the Queen's Bench Division of the High Court of Justice, and an order that the respondent be struck off the roll was substituted on 22nd October 1993."***
So, a happy ending.

Please see accompanying document "Tony-Freudmann-Disciplinary.pdf"

By the way, if you search for "[redacted]" on Google, you will find that he is one of those people who has taken advantage of Google's "unremembering" service – there's a footnote to the search results explaining that some results have been removed. This episode in Mr Freudmann's life was meant to have been air-brushed from history.

The Tribunal's decision was quashed on appeal to the Queen's Bench Division of the High Court of Justice, & an order that the respondent be struck off the roll was substituted on 22nd October 1993.

No. 6200/1992
5133

IN THE MATTER OF ANTHONY FREUDMANN, solicitor

- AND -

IN THE MATTER OF THE SOLICITORS ACT 1974

[redacted]
Clerk to the Solicitors Disciplinary Tribunal

Mr. A.J.C. Paines (in the Chair)
Mr. D.J. Leverton
Mr. R.P.L. McMurtrie

Date of hearing: 29th October 1992

F I N D I N G S A N D O R D E R

of the Solicitors' Disciplinary Tribunal
constituted under the Solicitors Act 1974

An application was duly made on behalf of the Solicitors Complaints Bureau by Geoffrey Williams, solicitor, of 36 West Bute Street, Cardiff on 17th July 1992 that Anthony Freudmann of [redacted], Shrewsbury, Shropshire might be required to answer the allegations contained in the affidavit which accompanied the application and that such Order might be made as the Tribunal should think right.

The allegation was that the respondent had been guilty of conduct unbefitting a solicitor in that he had used clients' funds for his own purposes.

The application was heard at the Court Room, No. 60 Carey Street, London WC2 on 29th October 1992 when Geoffrey Williams, solicitor and partner with the firm of Cartwrights Adams & Black of 36 West Bute Street, Cardiff, appeared for the applicant and Robin W. Onions of Messrs. Lanyon Bowdler of 23 Swan Hill, Shrewsbury appeared for the respondent.

The evidence before the Tribunal included the admissions of the respondent and exhibits "AF1" to "AF3" inclusive. The respondent gave evidence.

The facts are set out in paragraphs 1 to 15 hereunder.

1. The respondent, born in 1946, was admitted a solicitor in 1972. At all material times he practised as a solicitor in partnership under the style of Wace Morgan at 2 Bellmont, Shrewsbury.

2. Messrs. Wace Morgan acted for Mr. & Mrs. K in conveyancing transactions. Mr. & Mrs. K were due to complete a sale and a purchase of property on or about 24th April 1981. The purchaser from Mr. & Mrs. K failed to complete. To enable Mr. & Mrs. K to complete their purchase an advance was made by Mr. H.C. Wace to Messrs. Wace Morgan and thence to Mr. & Mrs. K. At the material time Mr. Wace was a partner in Wace Morgan and subsequently became a consultant.

3. The purchase having been completed the principle amount of the loan was subsequently repaid to Mr. Wace in or about June 1982. Interest however remained outstanding.

4. High Court proceedings were issued by Messrs. Wace Morgan on behalf of Mr. & Mrs. K against the defaulting purchaser. The proceedings sought to recover various losses sustained by reason of the purchaser's default including the sum of £3,061.06 representing interest due on the loan provided by Mr. Wace. Judgment was entered on or about 7th June 1985 for the total sum of £5,576.90. It was agreed that the defaulting purchaser should discharge the judgment by instalments of £100.00 per month.

5. The defaulting purchaser duly made instalment payments. Between 8th April 1986 and 27th October 1987 Mr. Wace received nine payments totalling £3,662.69 both from instalments received from the purchaser and from the partnership funds of Messrs. Wace Morgan. The final such payment of £2,087.79 made on 27th October 1987 was in full and final settlement of all sums due to Mr. Wace.

6. On 22nd January 1991 the sum of £1,223.94 was held in client account by Messrs. Wace Morgan on behalf of Mr. & Mrs. K in relation to their matters. The respondent paid the sum of £1,200.00 into an account he opened at the Shrewsbury branch of Cheltenham & Gloucester Building Society. It was not a client account but rather a trustee account with the respondent named as the trustee of E.C.K. Payments were made from that account by the respondent of a personal nature unbeknown to his partners or Mr. K. The payments had nothing whatsoever to do with Mr. K.

7. The partners of Messrs. Wace Morgan having discovered those matters gave the respondent notice of termination of partnership with immediate effect on 14th June 1991. On the same day the respondent repaid the sum of £1,200.00 to the trustee account at Cheltenham & Gloucester Building Society.

8. Messrs. Wace Morgan submitted a fee note to Mr. & Mrs. K in the sum of £417.75 on 16th September 1991. The firm claimed a further sum of £230.00 for costs incurred. All other amounts recovered from the defaulting purchaser, save for the sums paid to Mr. Wace, were due to Mr. & Mrs. K. At the date upon which the respondent opened the Building Society account, no bills of costs had been delivered to Mr. & Mrs. K. Subsequent to the repayment made by the respondent Messrs. Wace Morgan paid the sum of £809.73 to Mr. & Mrs. K, the payment being made on 19th June 1991. At the date of the application Messrs. Wace Morgan held the sum of £224.31 which was due to Mr. & Mrs. K.

9. Messrs. Wace Morgan acted for Mrs. P in matrimonial proceedings. A lump sum settlement of £5,646.66 was recovered for Mrs. P who was legally aided. A payment was made to Mrs. P and the balance of £1,732.19 was retained pending a Legal Aid taxation.

10. The sum so retained was utilised to open account number R817435/8 with Cheltenham & Gloucester Building Society, High Street, Shrewsbury. The account was opened on 19th September 1986 in the names of the respondent and his then partner, Mr. Trevor Wheatley as trustees for Mrs. P.

11. In the five year period following 6th October 1986 the respondent made various withdrawals from the Building Society account in an approximate total sum of £1,295.00. Those withdrawals were for the personal use and benefit of the respondent and were made without the knowledge of his partners. The payments had nothing to do with Mrs. P. They included a payment of £260.00 to Diners Club Limited and a cash withdrawal of £120.00.

12. Those matters were discovered in or about July 1991. At the date of the applicant's application the respondent had not repaid the sums he withdrew from that account.

13. The respondent acted for Mrs. H in a claim for damages. The sum of £30,000.00 was recovered from the defendants. The sum of £27,000.00 was invested pursuant to instructions received from Mrs. H who was legally aided. The balance of £3,000.00 was invested in an account with Cheltenham & Gloucester Building Society in the names of the respondent and his then partner Miss Madeleine Butcher. Under cover of a letter dated 15th September 1987 the respondent forwarded a Building Society cheque for £1,000.00 to Mrs. H. The respondent advised Mrs. H that he was retaining the balance of £2,000.00 until he resolved the question of the recovery of Legal Aid costs and certain costs not covered by Mrs. H's Legal Aid certificate. He indicated that he hoped "shortly to be able to put a figure on those costs." The costs of the said proceedings were paid in full by the defendants on or about 12th September 1988. The Legal Aid certificate was duly discharged.

14. In or about January 1992 the respondent met Mr. Fraser, the senior partner of Messrs. Wace Morgan and admitted that in the three year period after June 1987 he had made withdrawals from the Building Society account for his own use and benefit. Such withdrawals were made unbeknown to the respondent's partners and the payments had nothing whatsoever to do with Mrs. H. Upon discovery of the matters the partners of Wace Morgan paid Mrs. H the sum of £2,207.00 out of their own resources.

15. Messrs. Wace Morgan submitted separate complaints to the Solicitors Complaints Bureau in relation to the three individual matters referred to.

The submissions of the applicant

16. In the matter of the monies held which belonged to Mr. & Mrs. K the respondent made some fifteen payments out of the Building Society account which included cash withdrawals. All payments were made for the respondent's personal benefit. It was accepted that the respondent had repaid the principle sum back into the account of £1,200.00. The respondent would argue that at the time he had serious personal problems and there was no argument before the Tribunal that those monies were not clients' monies.

17. All monies taken by the respondent were monies which began as credits in client account. If the monies represented costs then no bill or written intimation had been delivered to the client.

18. With regard to Mrs. P, a lump sum had been recovered. It was believed that the statutory charge for costs, as it was a Legal Aid matter, applied. The respondent's explanation was that he had taken an unauthorised loan of office money born out of his frustration. The Building Society account had been opened on 9th September 1986 in the names of the respondent and Mr. Wheatley. The respondent's argument was that it would "all come out in the wash" when arrangements on dissolution of his partnership were concluded. That money had not therefore been repaid.

19. In the matter of Mrs. H, damages had been recovered on her behalf in the sum of £30,000.00 of which £28,000.00 had been paid out to her. The respondent had taken £2,200.00 for his own purposes over the years commencing in June 1987. On 15th September 1987 the respondent wrote to the client in the following terms "I hope shortly to put figure on costs" and sent a further £1,000.00. The proceedings had been settled and costs had been paid in full by the defendants. The respondent had used clients funds for his own purposes. The respondent had made eight withdrawals over a period of two years. The respondent had not sought to make a repayment of those monies and expected as in the case of Mrs. P that it would "all come out in the wash."

20. In respect of the three clients matters, the sums which the respondent had utilised were in the case of Mr. & Mrs. K £1,160.00, in the case of Mrs. P £1,295.00 and in the case of Mrs. H £2,207, making a total of £4,662.87. There had been some twenty-seven separate misappropriations.

21. The applicant accepted that he was unable to establish that the respondent had formed an intention permanently to deprive anybody of the monies taken. The applicant did however take issue with the respondent's argument that he was borrowing the money. In the submission of the applicant for there to be a "borrowing" there must be a willing lender. If there were lenders in this matter, they did not know what was going on.

22. Even if the respondent had not formulated an intention permanently to deprive any person of the monies, in two of the cases referred to he had not repaid any money.

23. There appeared to have been a suggestion that some of the monies represented costs, in which case the sums would have been divisable between the respondent and his partners and should not have been paid to the respondent alone.

24. In the submission of the applicant the respondent had undertaken a misappropriation of clients funds over a long period of time. The number of payments had been on a large scale and had been taken clandestinely. It was accepted that the transactions had been recorded but had occurred without the knowledge of the clients or the respondent's partners.

25. It was submitted that the respondent had indulged in a deliberate and deceitful course of conduct over a long period of time.

26. The behaviour of the respondent had a disastrous effect not only on the respondent himself but also on the solicitors' profession. The Tribunal was invited to consider the matter as one of very great seriousness.

The submissions of the respondent

27. The respondent obtained a degree from London University and served his articles with a small firm of solicitors in West London, qualifying as a solicitor in 1972. He moved in July 1973 to the firm which became Wace Morgan. As an assistant solicitor with the firm, the respondent was responsible for managing and developing the firm's litigation practice. He became a partner in 1975. As a partner his responsibilities remained the same although gradually he assumed responsibility for part of the management of the firm. He was responsible for the introduction of a number of modern systems such as a computerised accounting system and the introduction of the concept of fees and work-load assessment and analysis.

28. During the 1980's the respondent's work changed and he ceased to deal with criminal work. He also reduced the divorce and family work undertaken by him. He developed a specialisation in personal injury litigation, medical negligence and employment law. The success of the firm's litigation department provided an impetus for the growth of the firm. By 1987 the firm had grown considerably. And by 1987 the respondent was responsible for personnel matters, the number of staff employed in the firm being about fifty at that time, as well as financial control. Following the introduction by others of unsuccessful management arrangements the respondent became managing partner. Although it was felt that that position was a full time job, the respondent was still expected to devote one-third of his time to fee earning. He also had Council duties and had been appointed a Deputy District Judge (formerly a Deputy County Court Registrar), the respondent considered both appointments to be not only a personal honour but an honour to the firm. He had come to accept that he was working far too hard and believed that his judgment had become clouded as a result of what he and his partners demanded of him.

29. In particular the respondent took on one case which with hindsight he realised had provided considerable additional pressure. He had been instructed by a lady who had been engaged in bitter divorce proceedings which involved allegations of child abuse, physical cruelty, sexual malpractices and major fraud. The respondent had been the thirteenth solicitor to represent the client, she proved to be an extraordinarily demanding client. When the papers were delivered to the respondent they proved to be of great number. The client would telephone most evenings and at week-ends to speak to the respondent at his home and there followed innumerable hearings in London. The respondent said he worked himself into an absolute standstill by the end of the case in the Autumn of 1988, the respondent was, however, able to reflect with some satisfaction that the financial settlement finally achieved was some three times as much as the amount for which the client's former solicitors had advised her to settle. The respondent confirmed that his firm had been handsomely paid for all the work but the respondent had dealt with the case entirely on his own and upon reflection had come to realise that it had dominated his life to the point when he totally neglected his own affairs.

30. The firm of Wace Morgan was long established and in 1978 had taken over a small firm. Despite the efforts of the partners Messrs. Wace Morgan never showed great profit. The respondent had given a great deal of thought to the profitability of the firm which had not really improved despite the introduction of new business systems to include time recording and costs targets. One of the main reasons why the firm

consistently failed to achieve reasonable profits was the failure by three of the senior partners to achieve their costs targets or indeed to get anywhere close to them.

31. The respondent had built up a sense of grievance and resentment against the three partners who continually failed to meet their targets and to accept their responsibilities as partners. The respondent believed he should have taken a decision and left the partnership but did not do so because he felt great loyalty to his partners and the firm's staff.

32. In addition to the failure to meet costs targets there were persistent problems in credit control in that there were substantial sums outstanding for bills that had not been paid. The respondent's sense of disillusionment was increased when he learnt that one of the partners had delivered bills which had been entered as "bills delivered" but had not been sent to the clients. The firm had become responsible for the payment of V.A.T thereon and the credit control showed the bills as outstanding whereas in fact they had never been delivered.

33. The respondent told the Tribunal that it was against that general background that he behaved in a way which he found difficult to understand and which he did not in any way seek to excuse.

34. In the matter of Mr. & Mrs. K the respondent had not had any personal dealings in the clients' transactions and the file first appeared on his desk in his capacity as managing partner in late December 1990. There appeared to be a substantial sum on client account and having ascertained that no money was due to Mr. Wace, decided to pay the money to the client. He requisitioned a cheque but when it arrived at his desk he again looked at the file and realised that his firm was probably owed fees of several hundred pounds in connection with the collection of the debt. Instead in accordance with his firm's accepted practice he arranged to put the money into a building society account. At the time he opened the account he had absolutely no intention of borrowing or using any of the money.

35. At that time the respondent's own personal finances were strained and on 11th February 1991 he planned to see the firm's Bank Manager with a view either to extending his own overdraft or extending the firm's overdraft. His idea had been to go to the partners to ask for permission to make a special drawing on the firm's overdrawn account. The Bank Manager made it clear that the firm's overdraft could not be extended. The respondent did not following that decision ask for an extension of his own overdraft because to have done so would have meant disclosing the state of his own finances and that of the partnership. The respondent had a number of pressing bills to pay for medical expenses for his son who was an epileptic. The respondent accepted that faced with pressing demands and apparent inability to meet those demands over the period between February and April 1991 he withdrew sums of money from the Building Society account opened in the name of Mr. K. He had not intended to use that money for his own purpose and invited the Tribunal to consider the fact that he had not withdrawn the money in one lump sum. He used the money to pay a number of small bills and said that it was his intention always to borrow the money on the basis that he would repay it as soon as possible.

36. The respondent believed he had made it clear in correspondence that at least part of the money in the Building Society account was money to which the respondent and his partners were entitled as profit costs. He had however accepted advice that until the bill was delivered and the money was transferred from the Building Society account in settlement of that bill then the money remained technically client account money. In the submission of the respondent both Mr. Wace and the client accepted that they had received all monies due to them.

37. As soon as the allegation had been put to the respondent in June 1991, the respondent made arrangements through his wife for the sum to be repaid with immediate effect.

38. In connection with the matter of Mrs. P the respondent said that the sum retained on account of costs pending a Legal Aid taxation was, in accordance with the normal practice referred to before, deposited in an account with Cheltenham & Gloucester Building Society. The respondent accepted that subsequently he withdrew a total of £1,295.00 and that the various withdrawals made had been so made without the knowledge or approval of the respondent's former partners.

39. The respondent was of the view that of the sum retained some if not all of the money was due to Messrs. Wace Morgan as profit costs, again he had to accept that until any bill was delivered the sum in that account technically remained client money. When the respondent took the money it was always his intention to repay and again the money was taken against the background of monies due to the firm and the respondent's own particular difficult financial circumstances.

40. With regard to Mrs. H, the respondent confirmed that he had acted for her and had negotiated an agreed settlement. The respondent said that the sum of £27,000.00 was invested in accordance with Mrs. H's instructions and the balance of £3,000.00 was invested in an account with Cheltenham and Gloucester Building Society. The respondent accepted that he had written to Mrs. H on 15th September 1987 which letter made it clear that the sum of £3,000.00 had been invested with a building society. The respondent believed that he fairly explained the position to Mrs. H and in fact sent her a cheque for £1,000.00 meaning that the sum retained by his firm was £2,000.00 on account of costs.

41. The respondent accepted that he subsequently made withdrawals from that account for his own use without the knowledge or permission of the client, he accepted that he owed the sum of £2,207.00.

42. The respondent was asked to leave the partnership on 14th June 1991. He attended at his office without warning of what was to happen and whilst he was engaged in conversation with one of his partners, another partner let down the tyres on his leased car. His car keys were taken and he was "frog-marched" out of the office in full view of the partners, staff and clients. The car had been parked on a public street and the action of letting down the car tyres had been undertaken in full view of members of the public. The respondent knew that what had happened had quickly become public knowledge in Shrewsbury and the respondent still suffered nightmares about the events of that morning. He accepted responsibility for what he had done, but the actions of his former partners that morning had stripped him of any dignity.

43. The respondent said he could only describe his leaving the partnership as a form of bereavement. He had been involved in the firm since 1973 and never imagined that he would leave the partnership in the manner in which he did. He accepted the need of his former partners to protect their own interests but still found some of their actions difficult to accept. The respondent said that after he left the partnership he decided to try to maintain himself by continuing to work as a Deputy District Judge and also to undertake agency work for the Crown Prosecution Service. He was professionally advised that while the matter was before the Solicitors Complaints Bureau, it was private and as a holder of a Practising Certificate he could undertake work. One of the respondent's former partners wrote and informed the Lord Chancellor's Department of the circumstances of his leaving the partnership, as a result of which the respondent was suspended from his duties as a Deputy District Judge.

44. The respondent began to work as an agent for the Crown Prosecution Service following an approach made to him in October 1991 by the Branch Area Prosecutor. He worked for about one month until the Branch Prosecutor informed him that he had been contacted by one of the respondent's former partners who had made known the circumstances of the respondent leaving the firm. As a result he was no longer able to work as a Crown Prosecution Service Agent.

45. At the beginning of January 1992 the respondent had been approached by a reporter from a local newspaper who told the respondent that he had been informed by a member of his firm that the respondent faced serious charges involving clients money and he wanted to give the respondent an opportunity to comment before he ran the story. The respondent had been devastated. The respondent told the reporter the exact position and the story was not run.

46. The allegations against the respondent had also been reported on two separate occasions to the County Council. The Chief Executive had been informed that the respondent had been dismissed and also the Chairman of the County Council.

47. In July 1992 the County solicitor had been telephoned by one of the respondent's former partners who was informed that the respondent's case had been referred to the Disciplinary Tribunal.

48. All of these actions on the part of the respondent's former partners caused him considerable embarrassment, alarm and distress.

49. Whilst the respondent accepted that he had borrowed what was technically clients' money which he was not entitled to do, he had suffered serious financial loss as the result of his actions. He had lost the share of fees which he would have received in the period June 1991 to October 1992. He was still engaged in a dispute with his former partners over the firm's accounts. He believed that a substantial sum stood to his credit in the capital account but draft accounts had been delivered to him which had been prepared in such a way to show his capital as being in deficit to the sum of £23,000.00. That was not because of any irregularities. It was because of disputes concerning such matters as the value of work in progress, the value of the firm's library and the fact that having repossessed his firm's car, the former partners kept it for a year and then purported to charge the respondent £7,000.00 for that year's leasing costs. The respondent had also to suffer petty losses such as, for example, when the firm without warning stopped his

petrol account at a local garage, after he left them: he went in to pay a petrol bill and was asked by a member of the garage staff why he had left the firm.

50. The respondent's wife's car insurance was cancelled without warning or reference to the respondent, as was his private health insurance. That in itself caused considerable distress as the health cover extended to the respondent's son who was receiving treatment for epilepsy. For some time the insurance company stated that the policy had lapsed and the respondent would have to commence a fresh policy and his son would not be covered. After considerable pressure the respondent had happily been able to negotiate a continuation of the policy.

51. The respondent had been appointed trustee for a Barrister who had practised in Chester and had died in 1982. He gladly accepted her request to act as trustee and did so until 14th June 1992. On 15th June 1992 he had been telephoned by the Barrister's brother and co-trustee who said he had been contacted by one of the respondent's former partners and had been informed that the respondent had left the firm because of a serious breach of trust. The respondent explained the position to his co-trustee who subsequently rang back to state that whilst he wanted the respondent to continue as a trustee he felt that he had no alternative but to change solicitors completely and felt that it would be best if the respondent were to retire as trustee. The respondent agreed to do so but felt very depressed at having let down his Barrister friend.

52. The respondent was forty-six years of age, married, but separated from his wife. There were three children of the marriage. The respondent was still supporting the youngest of the children financially.

53. The respondent had obtained employment on a temporary basis as a company secretary with a small limited company for which he worked one and one-half days per week for a very modest salary. He also had obtained a consultancy with Central Law Training and specialised in legal training relating to Local Government Law. As part of his employment with that firm he was provided with a car and was paid a modest salary. That was also a temporary position.

54. The respondent was a Councillor for Shropshire County Council and had represented a Shrewsbury ward since 1981. Prior to that he had been Parish Councillor for a Parish on the outskirts of Shrewsbury.

55. The respondent had been leader of Shropshire County Council since April 1988. In addition to the leadership of the Council he also held the Chairmanship of the Policy and Resources Committee. Before that he was Chairman of the Leisure Services Committee for three years. The Policy and Resources Committee was the major Council Committee and established the Council's broad policy. It was also required to set and oversee the Council's budget and the budget for the then current financial year was set at £250 million.

56. The respondent was also a trustee of the Shropshire County Council Employees Pension Fund with the value of the Fund standing at approximately £200 million.

57. From 1983 to 1989, when he resigned through pressure of work, the respondent was a founder Director of the Shropshire Hospice. That was an unpaid position which involved many hours of voluntary work culminating in 1989 with the successful opening of the hospice.

58. For many years, the respondent had been the Honorary Solicitor to the Shrewsbury Citizens Advice Bureau. That had involved him in many hours of unpaid work on behalf of the community.

59. Initially when the respondent became leader of Shropshire County Council, there was no salary for that position but subsequently the Government introduced legislation that permitted the payment of salaries to Council leaders. The respondent received a salary of £5,000.00 per annum from May 1991 and in addition received attendance allowances for attending various Committee meetings. His duties increased when he became leader.

60. The respondent had informed the Council's Chief Officer and the Secretary of his Political Party of the proceedings pending against him. He had already decided to stand down from Council duties at the election in May 1993 as the possible outcome of the disciplinary proceedings, the respondent had decided to resign his Council duties and his seat as a Councillor with immediate effect. He was also of the opinion that he would be unable to continue to work for Capital Office Systems Limited and Central Law Training if his ability to practice were removed.

61. Although the respondent remained separated from his wife she had supported him. Their former home had been sold at a reduced sum and his former wife claimed the net equity in the property. The respondent was able to understand her claim as the fact that the house had to be sold on disadvantageous terms was the respondent's fault and not hers.

62. Since the allegations had come to light in June 1991 the respondent had had to live with the probability that the proceedings would culminate in an appearance before the Disciplinary Tribunal and that his entire practising life would be at stake.

63. The respondent fully accepted that he had let himself down, he had let his partners down and that he had let down the solicitors' profession. The respondent maintained that he only borrowed the money, which he always intended to repay. He had striven as best he could since 14th June 1991 to rebuild his life.

64. The respondent bitterly regretted what he had done and offered to his clients, his former partners and the Tribunal his deepest apologies.

The Tribunal FIND the allegation to have been substantiated, indeed it was not contested. The respondent had taken for his own use small sums of money. It was fortunate, and the Tribunal accepted, that no clients had suffered loss. The Tribunal has paid heed to the argument of the respondent that there were outstanding billable costs and accept that to some extent this mitigates the fact that the respondent had taken for his own purposes clients' money. There was no doubt that in the technical sense such money was clients' money and the Tribunal are able to give weight to the respondent's explanation. It is, however, not acceptable for a partner to take for his own use monies which were properly destined to be included in the fees earned by the partnership. The Tribunal perceive that there was within the partnership a considerable clash of personalities. The respondent was doubtless ambitious, dominating and aggressive. There was no doubt that he had done much good work. He entered partnership with partners who perhaps did not appreciate his drive, dynamism and business acumen. Of course, as the respondent himself indicated, the proper solution would have been

to withdraw from the partnership and seek an association with other partners or firm which matched his own views in such matters. It had to be said that the behaviour of the respondent's former partners following his ejection from the partnership did little to serve the good reputation of the solicitors' profession and could not do otherwise than evoke a degree of sympathy for the respondent.

The respondent's professional and public life was in shreds. Before appearing before the Tribunal, the respondent had already been made to suffer to a very considerable degree. The respondent's behaviour had been, of course, unacceptable. It was clear that he had been under pressure which, although to a certain extent he had placed upon himself, had been considerable. The Tribunal was impressed by the testimonial letters offered in support of the respondent.

It is because this respondent has already suffered to a very great degree that the Tribunal has in these exceptional circumstances decided to treat him with an unusual degree of leniency. Although the Tribunal gave grave and deep consideration to making an Order which would deprive the respondent of his ability to practise, they have decided in this case to impose a financial penalty. The Tribunal ORDER that the respondent, Anthony Freudmann of Shrewsbury, Shropshire, solicitor, do pay a fine of £5,000.00 such penalty to be forfeit to Her Majesty the Queen and they further Order that he do pay the costs of and incidental to this application and enquiry, such costs to be taxed by one of the Taxing Masters of the Supreme Court in the absence of agreement between the parties.

DATED AND FILED WITH THE LAW SOCIETY
this 21st day of January 1993

on behalf of the Tribunal

[redacted]

A.J.C. Paines
Chairman

From: [redacted]
To: manstonairport@pins.gsi.gov.uk
Subject: RSP DCO - Night Flights
Date: 15 February 2019 11:26:41

Please accept the below email train from the local MP for Thanet South, Craig Mackinlay as a further submission from me regarding the DCO for the deadline of today 15th February.

The emails show the sort of communication between those who do not support the DCO and MPs who blindly do, but also confirms the widespread position that night flights should not be permitted. Craig continues to believe that RSP don't want night flights despite them being specified in the DCO documentation, which seems naive although he is being led by Sir Roger Gale MP who is holding the same line despite clear evidence from RSP in the documentation.

Thanks Adem.

Begin forwarded message:

> **From:** "MACKINLAY, Craig" <craig.mackinlay.mp@parliament.uk>
> **Date:** 3 October 2018 at 17:04:22 BST
> **To:** [redacted]
> **Subject: Re: RSP DCO - Night Flights**
>
> Dear Adem
>
> You may **not draw** conclusions by my actions or words that do not fit in with your agenda. It is surely clear that I would not support night-flights as being part of an operational plan into the future. I have no concerns on this as there is no plan for it. You are spinning yourself into ever-decreasing circles on this.
>
> I appreciate that you are against Manston having an aviation future no matter what form it takes, that is your right. I have said every which way that I do not believe that there is any intention by RSP to promote or allow night flights. They are fully aware of local opposition to this, and likely opposition from TDC, and myself. It is fairly obvious that you have latched onto this issue as a means of furthering your wrecking aims for an airport full-stop.
>
> You are a regular communicator. My answers are always the same. I think we are simply wasting each others time, but as ever thank you for getting in touch.
>
> Regards
>
> Craig Mackinlay MP
> Member of Parliament for South Thanet
> Constituency number 01843 603242
> Westminster 020 7219 4442
> www.craigmackinlay.com
> Twitter @cmackinlay

Facebook: mackinlay4souththanet

From: [redacted]
Sent: Tuesday, October 2, 2018 3:23 pm
To: MACKINLAY, Craig
Subject: Fwd: RSP DCO - Night Flights

Craig, with respect to my email below could you please respond to me electronically as Royal Mail seem to only find my address intermittently despite agreeing alternative arrangements with them.

Thanks Adem.

Begin forwarded message:

> **From:** [redacted]
> **Date:** 2 October 2018 at 09:38:14 BST
> **To:** Craig mackinlay <craig.mackinlay.mp@parliament.uk>
> **Cc:** Roger Gale <galerj@parliament.uk>
> **Subject: RSP DCO - Night Flights**
>
> Craig, I've seen your responses to constituents concerned about the possibility of night flights at Manston. In your response you say that RSP don't want night flights and are not talking to any carriers that do. In the past both you and Sir Roger have always claimed that RSP don't want night flights and that you wouldn't support night flights if they did. We have also been told by Sma, Smaa, Suma and RSP themselves that they don't want or won't support an operation with night flights. There seems to be a clear agreement from all sides on this issue. Can I ask therefore whether you will register as an interested party with pins and write to them asking them to ban any night flights, scheduled or chartered (which Sir Roger has failed to rule out in his previous statements), as a condition of the granting of the DCO. Clearly exceptions need to be made for emergency or humanitarian situations which all sides would agree with. If you were able to do this, with Sir Roger as well, that would go a great way to clearing up the claimed misunderstandings that surround the possibility of night flights at Manston and reassure residents of Ramsgate and Herne Bay on this issue. If you feel unable to do this then we must draw the conclusion that night flights are required by RSP and have your support.
>
> Adem Mehmet
> [redacted]

accepted for any damage caused by any virus transmitted by this e-mail. This e-mail address is not secure, is not encrypted and should not be used for sensitive data.
