5 April 2024

To: Members of the Senate Inquiry: Impact & Mitigation of Aircraft Noise

Thank you for the opportunity to present a submission.

If I had a side-business that mowed lawns at midnight, followed with chainsaw tree lopping at 2am, and leaf blowing at 3am and then used a wood chipper at 4am, played loud rap music to relax at 5am and continued this behaviour every night so as to provide a valuable service to my paying clients, I would be be the subject of newspaper articles and quickly prosecuted. But if an airline does effectively the same thing to 10,000 residents, it is suddenly unremarkable, acceptable and even applauded as providing much needed convenience and 'connectivity' to its clients.

While I acknowledge the importance of aviation connectedness to the nation, it's become clear that the costs of pollution, and productivity and health harms from aircraft overfly noise have been entirely socialised onto the residents of Brisbane as well as those in many other cities in Australia.

The casual acceptance by frequent-flyer aviation policy makers of the economically-based belief that aircraft noise is a necessary inconvenience of progress is depressing. These are people who do not suffer the consequences of their policies, who have never lived under a busy flight path, who do not know the extreme distress and hurt caused, and who do not acknowledge the research on the harms caused by aircraft noise.

Methods to lessen aviation noise do exist but the desire to do so does not. The cost to abate noise is not the overriding issue that political apologists for aviation claim: there will be a cost, but the cost of not alleviating the noise is very significant.

For me, the issue is not just about the multiple flights every night which prevent proper sleep, but about the unfairness and stonewalling I have encountered in trying to make my voice heard by those who treat citizens as statistics, using euphemisms like 'social licence' and 'noise impacts' to camouflage the true nature of the damage that they claim is somehow necessary for an undefined public good. There is something intensely irritating and deeply offensive about the intrusiveness of the rumbling whining roaring crescendo of aircraft noise that interrupts your life.

In almost every other industry, there are regulations preventing harm and noise from various kinds of machinery: regulations which cover the extent, loudness, frequency and duration of such noise. However if the noise emanates from an aircraft, no such rules apply and aircraft noise is effectively completely unregulated in Australia.

Genuine attempts to deal with this problem, including operational restrictions if necessary, at some local and many large busy international airports demonstrate that mitigating aircraft noise is possible.

How do the government, airports and airlines imagine that they will be able to delay, obfuscate, and stonewall residents for the next two decades while they increase flight traffic and noise by 300%?

Now pilots claim that AirServices prioritizes noise reductions over their safety. In reality, AirServices has an impossible conflict of interest and everyone loses with current strategies, except the airport.

Would it not be better to create proper ESG regulation now, before the damage becomes even more significant. The cost of acting ethically now will be cheaper than delaying the reckoning.

Sincerely

Submission to Senate Inquiry

Rural And Regional Affairs And Transport References Committee For Inquiry And Report By 8 October 2024

Impact & Mitigation of Aircraft Noise

Disclaimer: This is a non-partisan completely independent personal submission designed to help bring relief to the many Australian citizens whose lives and health are seriously affected by flight path noise. The contents herein are not necessarily sanctioned by any organisation.

INQUIRY TERMS OF REFERENCE

The impact and mitigation of aircraft noise on residents and business in capital cities and regional towns, with particular reference to:

a the effect of aircraft noise on amenity, physical and mental well-being and

b the effect of aircraft noise on small business;

c any proposals for the mitigation and limitation of aircraft noise, including flight curfews, changes to flight paths and alternatives to air travel;

d any barriers to the mitigation and limitation of aircraft noise; and

e any other related matters.

CONTENTS

THE COMMUNITY VOICE

“This has been the most terrible day! Flights just keep coming over since early this morning non stop. Driving me crazy….. Not well and certainly can’t sleep. Another not peaceful Saturday - it has been relentless all morning.”

“I had a terrible night with all those planes flying over. They fly so low.”

“I think of the ongoing human cost-it’s relentless. I don’t know how they get away with this.”

“I can’t sleep because of the constant aircraft noise and worst of all, I can’t even have a moment of quiet in my own home because of the ever changing flight paths. I have to go out if I want peace.

“Prior to the opening of the new runway[we] received an average of 13 flights per day, it now receives 63 per day, and this figure rises every month.”

“Where other people use the weekend to rest and relax, I’m just feeling worn out and exhausted.”

“This is not something that is merely 'slightly irritating' …..you are depriving people of the ability to sleep at night in their own homes.”

“...Today I estimate 200 or more aircraft flew past or over the top of my house. It was incessant from 0510, a plane every 2.5 minutes, often less. At certain times we even had incoming planes going over as outgoing planes were going past about 1-2km away at best. Basically, at any given time, there was a plane going past for the entire day. 6:40pm and they’re still going.”

“Completely kills the enjoyment of the amenity of our home in this public holiday.”

“Just hate coming home now...no peace and serenity in the home I once loved and worked hard for.”

“I'm amazed at how anyone can think this is okay.... It's as bad as an ambulance driving down [the] road every 2 minutes.....They sometimes wake me up through my earplugs at 2am... I'm going to have to go and see my doctor about sleeping tablets....”

“No sleep-ins ever. It infuriates me. I have lupus and chronic fatigue, and am a single mother to a young boy. I’m already exhausted. ... This has to stop!”

“BNE is so intent on being a global city at the expense of all the residents. I used to enjoy the peace and quiet but now it's just a nightmare!”

“So many flights between 4-6 am this morning .... So loud I couldn’t get back to sleep.”

“Sick of having the same complaints day in and day out being sent to all involved parties and absolutely nothing being done!”

“I just emailed a complaint to ASA using their online form and a little bit of helpful information about how to contact Lifeline and Beyond Blue popped up. A ready admission in my opinion that they know that people who get disrupted sleep due to the incessant night time noise get kind of depressed and anxious. I for one am very teary and exhausted after no sleep for two nights.”

“At [State School] the aircraft noise over-head has gotten to a point where it’s almost non-stop noise. It can be disruptive to the class rooms to the point where you can actually hear the noise come through. We are also concerned about the pollution.”

“Two minutes into my movie and I’ve already had to pause it twice because I can’t hear a thing over the horrendous noise from planes flying over here.”

I now have disrupted sleep almost EVERY night.

I no longer value and enjoy the location I chose and worked hard to make my home. My trust in regulation and governance has been destroyed by the NPR process. Government has declared corporate profit is king over citizen rights and well-being.

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SUBMISSION FOCUS

This submission is based on community feedback and research into the causes and effects of the serious and growing problem of aircraft noise, the failure of current approaches and a potential way forward.

This submission focuses on the aircraft noise issue from the perspective that aircraft noise harms will not be mitigated with a few quick fix political recommendations (such as reforming the poorly performing government business AirServices).

It requires analysing the fundamental causes of the problem and implementing solutions that deal with these causes.

Examples to illustrate the key points will primarily be drawn from the Brisbane situation and the Brisbane community (the most complained about airport in Australia with good reason), but the problems that these local examples highlight are nationwide, and therefore the key issues and proposals should be applicable to other airports in Australia.

This submission recognises the importance of aviation to Australia and is not suggesting that ESG measures should cripple its operation. But this capital-intensive commercial industry sector is effectively a quasi-monopoly that has so far given no more than lip service to managing noise harms.

The government needs to implement effective safeguards to protect the public interest and ensure sustainable aviation that benefits all sectors of the community, not just aviation corporations, tourists and frequent flyers.

FOREWORD

I am personally affected by the operations of Brisbane Airport Corporation since the opening of the New Parallel Runway (NPR), with often up to 10-12 flights at irregular intervals between 10pm and 6am, and many more flights daily depending on the wind direction.

This is a disturbance about which I was never informed and which constitutes a severe and unwelcome intrusion to me, an intrusion contradicting the unpublished in-house (Environmental Assessment) EA done for the changes in flight paths of the NPR in 2018.

This impact 'assessment' found 'no significant impacts' thus avoiding further scrutiny of the changes to flight paths, and was later criticised by the ombudsman as being seriously flawed.

There is no procedure for redressing and calling to account past regulatory infringements, including misleading and partial information provided to communities prior to previous major developments & flight path changes.

Currently, policy makers seem to consider aircraft noise largely in the context of securing 'social license' for aviation expansion. They only ever talk about it in economic terms and completely neglect the contradictions between expanding one of the most polluting forms of travel with their alleged focus on improving the environment, or well-being of citizens.

There is little meaningful attempt to actually reduce aviation noise by any action which might noticeably impact aviation growth, or to even to research noise impacts properly with a view to understanding or limiting them, or make rational decisions about aviation growth used a transparently published cost-benefit analysis, instead of relying on industry PR scare tactics about 'economic impacts' and increased airfares.

When a long acting pollutant such as PFAS is found to be a health hazard, politicians find money to research its remediation. In contrast, for aviation noise impacts, any such urgency and commitment has so far been absent although it is an arguably an equally significant health issue, and moreover one which is much more amenable to practical solutions with immediate impact .

This is an example of industry capture in Australia where the public interest is ignored due to an under-regulated, quasi-monopolistic sector with a loud PR lobby group. There is an absence of published and inclusive cost benefit studies to justify the assumption that industry's expansion plans and calls for government money are economically beneficial or sustainable, and the lack of acknowledgement of any research or evidence which might conflict with the empire-building narrative.

Section 1: THE CURRENT SITUATION (see Appendices 2,3)

- Aviation is important to the island nation of Australia where long distances and lack of alternative convenient transport options have made the industry important to the connectivity and economy of the nation.
- Most Australian citizens fly at least occasionally, and many of them are frequent flyers travel multiple times monthly.
- With the current growth in air traffic and flight path design, hundreds of thousands of residents suffer increasing noise from aviation activity.
- Low altitude residential overfly, often at night, comes from many aviation operators including commercial airlines, general aviation, emergency services (mostly low flying helicopters), defence forces, and private and freight operators. The effect of these operations is cumulative.
- Aircraft noise, due to its frequency profile, duration and loudness is well researched to be more annoying and disturbing than other traffic noise of the same loudness.
- As flight paths are changed or added (often a result of infrastructure expansions), many residents who previously did not suffer aircraft noise, and who were not consulted properly about the changes, now find that they also experience noise.
- In many cases, residents under or near flight paths are interrupted dozens or hundreds of times a day and many times at night with aircraft noise of 65-75dB (from ambient noise of around 35-45dB depending on location). This is more or less equivalent to having a mower started under your window at irregular intervals.
- This noise level loudness and frequency is above thresholds set by the WHO as being appropriate to maintain proper health
- Many residents cannot sleep properly due to multiple intrusive noise interruptions from aircraft. This has an obvious and immediate effect on their productivity, health and general outlook on life, as well as exacerbating many chronic conditions.
- The impacts of aircraft noise are not merely an inevitable nuisance or a disturbance: they are a largely preventable harm
- Aircraft noise is well researched detriment to health, productivity and longevity beyond any reasonable doubt.
- Government and industry response to the epidemic of aircraft noise harms (euphemistically labelled as ‘disturbances’ or ‘impacts’) is a combination of wilful ignorance and cliches from the utilitarian approach to public health whereby it is acceptable to cause ‘disturbance’ to some for the economic good.
- The public economic good of unrestricted aviation expansion has never been properly defined and no comprehensive studies or evidence has been publicly presented to support it other than industry generated impact studies which omit any costs.

- The measures put in place to allegedly deal with the aircraft noise issue are obviously ineffective to allay the growing problem, which has got steadily worse as traffic levels increase.
- The thousands of citizens who are impacted by aircraft noise are met with stone-walling or asked to participate in ineffective (and often insulting) social engineering schemes and consultations.
- Citizens are aghast at the thought of the projected 300% air traffic increase along with the addition of drones and other potential sources of damaging and disturbing noise, as well as the pollution arising from these activities.
- Given the known serious harms of aircraft noise, it would be unethical and potentially costly to continue the same trajectory of ignoring, improperly regulating and therefore socialising these aviation noise harms.
- It is vitally necessary to improve the regulatory framework to prevent social conflict and restore a proper balance of economic growth with the health and other risks of aviation industry operations.
- If this is not done, the costs (of ongoing damages and the inevitable changes that regulation will require) will continue to increase and the eventually required inevitable changes will become more disruptive.

CONCLUSION: Aircraft noise is a massive public problem that is under-appreciated, has been framed as far less damaging than it really is, and is not properly addressed by policy makers.

Section 2: SECONDARY (ENABLING) CAUSES OF THE NOISE IMPACTS

A. AIRPORT INFRASTRUCTURE CLOSE TO CITIES IS ORIENTED FOR EFFICIENCY, NOT NOISE MITIGATION. IT LARGELY NEGATES CURRENT TIMID APPROACHES TO REDUCE NOISE. (See Appendix 4)

- Most of the now high-traffic capital-city airports were built at a time when air traffic and its associated noise and pollution were orders of magnitude less than at present.
- Key design considerations were mostly cost, practical ease of construction and convenience of public access rather than the noise impact of likely traffic growth (this occurred in an era of leaded petroleum and shortly after the cessation of aerial DDT spraying to control mosquitoes)
- In some cases, infrastructure 'improvements' after privatisation (e.g. Brisbane's decommissioning of the cross-runway and building of the new parallel runway - NPR) were primarily focused on developing infrastructure for maximum operational convenience at minimum cost (effectively socialising noise impacts).
- In many cases the regulations for assessing environmental impacts of infrastructure and flight path changes have been misapplied to the advantage of industry.
- This siting of existing airports and orientation of runways has imposed serious operational constraints on managing flight paths for noise mitigation, but there have been no proposals to improve infrastructure to help alleviate noise or to increase operational flexibility.
- The situation at many regional airports is now the same as it was in capital cities over 50 years ago: the noise problem in these areas is orders of magnitude less than capital city airports and regulatory concerns are somewhat different as a result.
- As an example of the outcomes of a regulatory vacuum regarding noise, in 2018, Brisbane Airport Corporation essentially self-assessed that changes in noise impacts from the NPR new flight paths were not significant" based on (a) assumptive modelling and (b) artificially selected significance criteria.
- Arbitrary selection of 'significance criteria' resulted in assuming an increase in noisy events @60dB of less than 25% for areas with existing noise or less than 50 flights daily for areas without noise at the time was considered 'not significant'
- The report, outsourced to ASA, is methodologically unsound, and was hidden from the public (FOI required). AirServices concluded 'no significant impact' so the runway development went ahead without proper scrutiny.
- The Ombudsman found significant breaches of good practice and the required assessment report had not even been concluded before the new runway opened.

- Public consultations were virtually unfunded and completely inadequate so the citizens did not get an adequate voice in the process.
- In the case of Brisbane, residents were assured that most flights would be over the water by the head of BAC, an assertion which was known to be false at the time.
- Infrastructure redevelopments continue to ignore the potential to mitigate noise. For example, Brisbane Airport's $5bn upgrade allots no money to improving infrastructure for noise abatement.

CONCLUSION: Although airports close to cities with large populations are not appropriately built for effective noise reduction, there is no proposal to improve this infrastructure for noise mitigation. New airports are still being improperly sited (e.g. Western Sydney against the wishes of many local residents) due to the regulatory vacuum around putting defined evidence based limits on aircraft noise.

B. THE CONSEQUENCE OF THE AVIATION GROWTH NARRATIVE (See Appendix 5)

- Privatised industry has shaped a public narrative of the aviation and tourism industries as central to the economy which is promoted using stakeholder-commissioned 'benefits-only' economic impacts studies.
- The industry downplays noise 'impacts' as an inevitable nuisance.
- As a result of the acceptance of this narrative by politicians and also the difficulty of regulating highly technical and complex aircraft operations, this has meant that regulation of noise from aircraft overfly does not occur for fear of its potential conflicts with the growth narrative
- No politician or bureaucrat wants to cause an aviation incident. There are no thus no regulations which might be even perceived to interfere with safety or efficiency.
- Airports and airlines today can avoid most real costs of mitigating the known social and medical harms of aircraft noise in their planning and operations due to the regulatory vacuum.
- Regulatory requirements sometimes include the need for public consultation. But this engagement is not a genuine public conversation. Because growth objectives prevail, it is mandated that operational restrictions are excluded from consideration.
- There are no clearly defined objectives of any community engagement, which appears to be mostly oriented to quiet acceptance or false hope - a form of 'social engineering'.

CONCLUSION: There is a fundamental contradiction in current polices caused by acceptance of the vital economic need to expand aviation capacity increases, while ig-

noring conflicts with government environmental and health policies. The result is that there is a 'don't want to hear about it' attitude to noise concerns rather than rationally working out policies to balance both interests.

C. LACK OF PROPER MEASUREMENT OF AIRCRAFT NOISE EXTENT AND LEVELS (Appendix 6)

- The use of consultants and CIC (black box) models has become institutionalised as a way to provide a sense of certainty in modelled outcomes, where no such certainty should exist. Most aviation noise models are highly technical and produced by industry stakeholders with vested interests in a particular outcome. They are rarely properly validated with real-world noise monitoring data.
- The central role of complex, noise-averaged models of aviation noise means that there is a momentum behind their continued use, even though they are poorly correlated with people's actual experience of and the harms of aircraft noise impacts.
- The ear responds to noise changes, rather than the noise averages which are favoured by modellers in the industry (e.g. L_{Aeq}) which poorly reflect the disturbance and harms of noise. Averaged and 'cleaned' noise profiles are not intuitive, easy to check, or even necessary to understand noise impacts. They are used by industry to downplay the impact of each singular 'noise event' and they further assume that only audible frequencies are of any significance.
- The Australian Noise Exposure Forecast (ANEF) used in Australia to assess noise impacts has been known to be unfit for purpose for decades, but no replacement has been proposed.
- Research has shown that the health and stressful impacts of noise are best measured through metrics covering the number of single noise events over a certain maximum loudness in a given period. The number of events and their timing is as important as the loudness of each one.
- A recommended practical and intuitive approach is to assess aircraft noise as follows: Use L_{max} (1 second interval) peak noise level (in dB) of each aircraft noise event in a particular location to create noise event contours (e.g. N60) where these contours on a regional or city map show the areas affected by the average or maximum number of events (e.g. over 60dB) day or night in a specified time period
- There are no clear N-contour maps at say 50, 60, 70dB to assess the true extent of noise impacts in Brisbane. AirServices provides a limited amount of modelled data based on an 'average' aircraft which is difficult to access and moreover fragmented by weather condition, flight path and day / night times so the overall noise impact of their operations is very difficult to assess. The data only covers certain residential areas.

- Current noise models used in Australia for assessment of impacts do not properly assess impacts of the loudness, frequency and timing of disturbing noise events even in the audible frequency range. Other biologically active noise frequencies are totally ignored. Like wind turbines, aircraft produce a large amount of barely audible low frequency noise which has been demonstrated to create negative effects on the cardiovascular system and unknown effects on other body functions.

  CONCLUSION: The extent and level of aircraft noise impacts is not amenable to proper assessment due to the lack of appropriate metrics and a comprehensive monitoring and mapping program for a full assessment of the extent and severity aircraft noise.

Section 3: MAJOR CAUSE: THE CURRENT REGULATORY VACUUM AROUND NOISE ASSESSMENT OF FLIGHT PATHS (See Appendix 8)

- Due to the technical nature of aviation, and the political impact of an aircraft 'incident', and the PR of the industry lobby about its economic benefits, government has adopted a very hands-off approach to the regulation of aviation in most areas other than safety, flight paths, and competition law.
- Only changes to flight paths arising from alterations to runways are the subject of a Major Development Plan. Otherwise, an alteration to flight paths is effectively unregulated and able to be made by the commercially-driven airport operator (through the 'for profit' air traffic services provider, AirServices) without an appropriate level of community input or consultation.
- The EPBC Act requires the proponents of airport developments to prepare an Environmental Impact Assessment (EIS) to determine whether the development will result in 'significant impact'. BUT there are NO guidelines or definition as to what constitutes 'significant'. An evidence based definition of these is urgently required.
- Noise is modelled using out of date averaging metrics that do not assess its impacts with any evidence base. Developments or changes are justified using outsourced noise modelling, which by its nature is a simplification, and the results are 'adjusted' using assumptions that are not publicised. Results are rarely verified against real-world data.
- The responsibility for managing the community impact of aircraft operations is given to the air traffic control service provider, AirServices Australia (ASA), whose operation depends almost wholly on fees from airlines, which is crippled by not being able to suggest any operational restrictions and which lacks any mandate or ability to alter operations to act in the best interests of affected communities and to ensure safety.
- When implementing new or redesigned flight paths, the Act requires AirServices to assess these using a 'National Operating Standard' wherein '*acceptable*' is never defined.
- AirServices is thus able to effectively assess a proposed development or flight path change as 'Not Significant' based on its own arbitrary and unjustifiable criteria, and optionally hold consultations with the community. It does not always choose to refer a change to the Minister if the change is self-assessed as 'not significant'.
- Arbitrary criteria of significance are applied so that e.g. "an increase of fewer than 50 flights per day" or "under 25% traffic increases" are assessed as 'not significant' for an arbitrarily chosen noise level e.g. 60dB indoors (assuming an implausible 10dB building attenuation) without any evidence base for these assumptions.

- AirServices flight path design principles are ambiguous as to the weighting given to various criteria e.g. *safety, efficiency, emissions, track miles, noise*. They appear to place reducing community and environmental impacts lower than other factors.
- Safety is the most important consideration, but this is used as justification by the industry to avoid changes while operational restrictions such as curfews and caps have been politically excluded.

CONCLUSION: The lack of appropriate noise regulation is due to the fear of its impact on the narrative of aviation growth and operational convenience. There is a lack of research on the impacts of aircraft noise,or any cost benefit analysis. Governments and industry operatives can socialise noise harms while pretending to deal with them through community 'engagement', while strenuously resisting any attempts to curb aviation operations in any manner.

Section 4: MAJOR CAUSE: IGNORING THE TRUE COSTS OF AVIATION NOISE (See Appendix 9)

- There is a considerable body of published, peer-reviewed research into the harms of aircraft noise on health, well-being and productivity. These effects are summarised in Section 5.
- There is a need for additional research in the Australian context, but this should not be an excuse to delay reform. The existing body of research is compelling and any further local research would be to establish the additive detriment of aircraft noise on health, well-being and productivity in addition to other stress such as that from ageing, disease (particularly cardiovascular disease), poverty, work etc., and to try to establish its economic and social consequences in Australia.
- Preventing the harms of aviation noise suggests the application of the precautionary principle, which aims to prevent partially unknown but potentially highly damaging public outcomes in matters related to environmental and medical consequences.
- Noise control requires an understanding of the proper measurement and threshold of noise harms. A knowledge about harm thresholds in the local context is lacking: This prevents the full acknowledgement of the extent of harms from aircraft noise.
- Noise costs and other direct and indirect subsidies (e.g. almost zero excise duty on AVGAS, and direct handouts, public-private partnerships, and indirect subsides through supporting infrastructure etc.) are omitted from political calculus about aviation's economic impacts: only questionable job growth and industry sponsored economic impact studies are cited.
- There are no proper studies of BOTH the economic benefits and costs of aviation expansion to the general economy (let alone from the perspective of sustainability or ethics).
- Reducing aircraft noise is in direct conflict with the goals of privatised airports and airlines (which include safety, freedom of scheduling, traffic increases, fuel and track efficiency, and operational convenience).
- Industry has no incentives to seriously curb noise as it is currently not an operational cost (i.e. due to regulatory omissions they can ignore it). Airlines invest in new aircraft primarily for the fuel efficiency benefits, not for noise reduction purposes – it is also important to note that there is a trade-off between these two aspects of aircraft design.
- Aircraft safety is a focus of Australian regulations but the definition of aircraft safety, unlike that for the safety of operation of other types of machinery, is narrowly confined to the aircraft/crew/passengers itself and ignores the potential health and safety impacts of the machine's operation on the general public or environment.

- A quote from the Minister exemplifies the current attitude to economic growth justifying the acceptance of noise harms (without researching the harms or their thresholds) : "A safe, efficient, sustainable, productive and competitive aviation sector is critical to the economy and the standard of living of all Australians." "What I would say really clearly is that we are not intending to implement a curfew or a cap on movements at Brisbane Airport. That would have significant economic consequences for the great State of Queensland and for Brisbane Airport……" Minister Catherine King (underlining added)
- Most noise from low residential overfly, particularly at night, will continue to damage citizens as long as industry can socialise the costs of this aspect of their operations, and no amount of public consultation or minor operational modifications will change that fact.
- Proper sleep is acknowledged as important to both public health and the economy by the Australian government but aviation noise-related sleep disturbance is omitted from any calculus and merely considered an unfortunate but necessary 'nuisance' byproduct of aviation operations.
- The costs of sleep disorders in Australia are estimated at approximately $70bn annually. If even 1% of sleep disturbance were caused by aircraft noise (the figure is possibly higher as not all sleep disturbance and harm is of the same intensity as that from aviation noise), the cost would be over $1bn. This productivity based estimate is almost certainly an underestimate of the true medical and productivity costs of aviation noise (see Appendix 27 for costs in Brisbane which used the methodology from a detailed study of the costs of noise harms at Brussels Airport of 1bn Euros pa)

CONCLUSION: Without acknowledging and then attempting to examine these social costs through the lenses of economics, medicine and ethics, it is impossible to develop rational policies which trade off costs and benefits, and attempt to compensate residents who remain affected after the implementation of evidence-based policies designed to properly address the aviation noise problem.

Section 5: AIRCRAFT NOISE – KNOWN EFFECTS ON CITIZENS (See Appendices 10-17)

- Aircraft noise has a frequency profile and duration that makes it the most annoying kind of background interruption, more than train, road or construction noise
- The WHO has assessed safe noise levels to be well below the arbitrary noise thresholds used in planning of aviation impacts in Australia (without any evidence base). NOTE: Although these noise levels are quoted using different averaged metrics, I am not in possession of data to make direct comparisons and the existing noise levels in Brisbane and other areas near capital city airports are certainly higher than these recommended safe levels).
- Even noise levels of 55dB wake a significant proportion of sleeping residents and the aircraft noise events commonly experienced within 20km of airports are regularly twice as loud as this level.
- Aircraft noise has a known detrimental effect on health (physical and mental), including insomnia, heart disease, stroke, dementia and stress – all major public health issues in Australia
- Aircraft noise interrupts the sleep cycle even if the noise does not cause awakening. Interrupted sleep is recognised by the Australian Government as a contributing factor to a number of serious long-term health impacts (stress, depression, diabetes, heart disease, stroke, dementia, blood sugar regulation etc.), and is known to seriously reduce motivation, judgement and productivity, and increase the risk of accidents.
- Even one hour of sleep loss affects judgement and risk perception (linked to losses and accidents), motivation, productivity, mood and substance abuse. The sleep deprivation and interruption caused by aircraft noise is multiple events nightly and this chronic disturbance in sleep patterns and cycles has enormous well-verified health consequences.
- During the day the frequent interruptions interfere with normal conversations and other activities requiring concentration are disrupted by aircraft noise. This extends to aircraft noise impacts on children at school. The interruptions of aircraft noise have a known detrimental effect on children's learning and on adult concentration, causing productivity losses
- For some citizens aircraft noise requires incurring direct costs of e.g. soundproofing insulation, moving home etc. Aircraft noise may also cause financial loss due to decreased property values as some more sensitive people are forced to move.
- Aircraft noise causes loss of amenity and the right to quiet enjoyment indoors and outside for hundreds of thousands of city residents across Australia. This loss is for the benefit of a privileged industry and the travellers who do not suffer the losses that their convenience imposes on other segments of the population.

- We do not fully understand the impacts of aircraft noise which extend to the low-frequency spectrum (similar to wind turbines) and the effects of these frequencies on human health is not properly researched. This is further evidence of the requirement for the application of the precautionary principle.

  CONCLUSION: Public health has its roots in utilitarianism which condones the acceptance of some collateral damage provided that the greatest happiness of the greatest number was ensured. But given what is established about the extent and degree of personal, social, medical and productivity damage caused by aviation noise, its acceptance in the name of assumed economic benefits should be totally unacceptable: good government should exercise the precautionary principle.

Section 6: FAILURE OF CURRENT APPROACHES (See Appendix 18)

ICAO's INTERNATIONAL STANDARD (See Appendices 18-21)

- ICAO is a UN body that sets international standards in air navigation and operations. Its goal is to achieve the sustainable growth of the global civil aviation system, with an emphasis on industry driven growth that downplays the costs of noise impacts.
- Aircraft Noise is indirectly regulated in Australia through a claimed adherence to the International Civil Aviation Organisation's so-called "Balanced Approach" to aircraft noise management.
- Even this industry-preferential standard is not properly implemented in Australia due to arbitrary exclusion of certain aspects of the guidelines of the so called Balanced Approach to manage aircraft noise, which recommends 4 basic procedures (to be applied in order).
    - (a) Reduction of 'noise at source' is the claimed reductions of noise due to better technology and quieter designs. It is important to note that the apparently remarkable claimed reductions are quoted in sound energy whereas the ear hears sound intensity and it will take a decade to achieve even a few decibels reduction – even if quieter aircraft are used on all routes (highly unlikely since 20 year old planes are still being used at Brisbane airport). The government certifies aircraft and allegedly considers the noise profile of the aircraft in regulation but this relies on manufacturer data under ideal conditions close to the airport and has little bearing on noise under flight paths – it is essentially irrelevant.
    - (b) Land use planning might mitigate future noise to residents near an airport, but it is largely irrelevant to existing residences at existing airports from where the majority of noise complaints originate. In addition, the current regulatory ambiguity regarding the significance level of noise impacts means that industry can bend the land use planning regulations in their favour.
    - (3) Noise reduction through improved operational procedures is being attempted at most airports by AirServices Australia. Improving operational procedures has some potential to reduce noise through measures such as changing flight paths and glide angles, or implementing operational procedures such as full runway takeoffs to gain maximum height before leaving the airport (not intersection departures), or Simultaneous Opposite Direction Parallel Runway Operations (SODPROPS) for airports with a parallel runway configuration.

Unfortunately in Brisbane, due to location and orientation of the airport, the prevailing winds, CASA's rather 5knt limit on tailwinds, and conflicts with adjacent regional and GA airports, these measures have proved largely ineffective. Full runway takeoff trials were ineffectively conducted and concluded no benefit although the process was deeply flawed as flight paths were not adjusted accordingly. The level of noise reduction for most residents would still be only a few decibels

- (4) Operational restrictions are proposed as the last resort if the other three measures do not produce the 'desired' result. These include measures such as restricting certain types of aircraft or imposing caps or curfews. These are usually effective at reducing noise but also impact industry profitability and operational efficiency so they are recommended by the pro-industry body as a last resort, and only after a cost-benefit analysis (criteria not specified) would support their use.

ARBITARY BYPASSING CERTAIN REQUIREMENTS IN ICAOs RECOMMENDED APPROACH

- The "Balanced Approach" has been only partially and inconsistently applied to aircraft noise mitigation in Australia for unjustified reasons without clear evidence to support them. (See Appendix 23,24)
- The Minister has ruled out any new operational restrictions (without providing any evidence of the required cost-benefit analysis or further explanation), in spite of the fact that other measures have not worked after three years of operational planning and consultations: In fact, the noise problem is actually getting worse.

AIRSERVICES NOISE ACTION PLAN (See Appendix 1. Appendix 25)

- AirServices has been given the role of managing operational improvements (as per ICAO step 3 of the balanced approach) for noise mitigation in Australia.
- AirServices' failure with the ineffective so-called Noise Action Plan for Brisbane (an important reason for the instigation of this Senate Inquiry) is DIRECTLY related to the extreme level of noise impacts that were knowingly and misleadingly created over a very wide area of Brisbane in falsely assessing the impacts of the NPR.
- There were obvious operational limitations created by selecting the NPR option in 2007 (pointing directly at the city) as cheapest and operationally efficient (ignoring noise) due to both the proximity of the original airport to residential areas and the

well known history of prevailing winds in Brisbane. The SODPROPS misdirection was always known to be a fabrication to placate any community unease at the now obvious consequences.

- The current suffering of many Brisbane residents has arisen LARGELY due to lack of independent scrutiny of changes to NPR flight paths which AirServices THEMSELVES had previously assessed in 2018 as causing a 'not significant' increase in aircraft noise impacts by deliberately using unjustifiable arbitrary significance criteria in their secretive assessment and exploiting gaps in the regulatory framework.
- The primary mechanism of the Noise Action Plan is to hold community consultations with the aim of changing flight paths to mitigate noise impacts, not by reducing overall aircraft noise, but by sharing it among different communities. This is a deeply socially divisive noise lottery and, given that noise is known harm, is also deeply unethical: it is analogous to spreading a polluting toxin to adjacent areas to reduce its toxicity (without even measuring thresholds of harm) rather than remediation of the pollution at source.
- These community engagement forums allow stakeholders to participate in discussions about proposed developments which, although they never materialise, seem to have the goal to convince people to wait in false hope to prevent them taking action before it is too late.
- From ASA Website: “The Noise Action Plan for Brisbane is AirServices Australia’s plan to reduce the IMPACT of aircraft noise on the communities of the wider Brisbane area. The plan was developed to address IMPACTS resulting from changes to Brisbane’s airspace, following the introduction of Brisbane Airport's new parallel runway in July 2020.”
- Comment: It is ironic that Air Services now believe they need a plan to address their previously assessed insignificant impacts. This plan contains a plethora of platitudes about stages and flight paths which is presented in a fragmented and obscure manner. Apart from being almost impossible to follow without spending hours of study, it has resulted in no effective noise reduction over the three years of claimed actions including extending the effectively useless SODPROPS (see below).
- AirServices (the Australian flight path design experts), have delayed implementation again after claiming the requirements are so complex that they need to hire an outside consultant to design a new ‘improved’ plan, while refusing to release details of the contractual terms of this engagement.
- The Noise Action Plan is hardly worthy of being called a plan. The goal is allegedly to reduce noise IMPACTS. But these impacts are never properly defined, no research has been done on them, there are no metrics for measuring them or their thresholds, and

no clear explanation of how community input data is collected and used to balance different community interests; and there are no noise impact reduction goals.

- This is a plan that cannot succeed because any real restrictions to operations have been ruled out in advance, but it also cannot fail and most importantly for AirServices, no one can be held accountable because it is a plan without any defined outcome. The fact that is has been outsourced by AirServices to an external consultation who they have previously used provides additional cover to avoid accountability ("best advice at the time" – independent advice?)
- It is clearly intended to provide a theatrical veneer of political and social respectability to stonewalling the community by providing a mixture of false hope and a divisive community engagement process (aka noise lottery) that is unlikely to reduce noise impacts (a euphemism for noise harms).
- The NAP is hamstrung by the a-priori ruling out of any operational restrictions by the Minister in the name of economic necessity, leaving only meaningless tweaks to flight paths without any knowledge or measurement of the real impacts of such adjustments. Any benefit is more than nullified by increased traffic volumes.
- One benefit for industry is that this NAP allows the design and trial of additional new flight paths under the guise of noise sharing, a precedent that might prove useful to deal with the projected increase in traffic.
- Others will no doubt make submissions on the complete farce of the Noise Complaints Information System (NCIS) so that issue is not considered herein except to say that it does not appear to serve any useful purpose other than collecting statistics which are 'cleaned' to showcase why noise is not a significant issue.
- In the whole of 2023 the Noise Action Plan merely accomplished a runway change for operational reasons (no noise reduction), a turbo-prop only early turn at night time (no jets re-routed and some residents still affected even by the turboprop change), and an extension of SODPROPS as 'preferred' mode, even though it can rarely be used. Traffic increases made the overall noise situation worse.

A NOTE ON THE INEFFECTIVENESS OF SODPROPS - THE PROMISED OVER WATER SOLUTION TO AIRCRAFT NOISE IN BRISBANE (See Appendix 22)

- SODPROPS was an operational mode promised as being able to send most traffic over the water (a known lie) prior to the New Parallel Runway (NPR) in Brisbane to allay citizens' concerns about its impact on their lives.
- In practice, SODPROPS is limited by near perfect weather and wind conditions: weather, visibility, rain, maximum wind-speed 5knts – and even after all these condi-

tions are met it can only be used in low traffic periods because it has a maximum traffic capacity of about 11 flights on each runway per hour. In practice SODPROPS can rarely be used.

- The current (March 24) statistics of SODPROPS use (noting that 50% over the water flights would constitute on average about zero use of SODPROPS operational mode) show a continuation of the trend of reduced use for the past 3.75 years.
    - Over water percentages for night time (10pm-6am) remains at 58%. The trend has been down since the opening of NPR
    - Over water for day time (6am-10pm) seldom moves above 50%. NPR has made zero difference to over water flight percentages.
    - Many alleged over-the-water flights then loop back quickly over land and traverse residential areas (for operational convenience).
- For the past 16 months flights over land have outnumbered flights over water. The only exception being in Dec 23 and Oct 23 where flight numbers were equal.
- CASA tailwind limits of 5knts severely limit the ability of industry and AirServices to mitigate noise through operational measures such as SODPROPS.
- In practice one set of communities suffers when the wind is from the north (approx 35% of the time), and another set of communities when the wind is from the south (approximately 65% of the time).

THE COMMUNICATIONS IN COMMUNITY ENGAGEMENT (See Appendix 25)

- To understand the actual impact of flight path changes over a particular location might be, it took hours of clicking on different maps and notes regarding potential changes of one section of the plan for different weather and wind conditions and different types of operation. It was almost impossible to make even a vague assessment of the impact.
- NO ONE received any clear and honest and actionable communications about the potential noise impacts on them from proposed changes in flight paths something like the points below:
    - Your home will be directly under a flight path and you may be affected in certain weather conditions by aircraft overhead at under 5000 ft.
    - There may be up to 100 flights per day over your home.
    - The noise you experience may be regularly 60-70dB in a range that the World Health Organisation deems harmful to human health and which may impact your child’s learning and development

- In peak periods flights may occur every 2 minutes for several hours, usually during the early morning and early evening
- There may regularly be 15-25 flights at night between the hours of 10 pm and 6 am over your home that may be disruptive to sleep.
- We assume no responsibility for financial or health harms because aircraft noise is not regulated in Australia and there are no limits as to loudness, frequency or timing

- We don't need to ask why AirServices presentations of the NAPB and their public communication about it is vague, fragmented, cliche-filled and opaque. Even if we accept some level of incompetence at AirServices, their obvious conflict of interest and the deliberate lack of authority to implement changes that are actually required to reduce noise means that their Noise Action Plan is designed to ensure an artificial compliance with best practice to develop social acceptance, rather than create any positive benefit for citizens. Its failure to produce results is hardly unsurprising.

Section 7: THE ROOT CAUSE OF NOISE MITIGATION FAILURE (See Appendices 26,27,28)

- Noise is not directly regulated, presumably in acknowledgement of the impact this regulation would have on the current conception of the vital need to expand air traffic based on economic arguments which have been assessed by industry sponsored impact studies that completely omit the social and productivity costs of noise pollution (as well as other direct and indirect funding from government).
- There are currently no limits on the timing, frequency or loudness of aircraft noise, unlike noise produced by almost every other machine or activity.
- Noise is instead indirectly regulated through means such as aircraft certification, infrastructure planning and operational management. These do not directly measure or necessarily cause noise reductions, particularly for existing airports.
- The existing regulatory processes are complex, and are heavily reliant on industry provided data and studies and, in the case of operations, have to be effectively managed by an industry which currently has no incentives to reduce noise because its costs can be completely socialised.
- Operational control of noise has limited effectiveness for existing airports because of the siting and orientation of most capital city airports, coupled with the political decision to rule out further operational restrictions.
- Operational control to provide any significant reduction in residential overfly without having any new restrictions or infrastructure redesign is almost impossible.
- Capacity increases in air traffic which, along with current infrastructure limitations, necessarily increases overall noise levels from low residential overfly using current flight paths, are not limited in any manner due to the political narrative about the centrality of aviation to economic growth and jobs. That means noise impacts will grow faster than noise abatement if current approaches are not improved.
- Regulating aircraft noise 'impacts' through regulating the operations which cause it appears to be logical but is deeply flawed due to the complex and fluid requirements of aviation operations management. Noise is just one byproduct of aircraft operations so this method of regulating it is inefficient and uncertain.
- Regulating noise by regulating operations will become almost impossible with future planned changes in the industry including UFVs (Drones) and other types of air vehicles like EV taxis etc to the mix.
- In practice, only industry can manage operational variables in real time, so operational regulation of noise effectively means self-regulation of noise. Therefore noise mitigation becomes just one non-critical facet of operational control and becomes an optional 'nice to have' benefit if it can be managed conveniently and does not interfere with profits, efficiency or safety.

- Regulating noise indirectly through operations management is like regulating vehicle emissions though regulating vehicle operations e.g. who drives them, where and when – without limiting how many vehicles there are or how much pollution each vehicle emits.
- Operations tweaks are also inefficient: noise is just one byproduct of operations management. This means there must be many exceptions / limitations on noise control as other important aspects of operations are affected by a certain actions: therefore loopholes abound, including weather, safety, schedule changes, runway repairs, wind direction, requirements of other airspace flight etc.
- Operations management in practice is ad-hoc and unfair: different limits on noise apply at different airports – even different runways at the same airports may have different noise management criteria solely as an artefact of when they were built and in whose electorate they were at the time.

SECTION CONCLUSION – A NEED TO RECONSIDER OBR OF NOISE IMPACTS:

The only effective way to prevent noise harms in Australia is to reconsider likely effective measures instead of the current ineffective measures which are logically inconsistent and destined to fail. (See Appendices 28, 30, 31)

This will include the need for a reassessment of the more logical and effective direct control of noise impacts by establishing acceptable levels of noise on citizens (loudness, frequency, timing) based on research evidence of the acceptable levels of harms and thresholds of these, and the extent of these levels being permissible.

Apart from the major issue of noise at present, privacy concerns will also become important and be better managed through an outcomes based framework, rather than a process-based framework.

The need for this re-assessment of how to manage noise impacts will become more urgent as the complexity of the airspace operations increases with a different volume and types of traffic. (Appendix 30)

Such a move will cause push-back from industry (See Appendix 31) but in the long term it will provide a clearer and more certain regulatory framework that will allow them to focus on growth with proper ESG requirements and provide a genuine level of social licence for their operations.

Section 8: SOLUTIONS TO MITIGATING NOISE

- Current solutions to noise management from low residential overfly have failed and their continuation is an abrogation of political responsibility to the electorate.
- Some current procedures such as full length runway departures, voluntary flight rescheduling and flight path improvement should be pursued but by themselves at most airports they will not noticeably mitigate the overall problem with current traffic levels and infrastructure siting.
- Proper research on the extent of noise and its harms and costs, along with cost benefit studies, ESG principles and ethics are necessary to establish a process to effectively reduce noise harms to residents from aviation.
- There are already effective regulations to ensure the current narrowly defined aircraft safety, and it clearly in the interests of the industry to abide by these.
- In the case of noise management, the regulations are ineffective or missing, and it is clearly not in the interests of industry to reduce noise if this impacts profits and operational flexibility and convenience. As a result, aircraft noise has to be tightly regulated in the public interest.
- Divisive and completely non-evidence based noise sharing schemes should be completely rejected as a valid solution (it is merely an avoidance strategy), and consider them as merely a temporary band-aids while real measures to reduce noise impacts are being considered.

- Several generic approaches that should additionally be considered are:

    1. Outcomes Based Regulation: Directly establish safe noise limits and then regulate noise according to a balance of these limits and operational constraints, rather than attempting ever more complex operational control where noise is just one component of operations management. This would require proper noise monitoring. In practice it would initially require some operational restrictions but the advantages of these restrictions are their certain effectiveness and directness, and the industry would use their considerable technical expertise to maximise operations without the government's direct intervention.

    2. Reconsideration of Operational Limitations: These including restricting operations by aircraft size, load, type and emitted noise (measured on the ground), and/or imposing flight caps to allow other operational procedures such as SODPROPS to be used more often to provide some relief, after performing in-

clusive and transparent cost benefit studies to the effects of these operations. Without such studies, no rational assessment of the economic consequences of the restrictions can be made, although they may still be justified by ethical considerations of fairness and the precautionary principle.

3. Impose Curfews: Regardless of whether an operational approach or an outcomes based approach to noise management is preferred in the long term, it is ethically and practically necessary to immediately put in place steps to impose curfews at those airports affecting a significant number of residents through night time operations.

   Curfews must be implemented in recognition of the serious harms of night time noise where infrastructure and traffic operations do not permit the redirection of flights away from residential areas at night.

   While curfews limit operations and profits, they are immediately effective and do not limit operations to the extent the industry becomes nonviable. Many busy local and international airports operate with curfews in acknowledgement of the harms of frequent loud noise at night, so it is impossible to argue that they are so disruptive as to be impracticable. Cost benefit studies (which include social and medical costs) are needed to abide by ICAO requirements.

   Curfews also allow better management of runway maintenance so that it does not conflict with noise management procedures during the daytime. Curfews should be introduced under the condition that they could be removed if the airport and airlines are able to adjust their operations and infrastructure to continue night operations but direct all traffic over 55dB on the ground away from residential areas.

4. Staged Imposition Of Caps At Airports Where Daytime Schedules Cause Unconscionable Levels Of Disturbance (e.g. hundreds of flights daily at over 65dB):

   Caps reduce flights and may lead to flight rescheduling, but they provide some relief to residents to allow better management and more consistent use of operational procedures to minimise noise disturbances such as full length runway departures and SODPROPS.

   In the case of Brisbane Airport, the fact that NPR was chosen as the low cost maximum traffic option with two runways pointing at highly populated areas (ignoring noise impacts) and sold using a fake narrative about SODPROPS

means that the airport should now ethically suffer the consequences of this decision by ignoring the valid concerns of citizens at the time, and bypassing any opposition through lobbying.

However, caps should be introduced only where required and under the condition that they could be removed if the airport and airlines are able to adjust their operations and infrastructure to provide an equivalent amount of relief to affected residents.

5. Revisit a long term ESG plan for the industry (See Appendix 32). This would include reviewing and improving aviation regulation, monitoring noise levels and assessing harms, redeveloping infrastructure (with government support), developing an integrated flight path system, reworking long term operating plans, establishing secondary freight airports and developing transport alternatives.

6. Any approaches need to apply to not only existing commercial, freight and general aviation but also to be applicable to the proposed deployment of drones and other forms of air traffic. This is why an outcomes based approach should be considered as being clearer and potentially more useful for the long term ESG of aviation.

Section 9: RECOMMENDATIONS

A. REQUIRED RESEARCH AND PLANNING

1. Develop appropriate noise metrics.
2. Determine how and where to establish a real time noise monitoring network
3. Conduct noise impact research to assess threshold levels and nature of harms
4. Determine extent of noise harms (loudness and frequency noise mapping; population affected)
5. Develop an economic assessment modelling framework: Impacts, public costs, benefits of policy and changes
6. Develop a comprehensive solutions modelling framework and procedure: Cost /benefits / risks of policy options e.g. curfews, noise regulation, caps etc.
7. Establish maximum noise level targets based on a review of the evidence. As a starting point we suggest final noise targets of no night flights creating any event of over 55dB (Lmax1sec) and maximum 50 flights over 65dB for any area at any time in any location. N55 and N65 maps of a city will determine the extent to which health is being damaged currently and provide a guideline for what appropriate actions could and should be considered.

B. REQUIRED IMMEDIATE REGULATORY REFORMS

This will also stand in good stead as a framework which applies equally to commercial, general aviation, transport and drone operations.

1. Development of a standard metric for the measurement of aircraft noise impacts (loudness and frequency maps) for assessing regulatory compliance
2. Development of specific (rather than re purposed) Aviation Environmental Impact Guidelines to include requirements to assess and limit noise emissions taking into account a complete evidence-base of its harms (at particular levels and frequencies and times)
3. Clearly and unambiguously define key assessment terms that are currently loosely defined or undefined, including ‘impact’ and ‘significant’ and ‘acceptable’ where these terms are used within the regulatory framework. This will avoid the arbitrary selection of the relevant parameters to suit the proposing stakeholder.
4. Require clear triggers for a review and proper oversight for any change (e.g. MDP or even change to flight path, traffic or schedules) which might materially affect noise impacts to residents.

5. Redefine aircraft safety to include the safety of those affected by its operations
6. Require inclusive and transparent noise monitoring along with comprehensive cost-benefit studies that include all social costs and benefits (not merely economic impact studies) to justify a flight path or traffic change, regardless of the reason.
7. As part of a precautionary principle for citizens and the environment, require detailed justifications of any flight changes and how these will preserve safety (as per point 5) and be in a more broadly defined public interest while complying with best practice ESG (not the focus of this submission).
8. Clearly provide penalties (including retrospective penalties to individuals and organisations) for providing information to the regulator or to the public that is subsequently assessed as knowingly being demonstrably incomplete, misleading or untrue at the time.
9. Provide a redress mechanism for past and future infringements that lead to financial and medical loss from any regulatory infringements, and set up a body to manage class actions against organisations or individuals for knowingly causing demonstrated harm for private or political benefit.
10. AirServices has an impossible conflict of interest in managing flight noise. They rely almost solely on income they receive for designing and managing flight navigation, it is clearly against their self-interest to impose any kind of limits on the operational efficiency of the airlines which would reduce the profits of both parties. THEREFORE managing noise impact reductions through operational adjustment by balancing the needs of industry with a proper consideration of the public interest, health and safety (based on medical and social evidence and cost benefit studies), should be removed from AirServices and given to an independent body with a sufficient budget and the degree of technical expertise and regulatory authority to allow them to achieve this goal. AirServices should be limited to providing flight path design expertise to the airlines and to this new fully independent regulatory organisation.

C. IMMEDIATE ACTIONS NECESSARY (Appendix 32)

1. It is important to focus on action now not vague future promises to delay immediate action. Industry promises (e.g. quieter planes) if actualised can allow industry to increase their operations within the proposed noise limits . It is not that the community should endure suffering while waiting for this potential benefit.
2. Impose curfews from 10pm to 6.30am at airports where a significant number of residents are currently affected by night flight noise of over 55dB. There is no other immediately practicable measure to limit night time noise in Brisbane and at some other

airports, or if there is at other airports it should be implemented ASAP. Eight hours sleep is a recognised health requirement -- to assume that everyone goes to bed at 10pm, falls asleep immediately, then wakes exactly 8 hours later is a convenient myth.

3. No airport in Australia should operate in a manner that causes low residential overfly at night.
4. Emergency services aircraft are exempt from such kind of restrictions, but some flights by emergency services operatives at night are merely routine and not directly related to a medical or other emergency - these should also be subject to a curfew unless essential.
5. Give notice of the phase out of leaded fuel in General Aviation and of training flights and other non essential private travel over residential areas (from e.g. Archerfield Airport). These can be moved to rural locations where noise is not an issue.
6. Continue refining the existing operational procedures such as full length departures, and redesigned flight paths, not as a stand-alone solution but to enhance operational flexibility for the industry.
7. Reject noise sharing as a valid solution, and consider it as merely a temporary band-aid
8. Consider noise and frequent flyer taxes, and limiting older noisy aircraft from certain routes to help mitigate noise in the short term

D. DEVELOPMENT OF LONG TERM ESG PLAN FOR AVIATION DEVELOPMENT (See Section 8, Appendix 32).

1. Develop an Integrated Airspace Plan to allow proper assessment of aviation noise from ALL sources (that is what is experienced by residents) and to better manage operations to reduce noise without airspace conflict limitations.
2. Either choose operational modifications to reduce noise impacts, or operational restrictions (after the proper cost benefit studies are done to support the extent of these), OR regulate noise directly. The latter is more logical but would probably face greater resistance from policy makers.
3. Most targeted noise reduction measures can be phased in gradually, with notice, although curfews should be imposed as soon as possible given the importance of uninterrupted sleep to health and well-being of residents and their children, and more broadly to the economy.
4. It is important that operational restrictions are tailored to the specific airport based on its siting, nearby population density, and traffic levels.

5. Any noise measures should have defined goals and their implementation should be measured.
6. Community consultation should be genuine. The need for using consultative mechanism to gain social license will be reduced if there are real reductions in noise harms and an obvious and genuine commitment from the government and industry to deal with the noise harms issue. After all, it is already known that communities do not want to be frequently disturbed or awakened by aircraft noise so there is a no need for a consultation to establish what is known in advance.
7. Sharing noise is not a solution to noise mitigation except to provide a temporary reprieve to residents while effective solutions for noticeable reductions are being developed and implemented. Noise sharing is a divisive and unethical way to avoid dealing properly with noise impacts by actually reducing them.
8. Have a uniform code of treatment of communities to mitigate noise (for social equity) but modifiable by airport and community need and values
9. Continue improving aviation regulation with a focus on ESG and a move to more outcomes based regulation
10. Improving the monitoring and reporting of noise levels and assessment of impacts harms
11. Redeveloping infrastructure in existing airports (with government support) so as to allow more efficient aviation operations that protects citizens against the noise and other pollution by-products of this
12. Establish secondary passenger, freight and GA airports 50-100k from cities where flight operations (including night time operations) can be directed over non residential areas, and connect these to major cities with a fast cheap rail network. This is common worldwide principle of airport siting and provides significant operational flexibility for minimal community impact on health and quality of life
13. Review and refine the certification process for aircraft which are allowed to operate in Australia to require the use of quieter, modern, more fuel efficient aircraft that can climb higher more quickly to reduce noise footprints near airports
14. Develop transport alternatives to air travel for journeys within several hundred km of major population centres
15. Remove permissions from private craft to overfly residential areas unless they comply with strict noise limits

Section 10: SAFEGUARD MECHANISMS

- During changes to move to a new paradigm for dealing with aircraft noise, it is acknowledged that there is the possibility of unintended second-order consequences of changing the regulatory framework to include more direct regulation of noise.
- AirServices, Airports and Airlines and the community must work together to deliver the noise targets set for ethical operations.
- Prior to implementation, industry's counter arguments should be considered rationally for merit, with evidence & assumptions clarified
- New regulations should be implemented in stages with clear notice and assistance to allow time for planning and operations adaptation
- Infrastructure enhancement programs should be planned to allow increases in air traffic even with effective noise limit safeguards
- Outcomes should be monitored for both compliance and second order effects
- Data must be collected to understand the interplay of commercial and other forces in shaping the industry's operational equilibrium (which necessarily includes a consideration of noise emissions)

  NOTE: Government should provide financial support in the early stages (as they do to autos, the energy industry with subsidies for ESG to assist with adaptation)

SUMMARY (See Appendix 33)

- Aviation planning is still based around media headlines about economic growth, while assuming that quality of living is solely measurable by economic figures.
- The issues of aircraft noise are largely due to inadequate regulation and the capture by industry of the prevailing narrative about noise and growth
- Limits to noise and particulate pollution are largely ignored in aviation policy settings except though holding consultations. The political and industry narrative shows an astounding disregard of medical, environmental and social harms.
- Aircraft noise for existing airports is allegedly regulated through managing noise at source and through operations, both of which are ineffective. Communities are being arbitrarily, unfairly and knowingly harmed by aviation noise with little recourse
- In reality, the timing, loudness, and frequency of aircraft noise is effectively unregulated in Australia (as noted in AirServices communications with residents who complain using the NCIS)
- Infrastructure limitations and the fact that no restrictions are allowed to interfere with planned aviation capacity increases means that opportunities for noise abatement are seriously limited
- Whether deliberate or not, community consultation appears a lot like social engineering (fake promises of future quiet planes and divisive schemes like noise sharing rather than noise reduction)
- Aircraft operations is so technical that the industry effectively has to self-regulate but due to the regulatory vacuum and ambiguity regarding the assessment of aviation noise impacts, noise harms can be socialised so noise mitigation is not a priority of industry unless it is easy and does not impact profits
- One effective way to regulate noise is to put an outcomes based limit on it and the other is to directly curtail operations
- If an outcomes based approach is adopted, using evidence-based research and setting limits by balancing harms and costs to reduce the harm done to citizens and to allow the industry to continue operation. Because noise costs would no longer be socialised the industry would use their considerable ingenuity in trying to mitigate noise through a variety of methods under their control, without directly having to regulate these. These might include voluntary curfews, re-purposed infrastructure, better operations management and scheduling for noise, use of quieter aircraft etc.
- Industry has a vested interest in the already well-regulated safety management but not in the virtually unregulated noise management. Safety and noise do not conflict,

but efficiency and noise do. Noise costs will continue to be socialised until the government acts in the interest of affected communities.

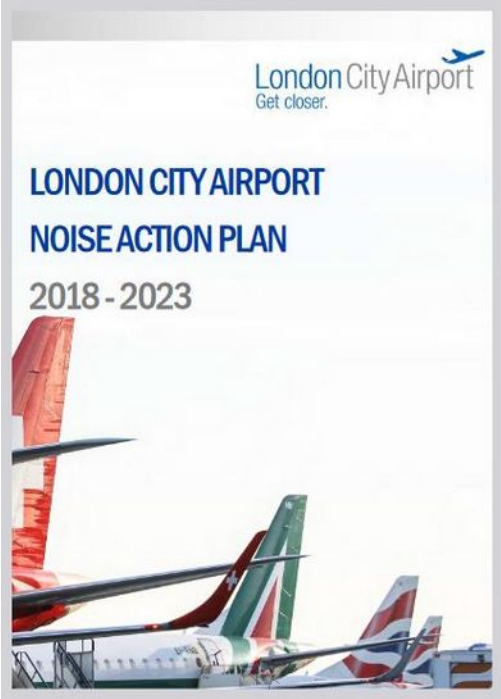
- A proper noise regulation model will be as effective for EV, drones, commercial and GA operations now and into the future. It can also be airport specific depending on the traffic and population density.
- There is no proper cost benefit study or consideration of the ethics of deliberately harming some persons for profits and convenience where the true cost of travel is ignored and socialised. Those negatively affected (seriously) are painted as minority of NIMBY residents and the polluting nature of air travel is whitewashed with government money through “public-private’ partnerships (read subsidies).
- Curfews are urgently needed to ensure all citizens get proper sleep and maintain health and productivity.

Appendix 1: AIRSERVICES 'PLANS' versus a CONCRETE ACTION PLAN

The Noise Action Plan for Brisbane is AirServices Australia's plan to reduce the impact of aircraft noise on the communities of the wider Brisbane area. The plan was developed to address impacts resulting from changes to Brisbane's airspace, following the introduction of Brisbane Airport's new parallel runway in July 2020.

Comment: A so-called plan without clear timelines, goals, metrics, or understanding of the impacts it claims to reduce. NPR impacts were assessed as 'not significant' by AirServices in 2018. AirServices now claim is is so complex that they have hired an outside consultant to design it, while declining to release details of the contractual terms of this engagement. Any improvements made by the NAPB have been more than reversed by air traffic increases and progress remains glacially slow, with any significant reduction unlikely due to the a-priori ruling out of any restrictions to aircraft operations.

The following document is a much better example of a real plan, with a commitment to effective action, produced by London City Airport.



CLICK IMAGE TO DOWNLOAD
https://assets.ctfassets.net/lmkdg513arga/66HSC3vZAIkgWRE8SMzYSh/d93aae74439f7a49d5025639923cf8f6/LCY_Noise_Action_Plan_2018-2023.pdf

Appendix 2: Brisbane Airport Short History

The current airport was opened on 19 March 1988, with two runways, one main runway and one cross runway to allow flexible operations in various wind conditions.

In 1997, as part of the privatisation of numerous Australian airports, the airport was acquired for $1.4 billion from the Federal Airports Corporation by Brisbane Airport Corporation (BAC) under a 50-year lease (with an option to renew for a further 49 years).

BAC has assumed ultimate responsibility for the operations of Brisbane Airport (a Leased Federal Airport) including all airport infrastructure investment with no government funding.

On 30 March 2020, the former cross runway was decommissioned so that it could be used for aircraft parking, and in May 2020, construction of the new parallel runway was completed and traffic has increased substantially since the end of COVID restrictions.

The BAC $5bn redevelopment plan commenced in late 2023 allots no funds for noise mitigation measures. The cross runway could be recommissioned so as to allow most night flights to use an over-the-water approach more effectively than SODPROPS but this renovation would cost money and the cross runway configuration requires more adept air traffic control mechanisms.

As at January 2024, the major shareholders were Queensland Investment Corporation (29%), Igneo Infrastructure Partners (27%), Amsterdam Airport Schiphol (20%) and IFM Investors (20%).

Passenger traffic has grown from to 5 million in 1990 to 10 million in 1999, is currently just over 20 million and projected to grow to 50 million by 2035.

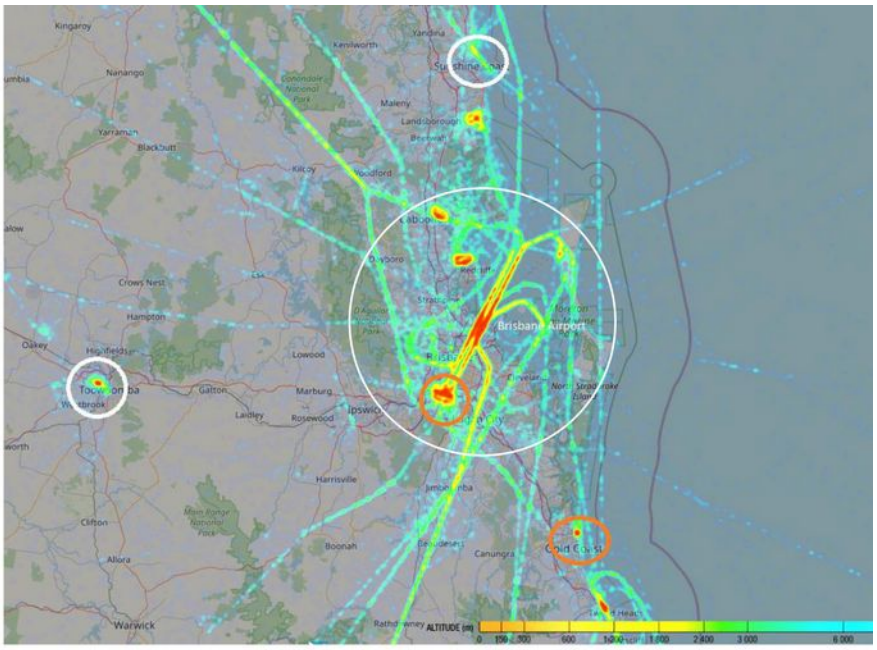
Appendix 3: Current Situation

Brisbane Region Noise Map

Regional vs Capital City

Regional airports have vastly lower traffic and need different considerations.

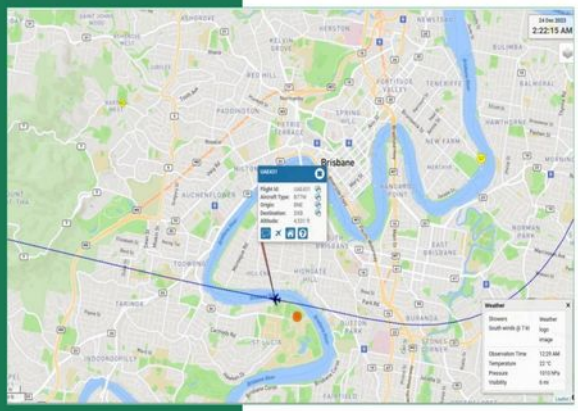
Page 8



Note the vast difference in noise pollution between Brisbane residential areas and that from the regional airports nearby viz (Sunshine Coast north, Gold Coast south, Toowomba west) and the significant GA noise pollution from Archerfield airport just SW of Brisbane due to training activities over residences

My New Reality: A Selection Of Night Offenders

depending on weekday and weather



Lawnmower -loud 60-70dB noise wake-ups

- 9:15PM UAE435 ** 9:40
- 9:51PM JST764
- 9:58PM VOZ385
- 10:10PM QTR51L
- 10:35PM BR316
- 10:41PM JST936
- 11.10PM CI054
- 11:25PM SIA246
- 11:40PM VJ84
- 12:10AM QFA1948
- 01.00AM CX156
- 02:04AM UAE431
- 03:03AM RSCU588
- 04:35 AM QFA7332
- 05:20 AM QFA7296
- 05:49AM QLK400D
- 06:02AM UTY2834
- 06:20AM QFA986
- And a flood after that

NOTE not all of these flights are every night but often 10 nightly depending on wind direction
The 9.15, 10.35, 11.10, 11.25, 1.00, 2.04 are often very loud. Times vary somewhat depending on delays

Appendix 4: Infrastructure Limitations

Historical Perspectives: Infrastructure Not Fit for Growth

- Low air traffic and few travelled regularly by air so low noise pollution
- Little concern about noise and pollution harms
- Safety was the top priority in a relatively lower tech environment
- Public infrastructure was built for expediency

- Vast increase in air traffic and travelling public
- Aviation helps to open up regional areas
- Industry is privatized & shapes a narrative of noise as necessary nuisance
- Regulation of noise does not occur so industry can ignore its social and medical harms

4

Brisbane Airport NPR

Design for Purely Operational Convenience

2007 EIS - 2018 EA

In 2007 BNE was required to mitigate noise as part of the ministerial conditions for expansion, and to compare actual noise with modeled noise. **Not done.**

In 2018, the Airport SELF ASSESSED that changes in noise impacts from the NPR new flight paths were 'not significant' based on (a) assumptive modeling and (b) artificially selected significance criteria. **The results are demonstrably false.**

Their report, outsourced to ASA, is methodologically unsound, and was **hidden from the public** (FOI required).

AirServices concluded *no significant impacts* so the runway development went ahead without scrutiny.

An increase in noisy events @60dB more than 25% for areas with existing noise or more than 50 flights daily for areas without noise at the time was considered 'not significant'

Page 5

Appendix 5: The Growth Narrative

"Comprehensive economic and ethical considerations have both been conspicuously absent in formulating aircraft noise policy in Australia. Instead the narrative has been captured by using the fairytale of never ending beneficial growth. "

Page 20

Economic Interests Govern Policy Settings

- The promoted positive economic impacts of aviation growth have been almost exclusively developed for the industry by private advocacy economic modeling consultants
- Economic modeling uses industry stakeholder selected data sets, forecasts and assumptions
- These data are accepted by the government for policy decision making without independent scrutiny
- Decontextualized positive headlines are promoted in the media to support the benefits of aviation
- The industry's pollution and noise impact damage is studiously ignored and 'impacts' assumed to be both necessary and inevitable.
- Much of the profit of aviation operations is privatized, but many costs to society are ignored and therefore effectively socialized.
- Touted economic benefit models omit publicly sponsored offsets such as subsidies, infrastructure, grants, and exemptions to the industry by taxpayers
- **They omit direct and indirect costs to society of air pollution, global warming, productivity losses from noise, and the compounding health harms from noise.**
- Cost benefit studies are more appropriate than the media promoted economic impact studies which focus on increases in money transfer, regardless of its social benefit
- Creating PREVENTABLE, KNOWN and DELIBERATE HARM been normalized in the name of an *undefined* and improperly assessed "common good", framed in narrowly economic terms.

Public Health has its roots in Utilitarianism which condoned the acceptance of some Collateral Damage provided that the greatest happiness of the greatest number was ensured. *The degree of Collateral Damage caused by aviation noise however should be totally unacceptable to Public Health which should, like good government, fully exercise the Precautionary Principle.*

Page 22

Ethical Considerations of Impact Ignored

For many thousands of citizens, sleep deprivation, frustration, the continual interruptions of the frequent loud and intrusive noise of low aviation overfly creates a sense of helplessness.

AirServices offers free psychological counseling to affected residents but claims not to have knowledge about the impacts they allegedly mitigate

The serious loss of amenity for many residents to their home environment added to the habitual tiredness is a form of torture: this adds to the frustration at denial and stonewalling.

Government's response is to avoid the problem by a divisive and deeply unethical sham consultation noise mitigation process which is engineered to develop 'social license' through "sharing the noise pollution", even while ruling out clearly practicable methods to reduce noise.

"Justifying low residential overfly, in spite of its known harmful effects, in the name of essential economic efficiency and operational convenience is like allowing the regular disposal of toxic chemicals because the chemical is a byproduct of operation of equipment used to make money for a contractor providing an important 'service', but difficult and expensive to clean and remove from the area."

We do not understand the full impacts of aircraft noise. But even the known effects give rise to serious concern for the health of hundreds of thousands. Why no research from the government?
https://www.youtube.com/watch?v=4E2olhpAlWs

Appendix 6: Noise Measurement

Best Aircraft Noise Measures: Simple, Intuitive, Reflective

- ❑ The ear responds to noise *changes*, *not* noise averages which are favored by modelers in the industry. ANEF UNFIT FOR PURPOSE
- ❑ Physical disturbance level is best measured through the number of single noise events over a certain loudness in a given period
- ❑ The number of events and their timing is as important as the loudness of each one.
- ❑ Averaged and cleaned noise profiles are not intuitive, easy to check or necessary to understand noise impacts.

Decibels

The loudness of sound is typically quantified in decibels (dB). It is a logarithmic scale so an increase of 10dB is a doubling of noise. Lmax is the maximum loundness of a single event. Over about 10dB above ambient noise is capable of disturbing sleep. dB noise level is widely understood.

NMetric

The 'N' metric quantifies the count of aircraft above a location that exceed a specified dB threshold. For instance, N80 indicates the Number of planes above 80 decibels that traverse that location within a certain timeframe. It is a good measure of frequency of disturbance.

Four Simple Measures

Prior to further research on the full noise spectrum

Using simple frequency and loudness metrics to compile four charts, we can estimate individual noise disturbance at a particular location, and overall progress of noise reduction measures in a typical suburb:

1. N50 night (annual average events at night)
2. N50 maximum value (maximum 50dB events per night)
3. N60 day (annual average events during daytime)
4. N60 maximum value (maximum 60dB events per day)

Number Above Contour Maps for Residential Areas

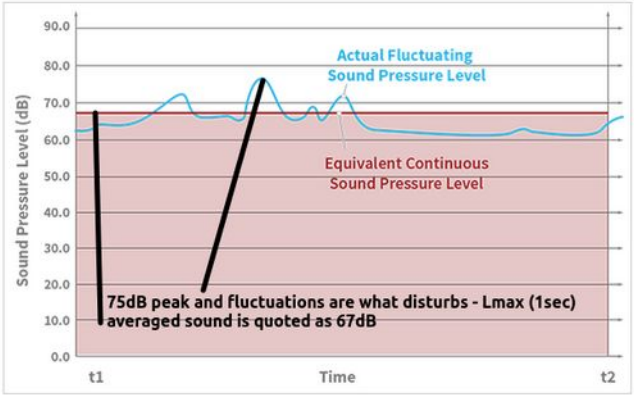
No such city wide map exists for Brisbane

An example from Perth

contours show events, map is for impact loudness

- ❖ This map is for the number of nois events at the loudness level 65dB which disturbs most people, especially at night
- ❖ If this is based on Lmax (dB) it is the simplest most useful type of map to assess noise impacts
- ❖ The areas most affected at this loudness are clearly shown by coloured contours
- ❖ There should be separate day & night time maps
- ❖ The level of noise can easily be correlated with levels of disturbance (= impact = harm)
- ❖ A city-wide map should be produced for annual aviation traffic from all sources (not just one airport), and updated annually to take into account traffic changes and mitigation measures
- ❖ A series of maps for different loudness levels should be produced e.g. 55, 60, 65, 70dB corresponding to levels of single event impact

Difference between averagedLeq and 1-second Lmax sound events



Averaged sound measures understate the annoyance of individual events, which is the key issue for residents

Appendix 7: Noise Impacts

Requirements to Assess Noise "Impacts"

MISSING

How can noise impacts be reduced if there are no metrics and no measurement?

Noise impacts are industry's and government's euphemism for the social and medical harms caused by noise. Research on these harms has been scrupulously avoided but is urgently necessary as a prelude to balancing the economic and social interests of aviation operations

1 MISSING	2 MISSING	3 MISSING	4 MISSING
Map City Noise Levels	**Correlate Noise to Harm**	**Social & Economic Impacts**	**Cost-Benefit Analysis**
N contour maps of single event frequencies for different noise intensities, to estimate levels of noise and populations affected by these.	Assess current research as a supplement to local studies to assess permissible levels of noise to avoid serious health and productivity impacts There is also a need to review current metrics to include all frequencies of aircraft noise	Make assessments of the productivity and health costs of harms, and overlay these with ethical considerations of amenity for affected residents	Perform comprehensive cost-benefit analyses (as required by the Australian government) to assess the impacts and tradeoffs of various mitigation measures, and develop policy measures for ESG of aviation operations.
01	02	03	04

Understanding the nature, level & costs of impacts is necessary to develop regulation to balance noise mitigation with the economic benefits of aviation

16

Aircraft Noise Where Is The Research Program?

Page 18

We Do Not Fully Understand Noise Impacts

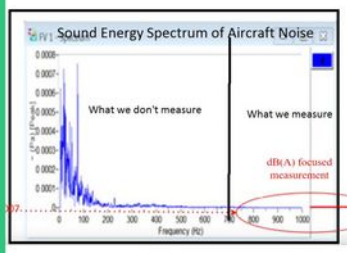
What *did* the FAA say about the adverse health effects of aviation noise in 1985?

In the 1985 report *Aviation Noise Effects*, the FAA stated:

"8.4 Summary: Although many airport neighbors have claimed a direct health impact from aviation noise, **there is little valid scientific basis for such claims.**" [emphasis added]

That may have been true in 1985 [it really v
noise was recognized as a public health ha
back as 1968], but it certainly is not true in

NEED TO KNOW



Low Frequency Aircraft Noise

- As demonstrated earlier, sound transmitted by aircraft noise causes vibration in solid surfaces.
  - these vibrations can readily pass through common building materials with minimal energy loss causing vibration to materials on the "other side"
  - These vibrations would be the source of "rattling doors and windows" from a flyover
  - This energy can also cause vibrations within the human body
- Vibration energy can become additive at resonance frequencies
  - Resonance from vibrations is common and the frequency that they occur at is based upon materials and mass.
  - these can be dangerous as the energy can quickly build and exceed the strength of the material and cause damage.
  - internet searches suggest 5 Hz as a common resonance frequency of the human body
  - Significant aircraft related vibrations occur at 5 Hz
- In work documented by Alves-Pereira and Castillo Branco, the aircraft induced vibrations in the human body lead to tissue damage in the cardiovascular system…
  - e.g., hardening of arteries as small tissue tears healed.

Appendix 8 Gaps In Regulation

Regulatory Problem 4

Discretionary Executive Decision

The Regulatory Vacuum: The Minister Decides

Civil Aviation Safety Authority (CASA) has the statutory authority to regulate the designation and use of flight paths.

The applicable Part within the Civil Aviation Safety Regulations 1998 Says "Note: This Part heading is reserved for future use."

MISSING

There is currently nothing within the Civil Aviation Safety Regulations 1998 that specifically deals with CASA's regulation, approval, or administration of airspace or with CASA's design or designation of airways or air routes.

This effectively results in the ad hoc approval of flight paths. Only changes to flight paths arising from alterations to runways are the subject of a Major Development Plan.

Otherwise, any alteration to flight paths are effectively unregulated and able to be made by the commercially-driven airport operator (through the 'for profit' air traffic services provider, AirServices) without proper community input or consultation.

A "major airport development" should be redefined to include altering a flight path in any way that significantly changes the patterns or levels of aircraft noise.

Regulatory Problem 5

EPBC Framework Not Fit for Aviation Development

This loophole was clearly evident in the EA 2018 for redesign of flight paths for the new parallel runway in Brisbane.

There is no protection for existing residences from continuing airport expansion or the development of new airports.

Approvals: The Use Of An EIS

Should the Minister require an Environment Assessment for changes new or existing Airport infrastructure, this relies on legislation designed to protect the natural environment (EPBC Act) to assess the impact of aircraft operations on community *and as such is bereft of any effective consideration of aircraft noise.*

There is no procedure for redressing and calling to account past regulatory infringements, including misleading and partial information provided to communities prior to previous major developments & flight path changes.

The EPBC Act requires the proponents of airport developments to prepare an environmental impact assessment to determine whether the development will result in 'significant impact'. There are no guidelines or definition as to what constitutes 'significant'. A narrow interpretation of the term social impact is used to exclude noise harms.

The responsibility for managing the community impact of aircraft operations is given to the air traffic control service provider, AirServices Australia (ASA), whose operation depends almost wholly on fees from airlines, and which lacks any regulatory powers to act in the best interests of affected communities.

When implementing new or redesigned flight paths, the Act requires AirServices to assess these using a 'National Operating Standard' wherein 'acceptable' is never defined: It is designed for indoor, not outdoor, noise levels.

AirServices is thus able to effectively assess a proposed development or flight path change as 'not significant' based on its own arbitrary criteria, and perhaps hold sham consultations with the community. It does not always choose to refer a change to the Minister if the development or change is assessed as 'not significant'.

AirServices flight path design principles are ambiguous as to the weighting given to various criteria e.g. safety, efficiency, emissions, track miles, noise . They appear to place airline profits, sometimes under the guise of safety, as a more important factor than reducing community and environmental impacts.

Appendix 9: The Ignored Costs of Noise (This is sleep costs only)

Noise Impact

Sleep Costs Ignored

Sleep Losses to the Economy

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AUSTRALIA / BEDTIME READING / 2. INSUFFICIENT SLEEP

2. Insufficient Sleep

Sleep affects all areas of our life; it is a fundamental building block of achieving and maintaining good health along with good nutrition and adequate exercise. Yet it is often overlooked and ignored.[1]

Introduction

2.1 Inadequate sleep is prevalent in Australian society with estimates suggesting four in every ten Australians are regularly experiencing inadequate sleep.[2]

2.2 Inadequate sleep can be caused by sleep disorders or by insufficient sleep due to lifestyle factors, such as work patterns, or the use of electronic media. Environmental factors such as noise or light may also contribute to insufficient sleep.

2.3 The impacts of insufficient sleep include: increased risk of chronic diseases, impacts on mental health, impaired judgement, increased risk of accidents and reduced productivity. In 2016-17, the inadequate sleep was estimated to cost the Australian econom $66.3 billion.[3]

Noise Impact

Sleep Public Health Crisis

Night Noise & Chronic Conditions

Australian Government
Australian Institute of Health and Welfare

infocus

Sleep problems as a risk factor for chronic conditions

Published November 2021

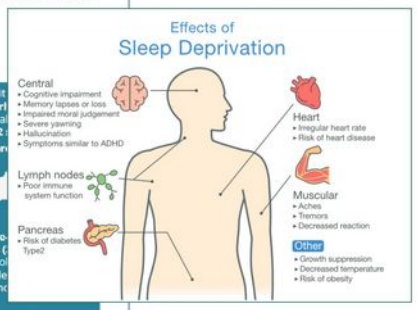
Getting enough sleep is crucial for our overall health and wellbeing. While most Australians are meeting national recommendations for how much sleep is required each night, many still experience some form of sleep problem.

Poor sleep can seriously affect a person's quality of life and increase the risk of developing chronic health conditions. It also has a substantial impact on the Australian economy.

This report summarises available national and international evidence on sleep problems as a risk factor for chronic conditions. It presents data on sleep in Australia, including the prevalence of sleep problems. It also highlights the limitations of existing data and identifies potential new data sources for monitoring sleep in Australia.

Why is sleep important?

Getting too much or too little sleep is associated with an **increased risk** of type 2 diabetes, cardiovascular disease, coronary heart disease, obesity, and death



Brussels Noise Costs Study Notes

Page 90

Brussels Airport causes €1 billion in health damage per year

Tuesday, 4 April 2023

By Lauren Walker

Brussels Airport is not only causing problems for locals with the enormous nitrogen and CO2 emissions caused by aircraft flying overhead, but it is also causing severe health damage which was, until now, underexposed.

From chronic sleep disruption to high blood pressure and heart disease, the health of people living near Belgium's largest airport in Zaventem has been damaged severely due to air traffic, in more ways than expected, a study commissioned by the Flemish Association for a Better Environment (BBL) showed.

The study showed that 220,000 people living in the neighbourhood are severely hampered by aircraft noise every year, while the sleep of 109,000 people living in the area is seriously disturbed, figures which come as no surprise to health experts, as people are particularly sensitive to noise at night.

"Our body reacts autonomously to noise, during the day and night, because our body unconsciously associates noise with danger," Marc Goethals, a cardiologist at Onze-Lieve-Vrouw Hospital in Aalst, said.

"As a result, our body goes into a state of defence, the so-called 'fight-or-flight response'." The World Health Organisation (WHO) has already been warning for years about the enormous health damage caused to residents living near airports.

Reduced immunity and bad mental health

Goethals explained that this response not only leads to reduced immunity against infections and cancer and slower physical recovery, but it also results in a rise in blood pressure, faster heart rate and release of stress hormones. Finally, this can also affect people's memory functions and mental health.

This was reflected in the study, which found that 51,000 locals face a greatly increased risk of developing

Appendix 10 : Aircraft Noise Harms

The Known Harms of Aircraft Noise: A Summary

- Aircraft noise has a frequency profile and duration that makes it the most annoying kind of background interruption, more than train, road or construction noise
- Aircraft noise interrupts the sleep cycle which has known negative effects on cardiovascular health, longevity, mental health, work efficiency etc.... even if noise does not cause awakening
- The interruptions of aircraft noise have a detrimental effect on children's learning and adult concentration, causing productivity losses
- For some citizens aircraft noise requires direct costs of e.g. soundproofing insulation, moving home etc.
- Aircraft noise causes loss of amenity and the right to quiet enjoyment indoors and outside for hundreds of thousands of city residents across Australia
- Aircraft noise may cause financial loss due to decreased property values
- Aircraft noise has a known detrimental effect on medical health, both physical and mental, including heart disease, stroke and stress – major public health issues in Australia

"Noise is the second most damaging form of pollution after air pollution"
WHO

4/1/2024 17

We Know Enough To Treat Aircraft Noise Much More Seriously Than We Do

Page 19

But We Do Know Removing Noise Is Better

Contents lists available at ScienceDirect
Transportation Research Part D
journal homepage: www.elsevier.com/locate/trd

Night-flight ban preserves sleep in airport residents

Eva-Maria Elmenhorst, Uwe Mueller, Julia Quehl, Mathias Basner, Sarah McGuire, Stefan Schmitt, Gernot Plath, Jens Jordan, Daniel Aeschbach

Precautionary Principle

- When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.
- Proponent of an activity, rather than the public, should bear the burden of proof
- The process of applying the Precautionary Principle must be open, informed and democratic and must include potentially affected parties. It must also involve an examination of the full range of alternatives, including no action.

ARTICLE INFO
Keywords:
Noise mitigation
Aircraft noise
Exposure–response relationship
Night-flight ban
Awakening
Sleep fragmentation

ABSTRACT
We conducted an observational field study at Frankfurt Airport before (2011) and after (2012) implementation of a night-flight ban (23:00–5:00) to determine whether reduced nighttime flight traffic protects airport residents from sleep fragmentation. We recorded sleep-EEG and noise exposure in residents' bedrooms in early sleepers (bedtime: 22:00–22:30, rise time: 6:00–6:30; 2011: N = 49; 2012: N = 42) and late sleepers (bedtime: 23:00–23:30, rise time 7:00–7:30; 2012 only: N = 41). Early sleepers were exposed to 26.8 ± 15.7 (mean per time in bed ± STD) overflights in 2011, and 14.9 ± 9.3 in 2012. Late sleepers were exposed to 24.6 ± 14.7 overflights in 2012. Number of awakenings was 27.5% lower in early sleepers in 2012 than in 2011 ($p < 0.001$). Noise-associated awakenings predicted from the exposure–response model were higher in late compared to early sleepers in 2012. A night-flight ban is most effective when it largely overlaps with the sleep episode.

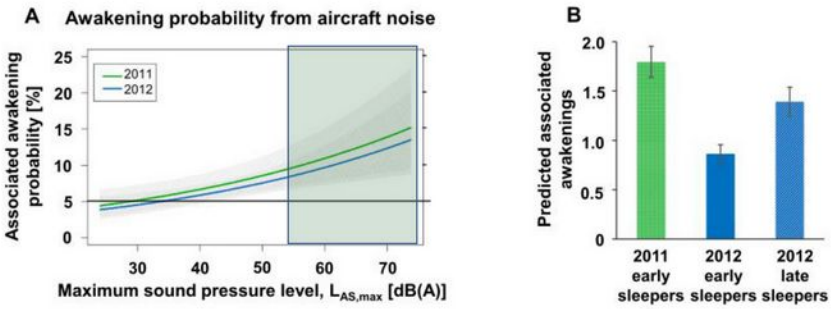
The most sleep-disruptive result from a noise event is an awakening. Even though awakenings are part of physiological sleep cycles, awakenings caused by noise may occur at any time during sleep and curtail sleep stages such as slow-wave sleep and REM (rapid eye movement) sleep, both considered most important for recuperation (Brown et al., 2012). Noise may also shift sleep to lighter, less restorative stages (S1, S2) (Basner and McGuire 2018). The more sleep time has elapsed and the more sleep need has dissipated, the higher is the probability to wake up. Thus, nighttime sleep becomes more fragile in the morning hours at a time when the surrounding noise environment intensifies. This may lead to fragmented sleep and early awakenings especially at that time. Noise may also prevent persons from falling asleep thereby delaying sleep onset. Thus, the duration and especially the quality of sleep may be compromised.

Appendix 11: Noise Harms

Noise Impact

Sleep

Hundreds of Thousands Woken By Over 55dB At Night



Noise Impact

Sleep

Sleep Disturbance Causes Blood Sugar Dysregulation

Linked to diabetes, stroke, headache, lack of focus, inflammation

Two nights of broken sleep can make people feel years older, finds study

Beyond simply feeling decrepit, perception of being older can affect health by encouraging unhealthy eating and reducing exercise

'If you want to feel young, the most important thing is to protect your sleep,' says the study's author. Photograph: Vladimir Godnik/Getty Images/iStock

Two nights of broken sleep are enough to make people feel years older, according to researchers, who said consistent, restful slumber was a key factor in helping to stave off feeling one's true age.

Psychologists in Sweden found that, on average, volunteers felt more than four years older when they were restricted to only four hours of sleep for two consecutive nights, with some claiming the sleepiness made them feel decades older.

The opposite was seen when people were allowed to stay in bed for nine hours, though the effect was more modest, with participants in the study claiming to feel on average three months younger than their real age after ample rest.

"Sleep has a major impact on how old you feel and it's not only your long-term sleep patterns," said Dr Leonie Balter, a psychoneuroimmunologist at the Karolinska Institute in Stockholm and first author on the study. "Even when you only sleep less for two nights that has a real impact on how you feel."

Beyond simply feeling more decrepit, the perception of being many years older may affect people's health, Balter said, by encouraging unhealthy eating, reducing physical exercise, and making people less willing to socialise and engage in new experiences.

Appendix 12 : Noise Harms

Noise Impact

Sleep

ScienceDaily

Your source for the latest research news

Exposure to airplane noise increases risk of sleeping fewer than 7 hours per night

Date: May 1, 2023

Source: Boston University School of Public Health

Summary: As major airline officials predict another record summer air travel season, a new analysis has found that exposure to even moderate levels of airplane noise may disrupt sleep, building upon a growing body of research on the adverse health effects of environmental noise. People who were exposed to airplane noise at levels as low as 45 dB were more likely to sleep less than 7 hours per night. For comparison, the sound of a whisper is 30 dB, a library setting is 40 dB, and a typical conversation at home is 50 dB.

FULL STORY

A new study has found that people who were exposed to even moderate levels of aircraft noise were less likely to receive the minimum recommended amount of sleep each night, and this risk increased among people living in the Western U.S., near a major cargo airport, or near a large water body, and among people with no hearing loss.

Noise Impact

Sleep

Aviation Noise Regulation Is Based on Convenience, Not Evidence

Results

The results show that, given a certain equivalent noise level, additional information on the overall number of events does not improve the prediction of sleep quality. However, the number of events above L_{Amax} of 60 dB was related to an increase in mean motility, indicating lower sleep quality. No effect of number of events was found on self-reported sleep quality.

2018 EIS judged up to 50 N60 events non significant

Conclusions

This study suggests that the number of events is more or less adequately represented in L_{night} and only the number of high noise level events may have additional effects on sleep quality as measured by motility. This may effect of the number of aircraft noise events on sl...

N60

be viewed as an indication that, in addition to L_{night}, the number of events with a relatively high L_{Amax} could be used as a basis for protection against noise-induced sleep disturbance.

Appendix 13: Noise Harms

Noise Impact

Loss Of Amenity Due To Both Loudness and Frequency of Aircraft Noise

Number Of Disturbing Events As Important As Loudness

Aircraft noise annoyance and the influence of number of aircraft movements

Truls GJESTLAND[1]; Femke B GELDERBLOM[2];
SINTEF DIGITAL, Norway

ABSTRACT

A majority of the countries that have some kind of noise regulations to control the environmental impact of noise around airports rely on a dose-based noise index such as Leq, Ldn or Lden, etc. The only deciding parameter is the total noise dose within a certain period regardless of how that dose has been produced. Similar doses can be the result of many low-level aircraft movements or a few high-level ones.

A re-analysis of surveys conducted over the past 40 years, shows that there is a clear relationship between annoyance and the number of aircraft movements. At so-called *low rate of change* airports the prevalence of highly annoyed residents at any given noise level increases with increasing number of movements. The same pattern can not be found at *high rate of change* airports.

Keywords: Annoyance; aircraft noise I-INCE Classification: 66

Brisbane Resident: "I've lived here for 53 years and always had planes, but the last three years I have been driven crazy, terrified by the planes so low over me, the number of flights in the year in 2019, pre-new runway was 586 the number in 2022 was 32,000"

Noise Impact

Cardiovascular Disease

(Number of noise events is important)

The impact of aircraft noise on vascular and cardiac function in relation to noise event number: a randomized trial

Frank P. Schmidt[1†], Johannes Herzog[1†], Boris Schnorbus[1], Mir Abolfazl Ostad[1], Larissa Lasetzki[1], Omar Hahad[1,2], Gianna Schäfers[1], Tommaso Gori[1,2], Mette Sørensen[3], Andreas Daiber[1,2], and Thomas Münzel[1,2]*

[1]Department of Cardiology I, University Medical Center of the Johannes Gutenberg-University Mainz, Langenbeckstraße 1, 55131 Mainz, Germany; [2]German Center for Cardiovascular Research (DZHK), Partner Site Rhine-Main, Mainz, Germany; and [3]Diet, Genes and Environment Unit, Danish Cancer Society Research Center, Copenhagen, Denmark

Received 7 May 2020; revised 1 June 2020; editorial decision 25 June 2020; accepted 2 July 2020; online publish-ahead-of-print 10 October 2020

Aims Nighttime aircraft noise exposure has been associated with increased risk of hypertension and myocardial infarction, mechanistically linked to sleep disturbance, stress, and endothelial dysfunction. It is unclear, whether the most widely used metric to determine noise exposure, equivalent continuous sound level (L_{eq}), is an adequate indicator of the cardiovascular impact induced by different noise patterns.

Methods and results In a randomized crossover study, we exposed 70 individuals with established cardiovascular disease or increased cardiovascular risk to two aircraft noise scenarios and one control scenario. Polygraphic recordings, echocardiography, and flow-mediated dilation (FMD) were determined for three study nights. The noise patterns consisted of 60 (Noise60) and 120 (Noise120) noise events, respectively, but with comparable L_{eq}, corresponding to a mean value of 45 dB. Mean value of noise during control nights was 37 dB. During the control night, FMD was 10.02 ± 3.75%, compared to 7.27 ± 3.21% for Noise60 nights and 7.21 ± 3.58% for Noise120 nights ($P < 0.001$). Sleep quality was impaired after noise exposure in both noise scenario nights ($P < 0.001$). Serial echocardiographic assessment demonstrated an increase in the E/E' ratio, a measure of diastolic function, within the three exposure nights, with a ratio of 6.83 ± 2.26 for the control night, 7.21 ± 2.33 for Noise60 and 7.83 ± 3.07 for Noise120 ($P = 0.043$).

Conclusions Nighttime exposure to aircraft noise with similar L_{eq} but different number of noise events, results in a comparable worsening of vascular function. Adverse effects of nighttime aircraft noise exposure on cardiac function (diastolic dysfunction) seemed stronger the higher number of noise events.

Appendix 14: Noise Harms

Noise Impact

Cardiovascular Disease Link Is Fairly Certain

Aircraft Noise Promotes the Biggest Killer in Australia

ESC European Society of Cardiology
European Journal of Preventive Cardiology (2023) **30**, 1552–1553
https://doi.org/10.1093/eurjpc/zwad129

Aircraft noise and cardiovascular risk: are we witnessing an evolving risk factor of the future?

Remya Sudevan

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Online publish-ahead-of-print 24 April 2023

Volume 30, Issue 15
October 2023

changes have some similarities with those seen during space travel. Space travellers too have constant noise exposure that may be relevant in prolonged exposure periods. Such prolonged noise exposure may have implications similar to that described for traffic noise. Both themes and their possible interactions are likely to be studied in more detail by future research given the marked growth in air and space travel modes.

In conclusion, we can be fairly certain about the detrimental impact of aircraft noise on cardiovascular health. The efficacy of therapeutically

Noise Impact

Sleep & Cardiovascular Health

Sleep Disturbance Is A Killer, Not A Nuisance

There are good reasons to focus on quantity, quality, and timing. Those are the aspects of sleep that best correlate with physical and mental health.

Sleep quantity predicts cardiovascular health (high blood pressure, heart attacks, strokes) so strongly, it is included in the American Heart Association's Essential Eight factors to protect cardiovascular health (alongside diet and exercise, among others).

Sleep quality, or the lack thereof in the form of insomnia, is a risk factor for a variety of mental health conditions, including depression, anxiety, alcohol dependence, and suicide.

Regularising sleep timing is a newer focus in the field of sleep health, and has quickly emerged as important for all-cause mortality and other health considerations.

That is, people with the most irregular sleep die earlier, regardless of cause, than those with the more regular sleep.

It is important to note, though, the measure of regularity in that study included more than just sleep timing. Nonetheless, sleep timing is a significant driver of sleep regularity.

Appendix 15: Aircraft Noise Harms

Noise Impact

Stroke

The Effect of Aircraft, Road, and Railway Traffic Noise on Stroke – Results of a Case–Control Study Based on Secondary Data

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Abstract

Results:

For 24-h continuous aircraft noise exposure, neither increased risk estimates nor a positive linear exposure–risk relation was found. However, stroke risk was statistically significantly increased by 7% [95% confidence intervals (95%CI): 2–13%] for people who were exposed to <40 dB of 24-h continuous aircraft noise, but ≥6 events of maximum nightly sound pressure levels ≥50 dB. For road and railway traffic noise, there was a positive linear exposure–risk relation: Per 10 dB the stroke risk increased by 1.7% (95%CI: 0.3–3.2%) for road traffic noise and by 1.8% (95%CI: 0.1–3.3%) for railway traffic noise. The maximum risk increase of 7% (95%CI: 0–14%) for road traffic noise and 18% (95%CI: 2–38%) for railway traffic noise was found in the exposure category ≥65 to <70 dB.

Conclusion:

This large case–control study indicates that traffic noise exposure may lead to an increase in stroke risk. It furthermore suggests that maximum aircraft noise levels at night increase the stroke risk even when continuous noise exposure is low, and thus highlights the relevance of maximum noise levels for research and policies on noise protection.

Noise Impact

Children's Learning

Gambling with the Future of Children

Discussion

The most consistent effects of aircraft noise found in children are cognitive impairments, though these effects are not uniform across all cognitive tasks.[14,15] Tasks which involve central processing and language comprehension, such as reading, attention, problem solving and memory, appear to be most affected by exposure to noise.[1,9,14,15] In the Munich study, a difficult word test, long-term recall of a text, and a reading test were impaired by aircraft noise (24 hour values).

261

Appendix 16: Noise Harms

Noise Impacts

Too Many
To ignore
Too Serious
To Ignore

What Are the Health Impacts of Aircraft Noise Exposure

Aircraft noise exposure has been associated with various adverse health outcomes. In the ANIMA project the impact of aircraft noise on human health and well-being was reviewed for several health outcomes: cardiovascular diseases, sleep disturbance, annoyance, cognition, mental health, hearing impairment and other adverse effects, including adverse birth effects and metabolic diseases. Together, these are the critical and important health outcomes affected by environmental noise as mentioned by the World Health Organisation's (WHO) Environmental Noise Guidelines for the European Region [76]. Within the ANIMA project a literature review was carried out, including publications after the year 2014. We focused on very recent articles as earlier publications are already evaluated by the WHO (see https://www.mdpi.com/journal/ijerph/special_issues/WHO_reviews). The outcomes from the literature review are published in the report 'Recommendations on noise and health (Deliverable D2.3, [41]).

The WHO reviews as well as the ANIMA literature review demonstrate associations between long-term aircraft noise exposure and ischemic heart disease, annoyance, reading and oral comprehension in school children as well as sleep disturbance during the night. In the ANIMA review, associations were made between sleep disturbance, annoyance and certain long-term health outcomes, indicating that self-reported sleep disturbance and annoyance may be mediators of adverse health outcomes. In the following sections new findings on the effects of aircraft noise exposure on different health outcomes are summarised.

Physiological responses to noise

- Immediate: increases in blood pressure and pulse
- Few minutes: activation of the hypophyseal-pituitary (ACTH)-adrenocortical axis (stress hormone increase)
- Hours: inflammatory response
- Days to months: hypertension, diabetes, obesity
- Years: heart disease, stroke, increased mortality

Page 52

More Health Research Urgently Needed

determine variances against presently defined acceptable human impact. It was determined that most of the aircraft produced sound is not within the FAA criteria and that the portion that isn't included causes harmful health effects. The frequencies that are the most significant component of aircraft sound energy are low frequency (200 Hz and less) and infrasound (20 Hz and less).

Experimentation demonstrated that aircraft produced infrasound and low frequency sound can travel almost a mile with minimal attenuation and are not blocked by common construction material. These sounds readily pass through and into common dwellings. Within the frequency range of about 5-40 Hz, similar amplitude/intensity infrasound and low frequency sound is being produced by each aircraft from approximately 4000 feet elevation and lower. This observation was generalized along the flight path of ascending aircraft from takeoff and allowed a description of a singular value of infrasound vibrational exposure beginning at the end of the runway to approximately five miles from the airport. Sound emanates out from either side of the aircraft and experimental data suggests a full exposure band of approximately one and a half miles wide. Partial reduced vibration exposures occur outside of the primary exposure band.

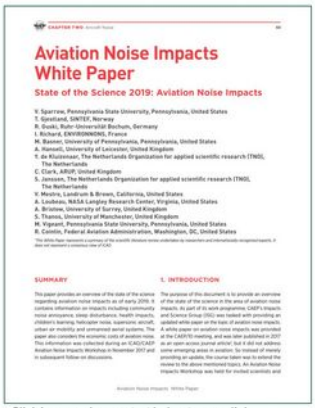
Low frequencies less than 40 Hz were measured in the experiment's simulated human tissue and this exposure range poses health concerns. These vibrations match natural human body frequencies leading to human cell damage and the thickening of tissue (Alves-Pereira, 2007). A serious health issue caused by this vibration is increased cardiovascular risk, which has been identified near several airports throughout the world (Correia, 2013). This research strongly suggests that human tissue damage can occur from each flight event.

NextGen navigation is the future of aviation and its implementation poses a special additional health risk in that its application intentionally concentrates aircraft flight into tight corridors. This

Appendix 17: Noise Harms

Review Papers

Four Useful References


Aviation Noise Impacts White Paper
State of the Science 2019: Aviation Noise Impacts


Aviation Noise Impact Management pp 173–195 | Cite as

Home › Aviation Noise Impact Management › Chapter

Impact of Aircraft Noise on Health

Sarah Benz, Julia Kuhlmann, Sonja Jeram, Susanne Bartels, Barbara Ohlenforst & Dirk Schreckenberg

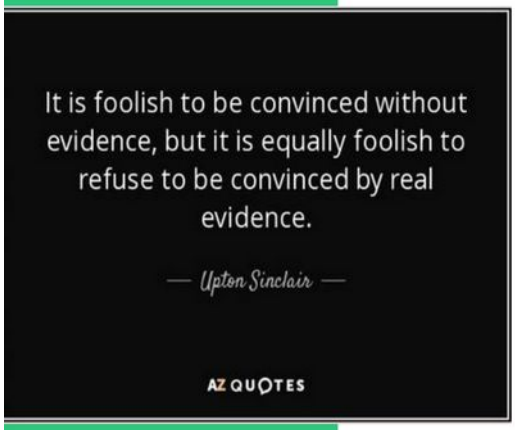
Chapter | Open Access | First Online: 31 January 2022

7303 Accesses | 7 Altmetric

Click images above or text below to open link

- Environmental Noise and Effects on Sleep: An Update to the WHO Systematic Review and Meta-Analysis
- Transportation noise pollution and cardiovascular disease

Page 54



APHA > Policy Statements and Advocacy > Policy Statements > Policy Statement Database > Noise as a Public Health Hazard

Noise as a Public Health Hazard

Date: Oct 26 2021 | **Policy Number:** 202115
Key Words: Occupational Health And Safety, Environment

Abstract

Noise is unwanted and/or harmful sound, first recognized as a public health hazard in 1968. The Noise Control Act of 1972 declared that "it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes their health or welfare." The promise of that legislation remains unfulfilled 50 years later. Human exposure to harmful noise levels is widespread. Major sources include transportation, military aircraft and combat operations, noisy recreational vehicles, industrial machinery, recreational and leisure activities, outdoor power equipment, consumer products, and, possibly, wind turbines. Loud noise causes hearing loss and tinnitus and can contribute to non-auditory health problems. Chronic noise, even at low levels, can cause annoyance, sleep disruption, and stress that contribute to cardiovascular disease, cerebrovascular disease, metabolic disturbances, exacerbation of psychological disorders, and premature mortality. Noise interferes with cognition and learning, contributes to behavior problems, and reduces achievement and productivity. The health of more than 100 million Americans is at risk, with children among the most vulnerable. Noise-related costs range in the hundreds of billions of dollars per year. Yet, the United States has no federal standards for non-occupational noise exposure. Federal standards for occupational noise exposure from the 1970s address only hearing loss as an adverse health effect and do not apply to all workers (e.g., those in agriculture and construction). Calls for action have gone largely unheeded. This policy calls for national noise standards, enforcement, education, outreach, and action on noise as a public health hazard. They are long overdue.

Page 55

Appendix 18: Noise Regulation and ICAO's Balanced Approach

Current Approaches to Noise Management

REGULATORY REQUIREMENTS

- Noise regulation by CASA remains incomplete
- Ministerial approvals require evidence produced by the beneficiaries of projects
- Environmental regulations omit noise
- Impact "significance" levels are not defined
- Safety considerations exclude citizens under flight paths

1

2

AIRSERVICES NOISE PLANS

- Failure to properly measure noise levels or report in a meaningful way
- No proper understanding of impacts
- No goals for impact reduction or understanding of appropriate noise levels
- Flight path design provides limited relief
- No focus on reducing total overfly

THE ICAO BALANCED APPROACH

- Government claims to follow international practice
- Reductions at source & land use planning are ineffective or irrelevant for established airports
- Operations management to reduce noise is limited by runway orientation / location
- Effective operational restrictions are ruled out

3

4

COMMUNITY CONSULTATION

- Overall noise has increased not decreased
- Divisive noise sharing scheme is proposed instead of noise reduction
- An ineffective/insulting complaints system
- Engagement is not genuine as outcome is pre-decided to not limit operations

Page 61

ICAOs "Balanced Approach" to Manage Aircraft Noise

Australia Claims to Follow International Standard "Best Practice"

Reduction at Source

This refers to manufacturer certification of aircraft noise very close to the airport under ideal conditions

1

Land Use Planning & Management

This is useful for new infrastructure but plays little role in established airports. Secondary airports for each capital city should be considered.

2

Operating Restrictions

Allegedly used only as a last resort if the previous methods fail to deliver desired result after a cost benefit analysis. Includes curfews, movement caps, , aircraft noise limits.

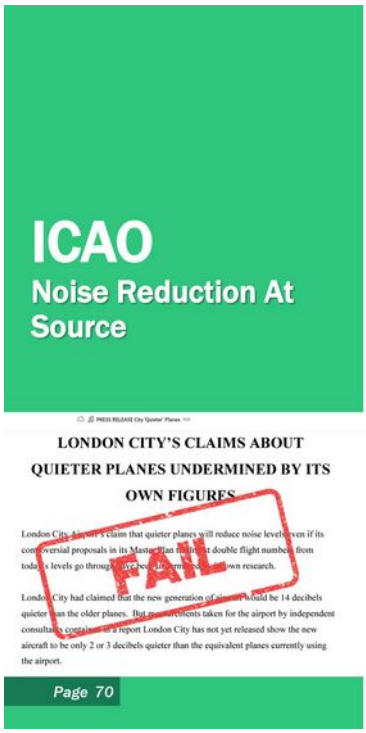
4

Noise Abatement Operational Procedures

There are several noise abatement procedures managed by Air Services with little actual effect due to flight path and airport and runway siting close to residential areas

3

Appendix 19 ICAO Approaches



Balanced Approach Step 1 - Key Points

- The industry's big promise of FUTURE reductions, without any goals or timelines. Industry buys new planes for fuel efficiency, not noise reduction so it is in their interest to promise future reductions.
- The noise we hear doesn't just come from the planes: It is also caused also from the way they are flown.
- It is claimed over the past 50 years individual aircraft have reduced their noise impact by 75% but this based upon manufacturers' certified figures (EPNLdB) which are measured and computed as sound pressure levels or sound energy. This has little relationship to perceived noise on the ground.
- People don't hear noise as sound energy but as degrees of loudness i.e sound intensity. Furthermore, these measurements use A-weighting. A 15 decibel reduction on departure is only about 33% of the reduction in loudness, not 75%.
- Most improvements took place between the 1960s and the 1990s. Improvement since 2000 has been more limited. Reducing airframe noise is even more challenging.
- The CAA believes we can expect to see noise improvements arising from normal fleet renewal exercises as airlines switch from older types. The industry puts improvement as 0.1 or 0.2 decibels each year. It will take 15 -30 years to achieve a just perceptible 3dB noise reduction per plane.
- Furthermore, many international and freight airlines use older noisier aircraft in Australia and we don't know when these will be phased out.
- There is also a dramatic increase in flight numbers more than compensating for the reductions in noise.
- Furthermore, there are tradeoffs between noise reduction and fuel efficiency.... Which one will industry voluntarily choose given that fuel costs are a significant proportion of their operations? Also a trade off between noise and emission, different aspects of sustainable aviation.

Balanced Approach Step 2 - Key Points

- Land Use Planning is useful for new infrastructure developments, but almost irrelevant for existing airports where land has already been developed for residential use around the airport
- Land use planning is also largely irrelevant with new flight paths or airport expansions for capacity increases
- Land use planning regulations are based on outdated noise levels, fail e in industry sponsored modeling, and are based on a not-fit-for-purpose EIS which almost completely ignores noise harms to humans
- Noise is usually assessed using modeled calculations based on selected industry data, using a non-validated model with opaque assumptions about traffic forecasts and aircraft types and noise levels.
- Historically these models dramatically underestimate the number and loudness of noise events, and data is presented in a fragmented and misleading manner. (Examples are 2007 EIS in Brisbane and previously hidden 2018 EA in Brisbane, self assessed as 'not significant' changes' based on completely arbitrary assumptions of what constitutes a 'significant impact')
- The EA report, conducted entirely by the main beneficiaries of the "no significant impact" conclusion stated that "Based on the above... referral to the Minister is not considered to be an appropriate course of action"
- Public consultations are largely for show, rather than aiming to incorporate feedback into changes that might reduce operational convenience.

Appendix 20: ICAO Approaches

ICAO
Noise Abatement Operational Procedures -1

Page 72

Balanced Approach Step 3 - Key Points

- Even if competently managed, these procedures have the capacity to make only small reductions in noise which are more than compensated by increased air traffic over residential areas
- The procedures are limited by considerations of efficiency in reducing track miles and fuel burn
- They are limited by weather, wind, visibility, runway repairs , traffic management limitations of ATC staffing etc.
- The main limitation of employing these operational procedures is on conflicting airspace requirements from different LGAs and over flight from neighboring airports – lack of integrated airspace design
- Operational practices which could cut aircraft noise
- **ARRIVALS**
  - Continuous Descent Approach (CDA): Aircraft can descend in one of two ways: either in a step-by-step fashion or using CDA. CDA can cut noise by between 2.5 and 5 decibels.
  - Steeper descent angles e.g. 5% instead of 3% as standard. However, this still means aircraft are under 4000 ft (noisy) even 13K from the airport, which encompasses major residential areas
  - Delayed lowering of landing gear
  - Minimum use of reverse thrust (full runway landings) and idling times

FAIL

ICAO
Noise Abatement Operational Procedures -2

Page 73

Balanced Approach Step 3 - Key Points

- Operational practices which could cut aircraft noise
- **DEPARTURES**
  - Steeper rate of ascent after takeoff (also connected with full runway use not intersection departures which airports like for convenience and maximum throughput). If a plane uses all its power to climb steeply on leaving the runway, that will benefit some communities directly under the flight path further from the airport. But it will:
    - increase noise for people very close to the airport
    - increase air pollution levels in the vicinity of the airport
    - will have a significant impact on the wear and tear of engines
    - spread the noise so that communities living either side of the flight path up to about 1.5K will get more noise, and this impacts more residents close to the airport who already have health damaging levels of noise
  - Performance based navigation can actually reduce the population overflown and allow for better management of aircraft ascent, but makes the situation worse for residents under or near the more narrowly utilized flight paths.
  - Other methods include no intersection departures to maximize height before leaving airport surrounds

FAIL

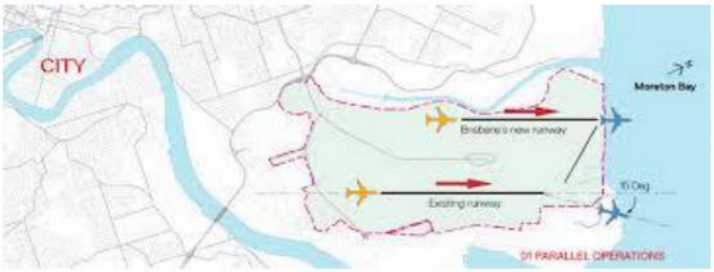
Appendix 21 ICAO Approaches

ICAO
Noise Abatement Operational Procedures -3A

Page 74

Balanced Approach Step 3: SODPROPS

- A claim which was being made even in 2019 by Brisbane Airport was that the proposed new parallel runway (NPR) would allow MOST aircraft to arrive or depart over the water, rather than flying over residential areas.
  - SIMULTANEOUS OPPOSITE DIRECTION PARALLEL RUNWAY OPERATIONS



- This was how the NPR was sold to Brisbane. It was a lie as the limitations of weather, wind and traffic make the use of SODPROPS impractical most of the time.
- Why: AIRCRAFT NEED TO TAKE OFF AND LAND INTO THE WIND UNLESS WIND SPEED IS UNDER 5KNTS

ICAO
Noise Abatement Operational Procedures -3B

Balanced Approach Step 3: SODPROPS

- SODPROPS required both runways to be operational, but there are frequent runway repairs
- SOFPROPS can only be used if traffic is under about 22 flights per hour (11 each way) even when conditions are otherwise favourable, whereas BNE aims to handle over 100 flights per hour

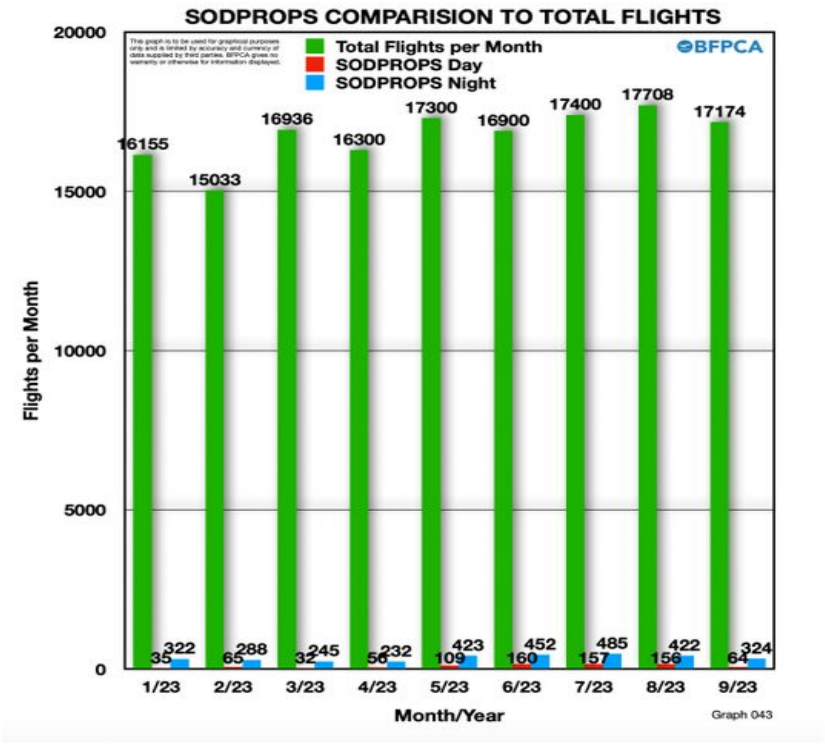
SODPROPS can only be used when wind is under 5knots, visibility is good, and runway is dry – this is rather a rare combination of events in Brisbane

Currently only 3% of flights operate in SODPROPS mode, and many of these over water flights then turn back over the city

A statistic of 50% over the water flights promoted by BAC would be approximately ZERO use of SODPROPS.

Currently, with inimal use of SDPROPS due to 65% prevailing south winds, 65% depart over city and 35% arrive over city. The situation is reversed when winds are from the north.

Appendix 22: SODPROPS ACTUAL USAGE



igure 4: SODPROPS (red and blue) comparison to total flights (green). Data source.

Note that 50% flights over water corresponds to approximately zero use of SODPROPS

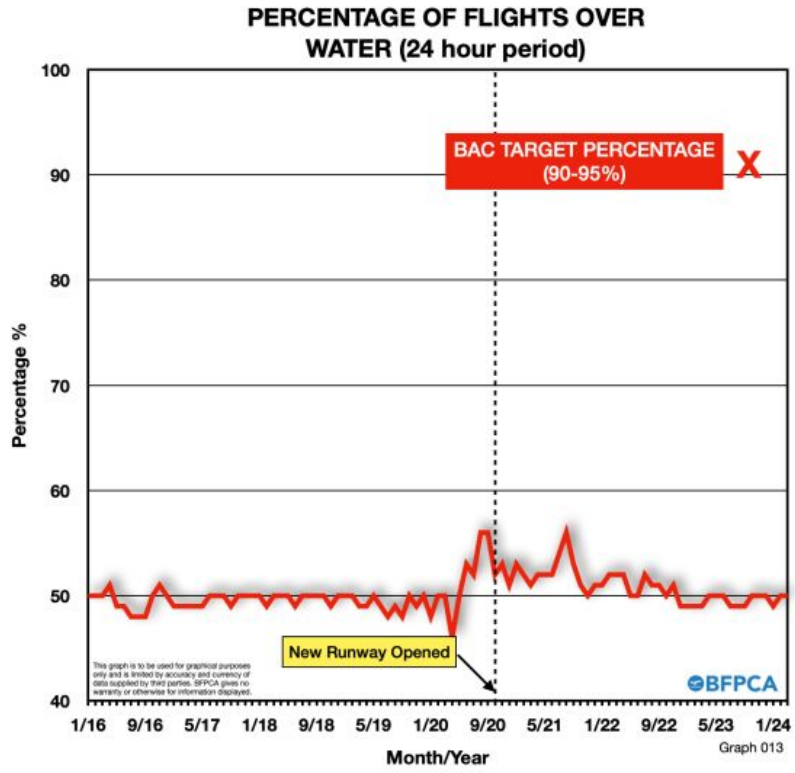


Figure 3: Percentage of flights over water (24 hours). Data source.

Appendix 23: IMPLEMENTATION FAILURES OF BALANCED APPROACH

Balanced Approach Implementation Failure

What does ICAO actually say?

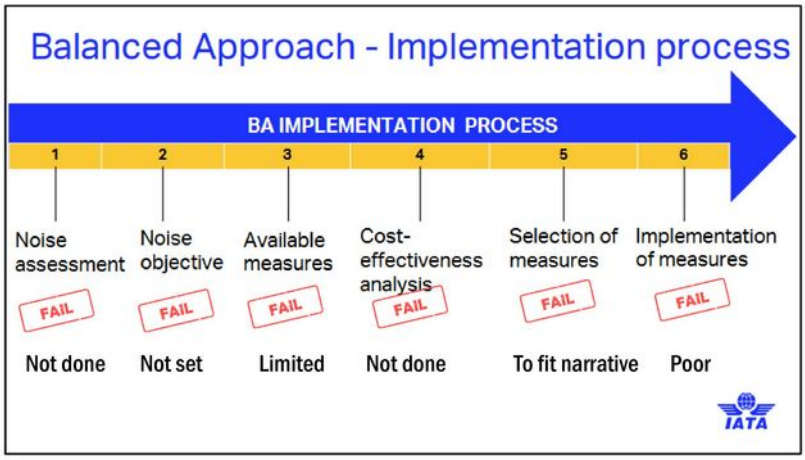
Each airport should identify what are the main causes of noise problems and set noise objectives to be achieved. If there is any difference between the objectives and the evolution of the noise problem, then a problem exists. In the document it is also stated that Airports might have different problems regarding noise pollution, different ways to assess it and different objectives.

ICAO also defined the guidelines to assess noise around airports, stating that a good metric is the number of people affected by more than a specified noise index. A reduction of the number of people following the application of noise abatement measures should also be considered really carefully, as it could happen that more flights (and more noise) would be concentrated on a minority of people.

FAIL FAIL FAIL

NO EVIDENCE BASED RESEARCH, NO METRICS, NO GOALS, NO SUCCESS IN STEPS 1 TO 3

Balanced Approach Step 4 - Key Points



Appendix 24: Cost Effectiveness Studies Not Done As Required

Where's the Cost-Benefit Analysis of Operational Restrictions?

Cost Benefit Analysis

July 2023

Please note that this guidance is under review. If you have suggestions or would like to discuss, please email Helpdesk-OIA@pmc.gov.au

Purpose

The Australian Government is committed to the use of cost–benefit analysis (CBA) to assess policy proposals in order to encourage better decision making.

A CBA involves a systematic evaluation of the impacts of a proposal, accounting for all the effects on the community and economy, not just the immediate or direct effects, financial effects or effects on one group. It emphasises, to the extent possible, valuing the gains and losses from a proposal in monetary terms.

The goal of CBA is to provide the final decision maker with as much information about a proposal as is relevant in informing their decision. It provides an objective framework for weighing up different impacts and impacts that occur in different periods. This objectivity is supported by converting all impacts into present value dollar terms. However, even when full quantification of impacts is not possible, CBA can still be useful in providing a clear decision-making framework.

The purpose of this guidance note is to guide policy makers on the use of CBA for policy proposals.

Introduction

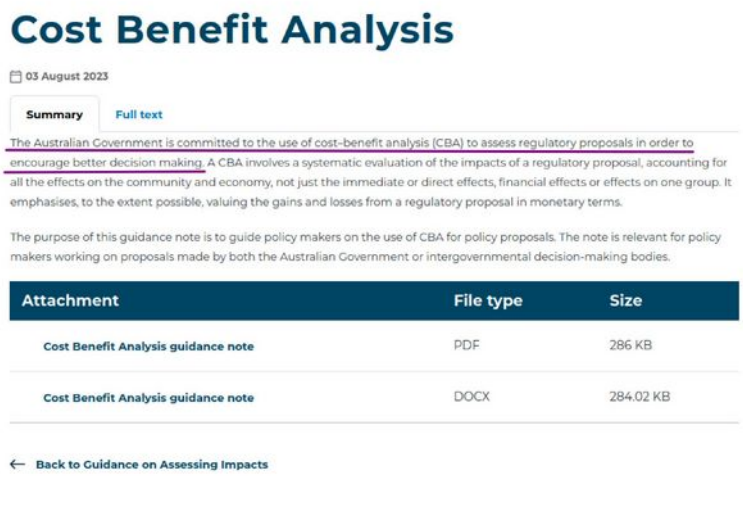
In impact analysis, CBA is a method of evaluation that attempts to estimate and compare the total benefits and costs of a particular policy proposal.

In principle, CBA measures the efficiency or resource allocation effects of a change. It calculates the dollar value of the gains and losses for all people affected. If the sum is positive, the benefits exceed the costs and the proposal would increase efficiency.

CBA is useful because it:

- provides decision makers with quantitative and qualitative information about the likely effects of a regulation

Office of Impact Analysis | Guidance Note | Cost Benefit Analysis 1



Cost Benefit Analysis

03 August 2023

Summary | Full text

The Australian Government is committed to the use of cost–benefit analysis (CBA) to assess regulatory proposals in order to encourage better decision making. A CBA involves a systematic evaluation of the impacts of a regulatory proposal, accounting for all the effects on the community and economy, not just the immediate or direct effects, financial effects or effects on one group. It emphasises, to the extent possible, valuing the gains and losses from a regulatory proposal in monetary terms.

The purpose of this guidance note is to guide policy makers on the use of CBA for policy proposals. The note is relevant for policy makers working on proposals made by both the Australian Government or intergovernmental decision-making bodies.

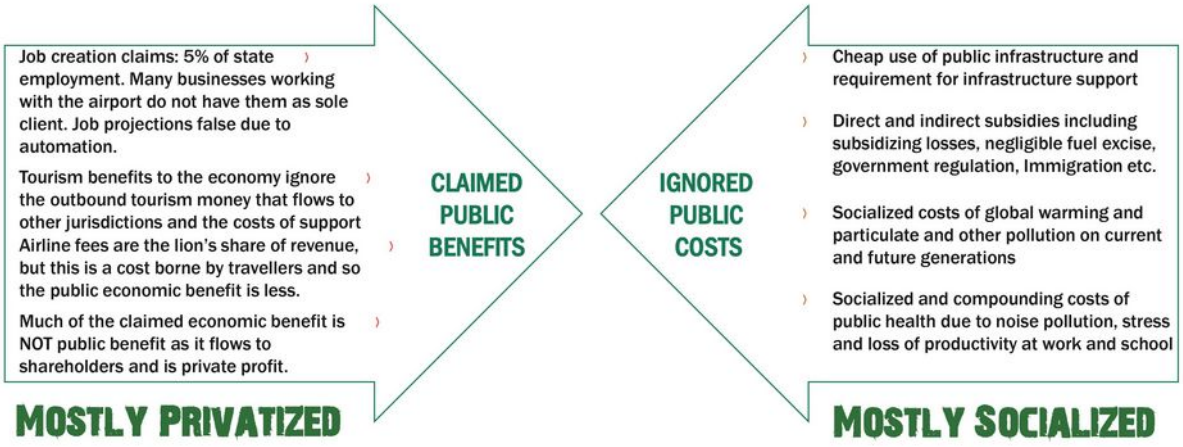
Attachment	File type	Size
Cost Benefit Analysis guidance note	PDF	286 KB
Cost Benefit Analysis guidance note	DOCX	284.02 KB

← Back to Guidance on Assessing Impacts

79

Refining The Economic Argument for Aviation Expansion

There is no doubt that aviation is important for the economy, but industry sponsored *Economic Impact Studies* do not consider the true public benefits of unrestricted operations since they ignore the direct and indirect public costs



Appendix 25: Community Engagement Failures

AirServices Community Engagement Theatre

FAIL

Social Engineering Replaces Noise Mitigation

Following failure to pay more than lip service to ICAOs Balanced Approach to reduce aircraft noise harms, the Government has a plan to develop 'social license' for increasing aircraft operations without restriction (based on insincere consultation, vague promises, and keeping hope alive of benefits in the)

- AirServices is a business paid by the industry whose noise is related to their income
- The so called *Noise Action Plan* (NAP) aims to reduce noise "impacts" without limiting operations in any way, or without properly measuring or defining the "impacts"
- The NAP has no clear goals, no metrics, no research into noise limits or thresholds and no clearly defined outcomes, or future traffic projections over the city
- Data is presented in an incomplete and fragmented manner: It is difficult to determine personal impacts of any options proposed: choose harm A, B or C!
- The noise complaints process is complex and slow
- Complaints are 'cleansed' (1 per person) and no action results from them
- Consultations are divisive to the community: which area will suffer the next round of noise trials?
- The method of designing flight paths is only vaguely specified and appears to be based mostly on operational convenience, and avoiding restrictions, and aviation safety and efficiency
- There is reporting of options but no reporting of outcomes and no accountability
- Suicide and mental health consultations are offered to affected residents who complain
- The main strategy ('noise sharing') does not aim to reduce noise impacts, merely to share them among different communities. That is deeply unethical.

Noise Complaints Are Artificially Low

"Brisbane Airport is a 24-hour operating airport, and no curfew applies. In terms of frequency, flights are scheduled by the airport and the airlines to meet demand.

Airservices has *no oversight* of flight schedules and is not able to force airlines to schedule flights for any particular time. Our organisation has *no powers* to place operating restrictions on airports, nor are we involved in flight scheduling.

Your 26 March dated complaint also raised concerns about the decibel levels when you indicated an aircraft flying at 73 decibels over your location at 2:32 am.

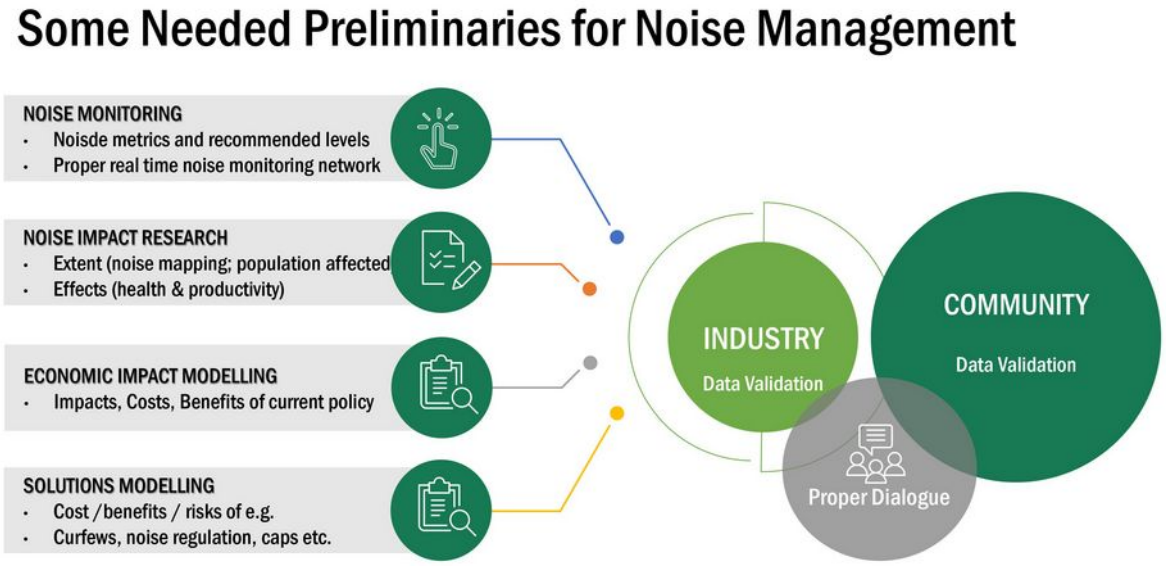
With regard to decibel levels, Airservices use a Noise and Flight Path Monitoring System (NFPMS) to collect noise and flight path data at a number of airports around Australia.

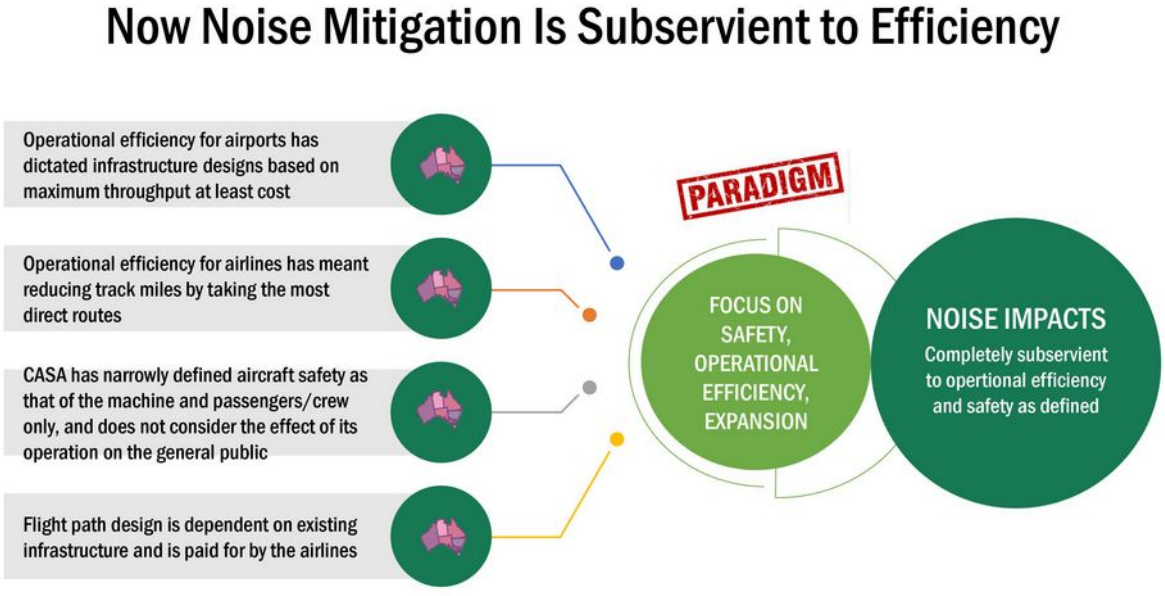
Noise monitoring is not undertaken to determine compliance with aircraft noise regulations as there are *no regulations which specify a maximum noise level for aircraft.*"

Why Not More Complaints?

- How to make a complaint is not obvious
- Understanding the over flight noise issue takes more time than most people have
- The process of complaining is difficult and 'valid reasons' must be given
- Only one complaint is allowed per person – multiple complaints are 'cleansed'
- The wait time for a reply is months, if any reply is provided
- No action results from the complaint other than a letter essentially saying that there is no basis for the complaint
- Many people just accept the noise, even if they find it disturbing, not knowing the harm
- Politicians report that this is a significant problem when they talk to constituents

Appendix 26: Noise Management Preliminary Requirements





Noise management has a trade-off with efficiency of flight paths, fuel efficiency and operations. Industry has a strong vested interest in safety and fuel efficiency (new aircraft) but no such interest in noise management while costs can be socialized.

Appendix 27: Industry Resistance to Regulation with Refutations

Brisbane Airport Warns Greens Curfews Will Cost $1.5 Billion

New modeling shows how much economic damage will be done to Queensland regional communities if Greens legislation ever gets passed.

BY MICHAEL DORAN · PUBLISHED OCT 16, 2023

SUMMARY

- Introducing a night curfew and movement cap at Brisbane Airport would cost AU$1.5 billion and result in 16,000 job losses, according to independent financial modeling.
- Elizabeth Watson-Brown, a politician from the Australian Greens party, is pushing for the restrictions, which would limit flights to 45 per hour and impose a curfew between 22:00 and 06:00.
- The modeling also predicts a decline in regional flights and passenger movements, with significant negative impacts on tourism, essential deliveries, and local produce exports. It would also lead to flight cancellations, delays, inconvenient schedules, and higher airfares for passengers.

NOTE:: DETAILS OF BAC STUDY HAVE BEEN REQUESTED BUT NOT RELEASED

Example: One-Sided Economic Impact Claims

First order thinking

- Impact on airport operations at night affects fewer jobs, fewer flights and less income due to much lower traffic
- Not all the jobs would be lost as claimed, and not all jobs are a FTE as contractors have multiple clients and staff may not work full time on BAC related work
- Some of the night flights could be rescheduled, thus not causing significant loss
- Proper time would be available for frequent runways maintenance
- The decline in regional flights is unsupported
- Increased cost of flying is not supported
- Inconvenient schedules is laughable
- The social cost of night flights due to sleep deprivation is extreme and well researched
- Many airports operate successfully with curfews for the sake of their communities
- Unnecessarily politicized

Parallel Brisbane Study

› Annual Aviation Noise Costs for Brisbane Estimated $3bn

› (productivity and health losses from aircraft noise)

Noise Annoyance, Sleep Disturbance, Productivity Losses, Disease – Estimated Socialized Costs

'Externalities' borne by Communities (2023)

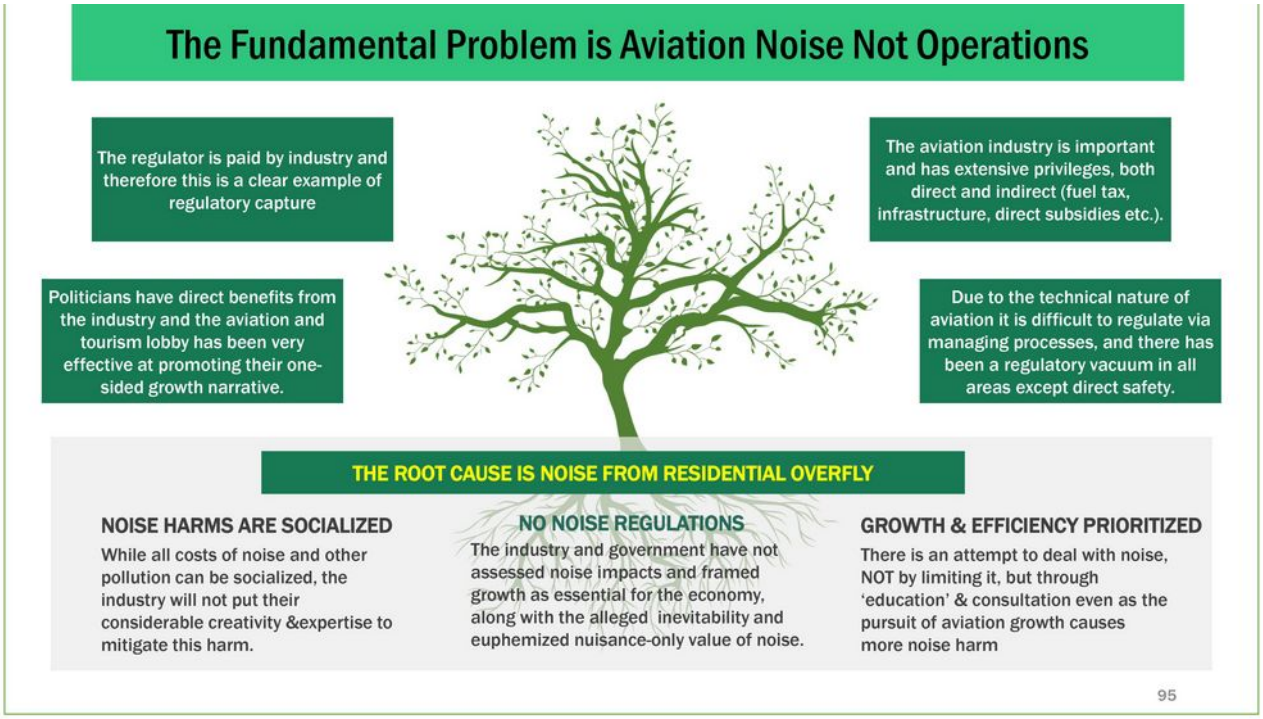
DALYs Lost ~13,880/annum
Severely afflicted cost = ~$11,843/person/annum

BAC's Impact Qld. v Noise Costs 2019 & 2041 (projected)

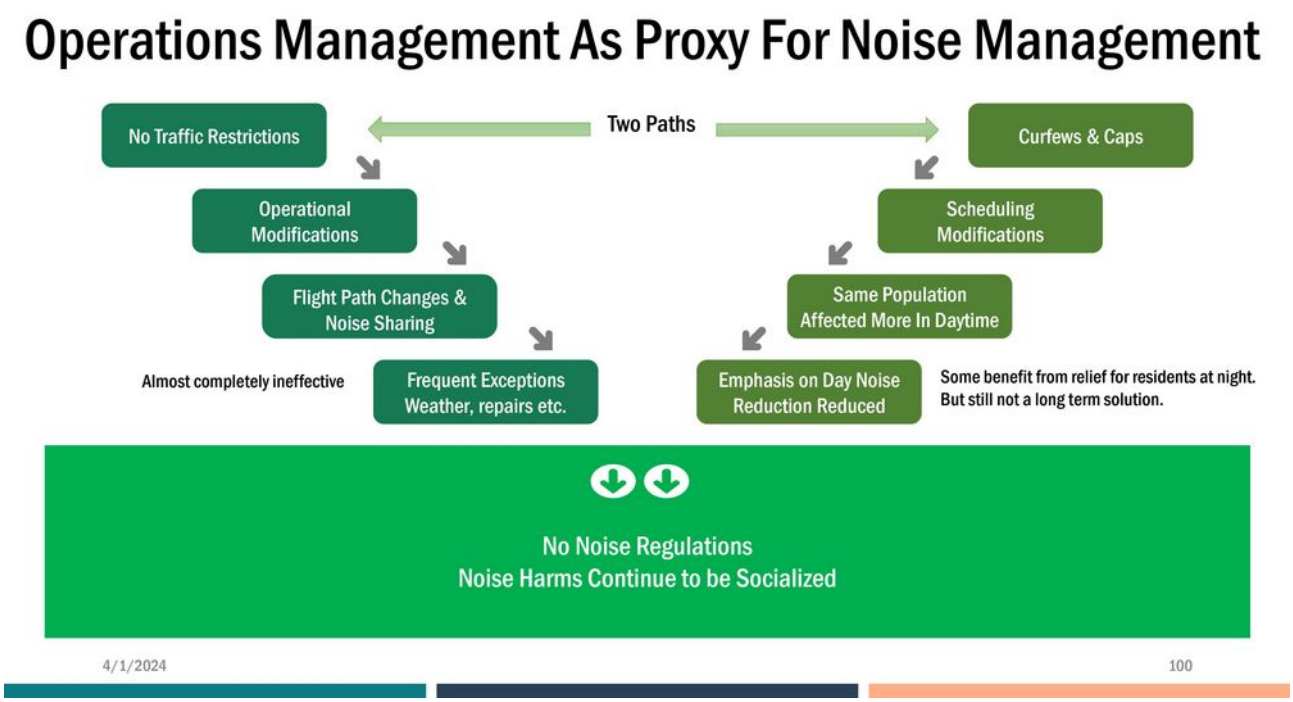
Year	Annual Air Movements	BAC Claimed Contribution	Community Health Cost
2019	213,000	~$4.3 bn	~3.9 bn
2041	380,000	~$8 bn	~~8 bn

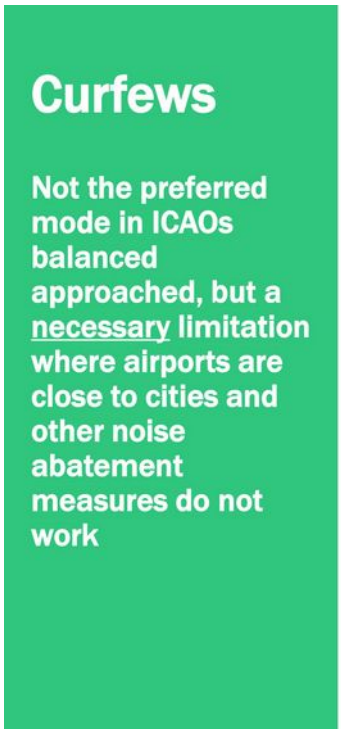
DATA: Brussels Methodology: flight path data (2022) from Belgian aviation authorities, health and other cost data from WHO Europe's database, population 1.3 million (half Brisbane's) severely afflicted estimate: ~220,000 people suffer annoyance (4,830 DALYs), ~109,000 sleep disturbance (6,000 DALYs), ~6,800 cardiovascular risks (6,800 DALYs) = Total 19,260 DALYs. Health-economic cost/annum : annoyance EUR 0.578 bn, sleep disturbance EUR 1.007 bn, cardiovascular risk EUR 0.900 bn = Total EUR 2.485 bn (~AUD 3.997 bn/annum). Severely afflicted people: Brussels EUR 7,402/person/annum, ~AUD 11,843/person/annum.
DALY = Disability Adjusted Life Years. Brussels, ENVISA 2023. Brisbane Airport data from BAC Master Plan (2020)

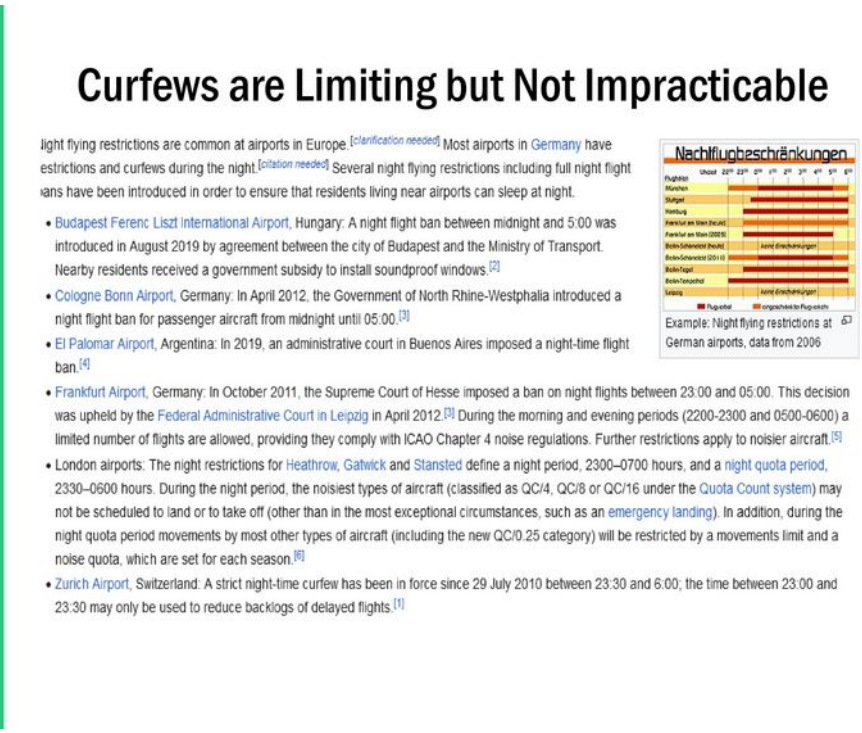
Appendix 28: Aircraft Noise Regulation: Need For New Frameworks



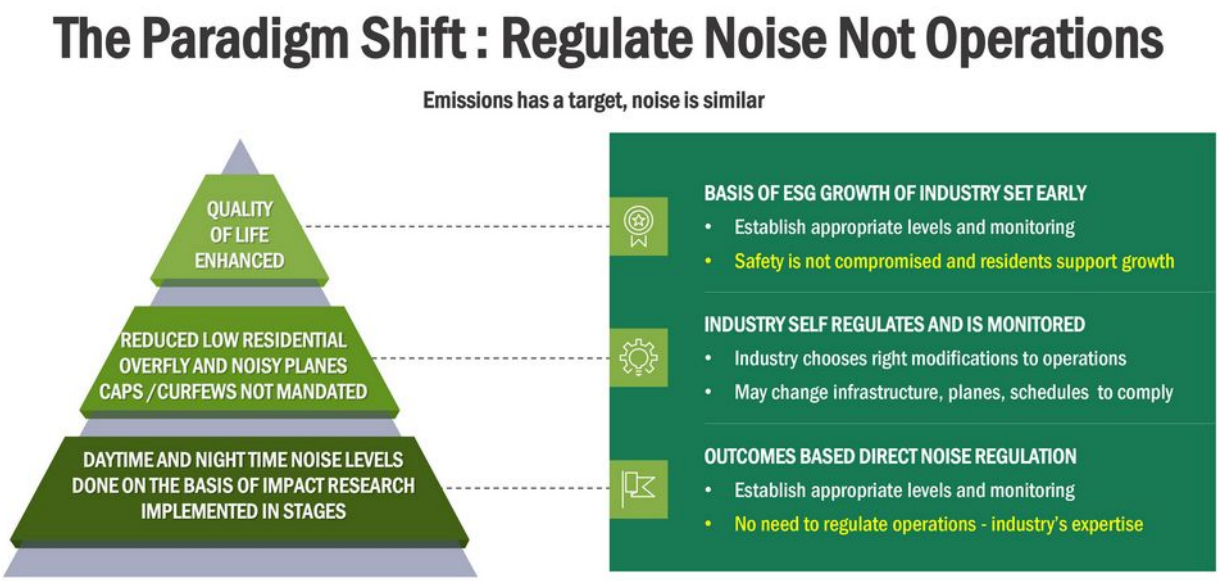
Appendix 29 Operational Restrictions Through Curfews

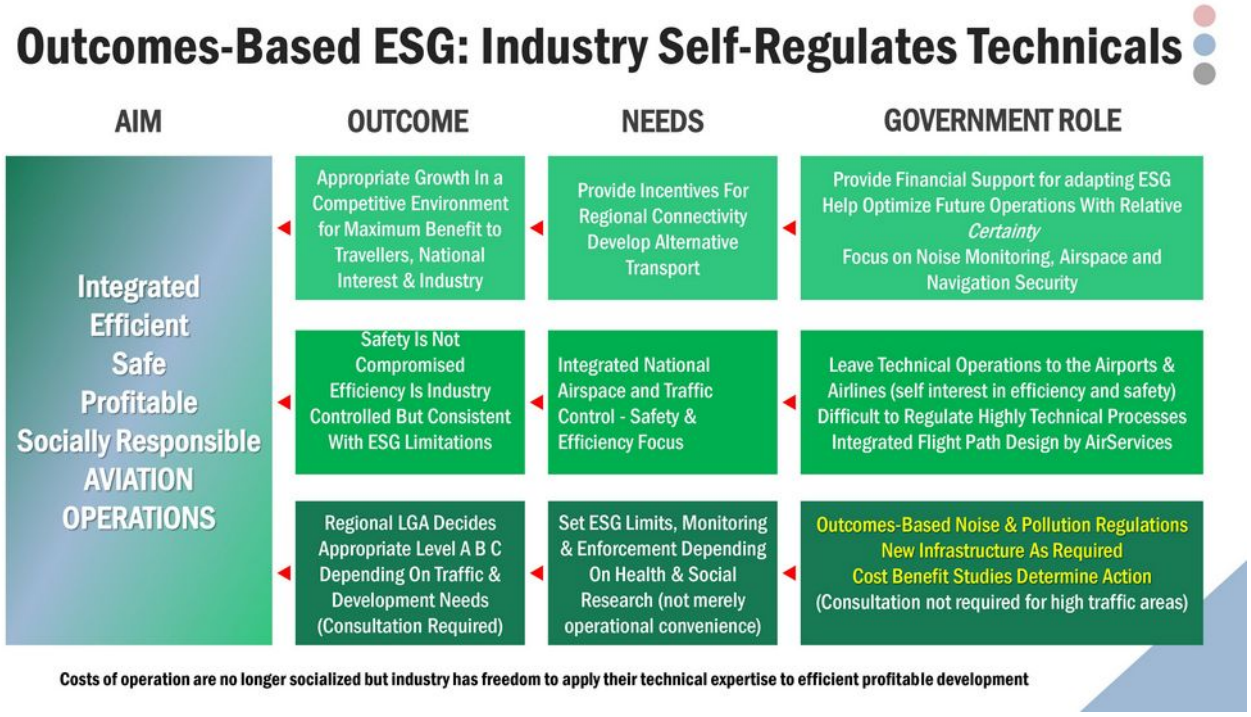




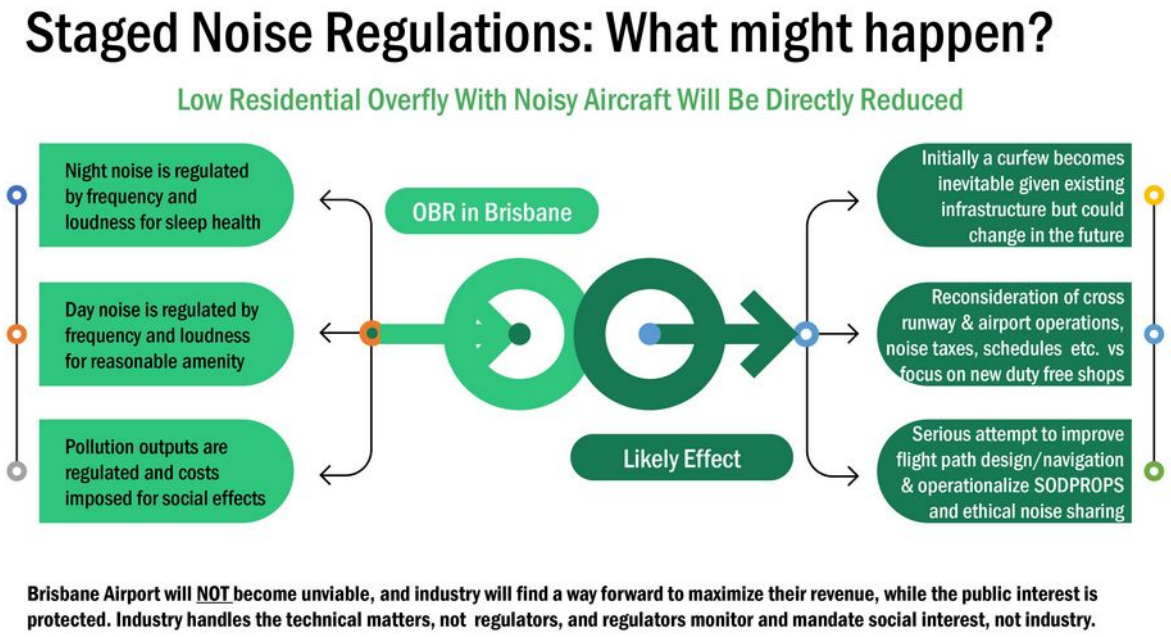


Appendix 30: Direct Noise Regulation – An Idea To Explore

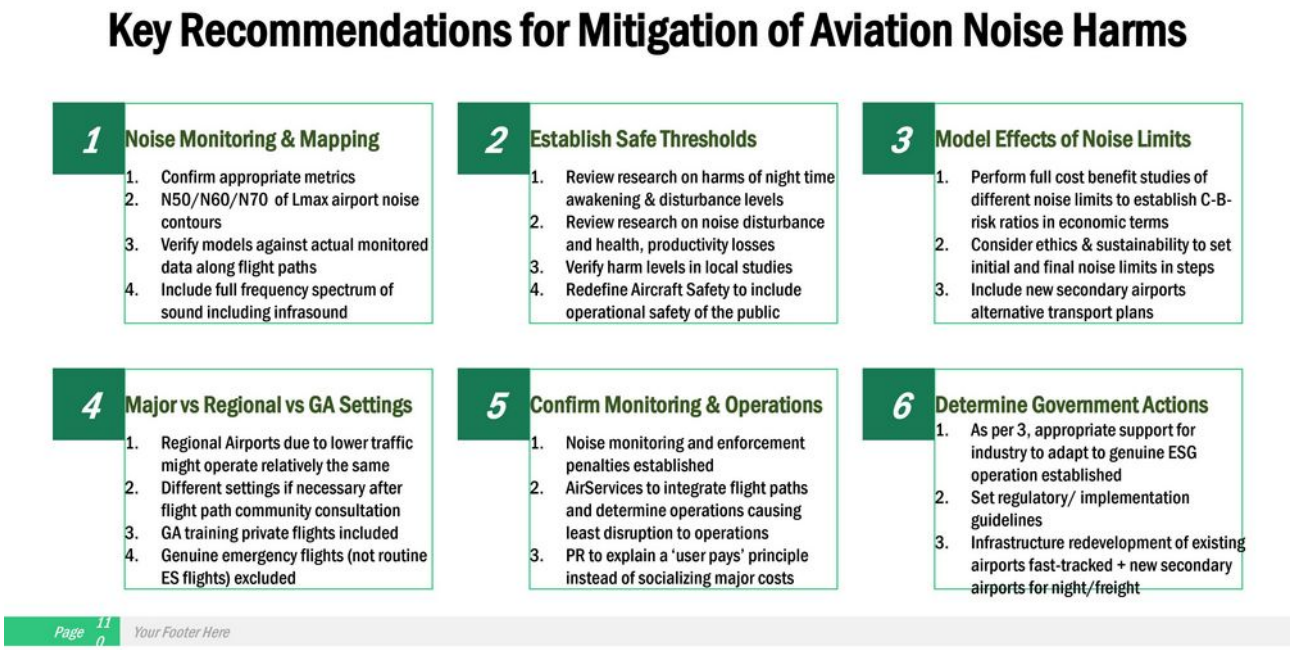


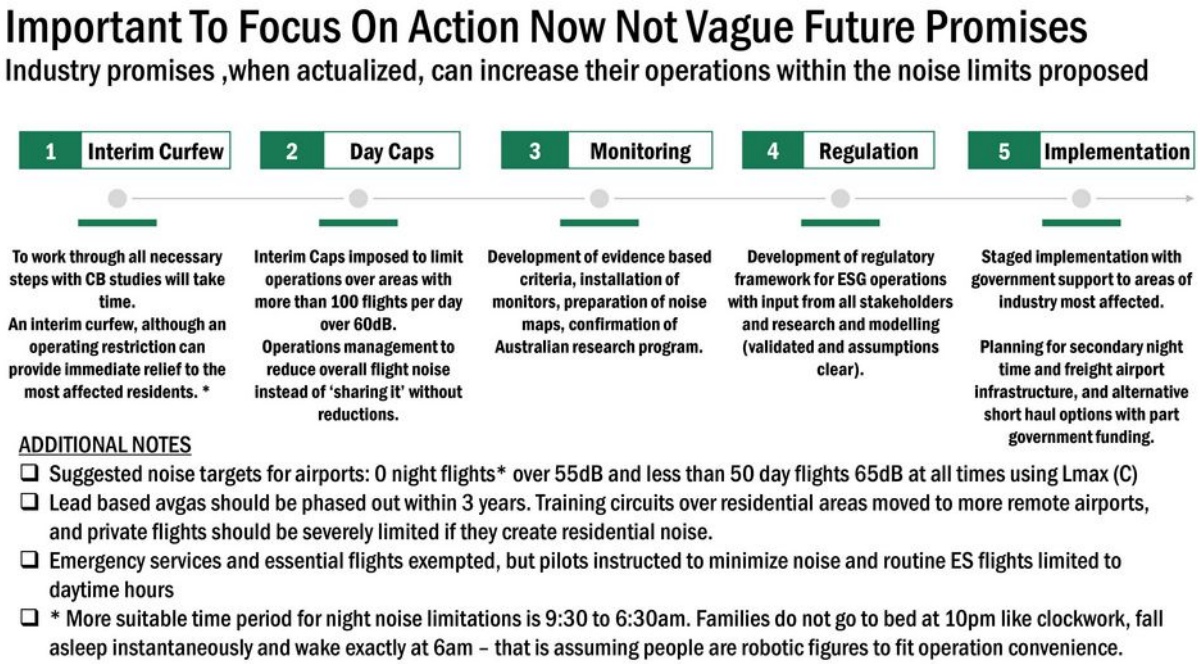


Appendix 31: Staged Noise Regulations



Appendix 32: Observations on A Way Forward





Appendix 33: Final Thoughts

Dutch court says the government must do more to rein in noise pollution at Amsterdam's busy airport

Mike Corder | AP ⋮ ⋮ 20/03/2024

THE HAGUE, Netherlands — *The Dutch government has systematically put the interests of the aviation sector above those of people who live near Schiphol Airport*, one of Europe's busiest aviation hubs, a Dutch court ruled Wednesday, saying that the treatment of local residents amounts to a breach of Europe's human rights convention.

"The state has always prioritized the 'hub function' and the growth of Schiphol," The Hague District Court said, as it ordered authorities to do more to rein in noise pollution.

The court ruling was the latest development in long-running efforts to rein in noise pollution and nuisance caused by the airport on the outskirts of Amsterdam. Late last year, the government shelved plans to rein in flights following protests from countries including the United States and warnings that the move could breach European law and aviation agreements.

"The judge's decision is crystal clear: more attention must be paid to local residents and the reduction of noise pollution. That was already the government's commitment, and we will study the verdict," the ministry for infrastructure and water said in a written response.

The national public health institute estimates that around 259,000 people in the Netherlands experience "serious nuisance" from aircraft flying over the densely populated country.

Wednesday's court ruling ordered the government to properly enforce existing noise pollution laws and regulations within a year and to provide "practical and effective legal protection for all people who experience serious inconvenience or sleep disturbance due to air traffic to and from Schiphol."

The organization that brought the case, called The Right to Protection from Aircraft Nuisance, welcomed the ruling.

"The court ruled that the state did not properly weigh interests: economic interests have always been central, local residents were lowest in the pecking order. That is no longer allowed," it said, adding that the group and its lawyers were "extremely satisfied" with the decision.

Schiphol said in a statement that it is working toward reducing noise pollution

"Like these local residents, we want aviation to cause less nuisance. At the same time, we want the Netherlands to remain connected to the rest of the world, but quieter, cleaner and better," the airport said in a written statement.

Among measures the airport is proposing are closing at nighttime and banning the noisiest planes.

"This will lead to a reduction in the number of people experiencing noise nuisance. In the short term, it is in any case important to have legislation that gives clarity to both local residents and the aviation sector. That is also the judge's verdict today," Schiphol added.

Socially Responsible & Profitable Goals Mutually Exclusive?

Industry Profits are expanded by privatizing the benefits, getting more subsidies and exemptions, and socializing the costs. Industry has shown that they are unwilling to self-regulate for these reasons.

Regional growth is not curtailed by ESG operations of the industry as claimed. Their economic impact studies are completely one sided and self-serving.
Regions face different problems and could have different levels of regulation within an ESG framework

Responsible operations will mean that society does not pay for hidden costs of aviation operations, a situation which will get untenable in the future.
Social license to operate should not be either by mandate or fake community consultation and 'education'

87