

# **Health and the Effects of Aircraft Noise.**

**Submission to WSI EIS**

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## 1. Introduction

Within one of the references of EIS 20.2 *One of the primary objectives of The Governments Health Guidance is to ensure that health considerations are factored into the early stages of planning and decision-making processes of relevant developments. The intent of this should be to highlight both the potential harm and benefit to the current and future health of the community and provide suggestions for better health outcomes. The failure to identify, assess and manage these impacts can result in poorer health outcomes, missed opportunities to improve health, greater inequities and fractured communities. Health Impact Assessment Guidelines (Environmental Health C<https://www.health.gov.au/resources/publications/enhealth-guidance-health-impact-assessmentguidelines?language=enommittee>, 2017).*

Within the EIS There are glaring omissions and fragmented statements rerouting towards other chapters without specific world-wide evidence. This limits the public to make informed opinions/submissions from the document to include the detrimental health effects of sleep deprivation statistically significantly due to aircraft noise disturbance.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8910193/> Within the WSI EIS document it is quite evident that it has not addressed the noise impact and its effects on health. All it has achieved is moving Sydney Airport to the Western Sydney Suburbs extending the problem even further Day and Night

The WHO 2018 report concludes that government policy and noise targets are inadequate and out of date, and it strongly recommends that new targets are established and incorporated into national policies.

The report recommends threshold aircraft noise limits of 45dB Lden during the day and 40dB Lnight at night compared with the previous levels of 55dB and 45dB respectively. These recommendations present a significant challenge for the aviation industry. Forecasts in 2017 showed that worldwide passenger numbers could double to 8.2 billion annually by 2037 The aviation industry states that “new generation aircraft will be 50% quieter” but this needs to be carefully scrutinised since this falls well short of halving the noise intensity or loudness of an aircraft’s noise emissions While current aircraft have reduced their noise emissions compared with earlier generations, this improvement is now becoming much less marked in terms of the actual reduction of noise intensity. In the United Kingdom alone it has been estimated that over half the population is exposed to more than the

WHO's previous recommended daytime noise levels and just under three quarters reside in areas where previous recommended night time noise levels are exceeded Unless urgent action is taken using the new WHO recommendations for lower thresholds, the health of communities residing near airports will continue to show marked deterioration.

<https://blogs.bmj.com/bmj/2019/06/18/theharms-to-health-caused-by-aviation-noise-require-urgent-action/>

## 2. The Effect of Noise on Health

*The Nobel Prize Winner Robert Koch predicted in 1910 that 'One day man will have to fight noise as fiercely as cholera and pest'. Acutely, noise interferes with communication, disturbs sleep, and causes annoyance. At the same equivalent noise level, annoyance and self-reported sleep disturbance are usually highest for aircraft noise, compared with rail traffic noise Further, long-term exposure to relevant noise levels has been shown to be associated with negative health outcomes.*

Noise exposure modifies the function of multiple organs and systems. Acute noise exposure, in both laboratory settings where traffic noise was simulated and in real-life environments, can cause increases in blood pressure, heart rate, and cardiac output, likely mediated by the release of stress hormones such as catecholamines (As shown by field studies, these acute effects occur not only at high sound levels in occupational settings but also at relatively low environmental noise levels when concentration, relaxation, or sleep is disturbed.

As described above, noise may exert its effects either directly, through synaptic interactions, or indirectly, through the emotional and the cognitive perception of sound. **In other words, both the objective noise exposure (sound level) and its subjective perception determine the impact of noise on neuroendocrine homeostasis.**

Sleep is a complex and very active process, incorporating many vital physiological processes (e.g. protein biosynthesis, excretion of specific hormones, memory consolidation) that, in a broad sense, serve recuperation and preparation for the next wake period. Acute and chronic sleep restriction or fragmentation has been shown to be associated with inadequate pancreatic insulin, sleep disturbance is usually considered the most severe non-auditory effect of environmental noise exposure.

The Ascending Reticular Activating System is part of the body's arousal system. It receives input from several sensory systems (including the auditory) and relays this information, for instance, to cardio-respiratory brainstem networks and through the Thalamus to the Cortex. Thus, we recognize, evaluate, and react to environmental sounds even while asleep.

Repeated noise-induced arousals reduce sleep quality through changes in sleep structure that includes delayed sleep onset and early awakenings, fewer deep and rapid eye movement sleep, and more time spent awake and in superficial sleep stages.

Exposure–response relationships have associated several traffic noise sources (e.g. road, rail, and aircraft noise) with awakenings, ..., with a less pronounced effect of railroad noise, and a more pronounced effect of aircraft noise at the same equivalent noise level

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3971384/>

### **3. Aircraft Noise Negatively affecting People's Health and Quality of Life.**

Aircraft noise can no longer be considered simply as an inconvenience to people's lives. Major studies have concluded that aircraft noise is negatively affecting people's health and quality of life. Exposure to aircraft noise can lead to short-term responses such as sleep disturbance, annoyance, and impairment of learning in children, and long-term exposure is associated with increased risk of high blood pressure, heart disease, heart attack, stroke, dementia, and may contribute to long-term mental health issues <https://waubrafoundation.org.au/resources/bronzaft-impact-noise-health-dividebetween-policy-science/>

Evidence for aircraft noise WHO (1999a) noted that different noise sources have different “information content” which could affect thresholds and dose-response relationships. Aircraft noise is characterised by A review by Stansfeld (2015) of 25 studies that look at both noise and air pollution found independent, substantial effects of noise on cardiovascular outcomes. Aircraft noise and public health: the evidence is loud and clear 17 high noise levels per event but low numbers of events compared, for example, to road traffic noise (WHO 2009). Reviews of evidence on aircraft noise by the CAA in 2013 for the Department for Transport, and Dr Charlotte Clark in 2015 for the Airports Commission both highlighted strong links specifically between aircraft noise and health effects. (CAA 2013b). <https://www.aef.org.uk/uploads/Aircraft-Noise-and-Public-Health-the-evidence-is-loud-andclear-final-reportONLINE.pdf>

## 4. Cardiovascular effects of nocturnal noise

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More recent studies, provided evidence of a higher cardiovascular risk for subjects who reside near airports. In an ecological study carried out around Heathrow airport, London, an increased risk of stroke and coronary heart disease was reported in relation to day- and night-time exposure to aircraft noise in people that were more exposed to aircraft noise than others.

A large cohort study in Switzerland reported an increased mortality due to myocardial infarction with increasing exposure levels and duration of aircraft noise, with a non-significant hazard ratio of 1.3 when persons exposed to noise levels ( $L_{DN}$ ) $\geq$ 60 dB compared with those exposed to  $<$ 45 dB after adjustment for several individual and geographical variables, including air pollution. several studies within the last 10 years demonstrate a higher prevalence of annoyance, cardiovascular disease, or medication intake in persons exposed to aircraft noise.

“Cardiovascular effects of environmental noise exposure”

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3971384/> “Physiology, Catecholamines”

<https://www.ncbi.nlm.nih.gov/books/NBK507716/>

### From the UK Evidence Loud and clear

The report calls for the Government to act now and commit to developing targets to protect the public from the health impacts of aircraft noise and to review all policies The report also calls for any future aviation policy decisions to assess the impact from aircraft noise on health. *Government should draw on all available evidence including the anticipated WHO guidelines, upcoming noise attitudes survey and any other recent research, in setting its long-term objectives for aircraft noise.*

<https://www.aef.org.uk/2016/01/12/new-report-finds-aircraft-noise-policies-put-the-health-of-overone-million-people-at-risk/>

## 5. Noise induced nocturnal cortisol secretion and tolerable overhead flights.

Noise induce cortisol excretion even below the awakening threshold. Thus, repeated noise events (e.g. overflights during night time) may lead to accumulation of the cortisol level in blood ...as a result of long-term stress activation by environmental influences such as environmental noise. Based upon a physiological model calculating the cortisol accumulation starting at a nightly threshold of

physiological over-proportional reactions around  $L_{max} = 53$  dB(A) the number of tolerable noise events (over-flights in a nightly time range) can be estimated for given indoor peak sound pressure levels, keeping the cortisol increase within the normal range. Examples of results for 8 hours in the night are for instance number and level combinations (NAL-values) of 13 events with 53 dB(A) indoor peak level or 6 events with 70 dB(A) indoor peak level respectively.

<https://pubmed.ncbi.nlm.nih.gov/15070527/>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4608916/>

## 6. WSI attempts in Tempering Aircraft Noise Impact without dealing with the real aspects of damaging traits of Noise Impact

WSI :EIS stated that individuals and communities newly exposed to aircraft noise are likely to show an *enhanced sensitivity to changes in the noise environment. Chapter 11, p11 and that people will get used to the noise over time*"; Chapter 20 Human Health Page 404 of Part C of the Draft EIS [https://www.wsiflightpaths.gov.au/pdf\\_documents/WSI\\_EIS\\_Part\\_C\\_Environmental\\_impact\\_assessment.pdf](https://www.wsiflightpaths.gov.au/pdf_documents/WSI_EIS_Part_C_Environmental_impact_assessment.pdf)

WSI :“By 2055 there would be some additional locations, outside of the modelled ANEC 20 contours where impacts on *community health may be of significance*. Changes in noise as a result of operations between 2033 and 2055 would be expected to be *gradual*, and hence the *significance of the impacts* identified may be influenced by community *adjustment* to the presence of aircraft noise in the environment.

These changes, however, may remain of significance to some members of the community. It is expected that by 2055 the presence of aircraft noise in the local study area would have been present for a significant period of time, where some members of the community may have *adjusted to the presence of aircraft noise in the environment*. In addition, the change in noise levels between 2033 and 2055 would be expected to be gradual where *adjustment to changes in noise levels* would be expected to occur. At the same time the assessment of health and wellbeing considers the *actual or perceived impacts* of the project on the community wellbeing and learning environments due to changes to the noise, air and/or visual environments. (WSI. 18.5.5 p.380)

Despite numerous studies identifying the negative effects of aircraft noise on health, the Draft EIS Comments are noted within the Document regarding Noise with:

“Comments such as : adjustment , enhanced sensitivity, it will be gradual, perceived impacts, people will get used to the noise over time, are very ambiguous and condescending

Is this a strategy of addressing a problem by downplaying the health effects of noise by using psychological tempering resulting in suffering or if the residents do not comply, we could name it - Adjustment Disorder or Sensory Overload?

Tempering actions taken in response to a perceived problem sometimes lead to an inferior result rather than an improvement. Such actions have been implied as tempering. Another identified mechanism is a desire to meet external expectations for example to comply with directives provided by authorities irrespective of whether they are supportive or not.

## 7. Questions and Responses to: Possibilities for Community Adjustment to the Detrimental Effects on Health

*7.1 WSI In the Summary of effects to wellbeing because of aircraft operation noise and emissions Possibility of Year 2033 Table 18.13 . p 381 Detrimental effects to wellbeing as a result of changes to amenity to populations of Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek with a Magnitude being Moderate with residual impact being Medium.*

Within the same document WSI Draft EIS 20.5.2.. p 416. Health related noise impacts - highest potential for increases in sleep disturbance impacts would occur in areas closest to WSI being Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek

*The relationship between mental health and sleep is bidirectional which simply means that they affect each other, in either cause or effect., chronic sleep problems can exacerbate mental health issues and increase the risk of developing mood disorders.*

*Quality sleep is crucial for emotional regulation, cognitive function, and overall psychological well-being. Addressing sleep problems and prioritising good sleep hygiene can be a vital part of managing and improving mental health, while mental health treatment can help alleviate sleep-related issues, highlighting the interconnectedness of the two.*



<https://www.sleephealthfoundat>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4608916/ion.org.au/sleep-categories/mental-health-sleep>

**Response** : So, my question is if WSI EIS states that noise is “ (causing **Detrimental**” harm or damage. Table 18.13.p.381) to the well-being how can it be moderate? In particular that it causes sleep disturbance *Therefore, any changes brought by the aircrafts in Health and **Significant** well-being is and needs to be addressed.*

Health is paramount and the health budget will be exorbitant as we are not addressing the health issues and not addressing the solution of people’s health and well being <https://bfpca.org.au/health-study/>

“Impact of Noise on Health: The Divide between Policy and Science” would argue that cost to abate noise is not the overriding issue that many claim it is in that the cost **in not alleviating the noise may be higher.** We often do not factor in medical and educational costs in deciding what to do about noise sources. <https://waubrafoundation.org.au/wp-content/uploads/2017/05/Bronzart-A.-Impact-of-Noiseon-Health.-Divide-Between-Policy-Science.pdf>

**Is the Australian Government ignoring the evidence?** — Christopher Hitchens proverb “**That which can be asserted without evidence, can be dismissed without evidence.**”

“A reliable way to make people believe in falsehoods is frequent repetition, because familiarity is not easily distinguished from truth. Authoritarian institutions and marketers have always known this fact. <https://calvinrosser.com/notes/thinking-fast-and-slow-daniel-kahneman/>

Can then this be applied to comments quite frequently used “is that people will get used to the **noise over**” time;.” “**You will adjust**”, “**you are just sensitive to the noise**” “ It about Jobs”

“**It’s about economics**” **But at what cost both Physical and Mental outcomes?** “**Who really Benefits**” “**Who Plays People Health as not important**”.

7.2 Aircraft Noise : maybe for some within the community over time the noise affected their hearing developing problems from the Aircraft Noise therefore adjusted:

7.3 WSI: Air Services: Will our complaints be heard or stonewalled? Air Services complaints Department stonewalled complaints, example approximately 25,000 complaints being stonewalled Brisbane Airport <https://bfpca.org.au/ncis/>

7.4 In "Brisbane the 2020 BFPCA community survey 68% of people reported mental distress from aircraft noise – this figure has jumped to over 74% in the latest survey as a result of the increased traffic at Brisbane Airport. Due to the severe mental distress experienced by Brisbane communities, Airservices Australia now offer free mental health counselling services available "to any community member who is feeling negatively affected by aircraft operations." Airservices have also admitted in Senate Estimates that they have started to send the Queensland Police into people's homes to conduct welfare checks as a result of the harm caused by the flight path noise pollution". This finding does not give any consolation that people are adjusting. <https://bfpca.org.au/health-study/>

So it appears that the Brisbane Airservices Government direction of mental health counselling is very expensive for the tax payers and detrimental for the residents affecting both mentally and physical harm resulting in both poorer health and fractured social community . One could call it a bandage (a coverup) what might appear a solution not working so therefore it is not a solution for WSI.

in 2011 Perth Albanese defends aircraft noise decision

Federal Transport Minister Anthony Albanese says the government's decision not to fund insulation for homes near Perth airport is based on science..

<https://www.sbs.com.au/news/article/albanese-defends-aircraft-noise-decision/mcfmwxe3h>

There is science there is evidence, but will the Government read it or acknowledge it?

In March 2023 The Aviation Noise Ombudsman (ANO ) has conducted seven major investigations<sup>4</sup> into noise complaints in: Sydney, Parafield (Adelaide), Perth, Hobart, Sunshine Coast, East Melbourne and Brisbane. Each investigation found that communities were misled about the amount and/or location of aircraft noise expected from new runways or

changes to flight paths. No meaningful change has resulted from any <https://www.infrastructure.gov.au/sites/default/files/documents/awptor2023-submission-a67residents-against-western-sydney-airport.pdf> of these investigations.

**7.5 WSI EIS p.417** Despite the accumulation of evidence worldwide Including WHO that noise pollution is linked to an increase risk of cardiovascular disease WSI EIS presents that this is in a category of low ***“Therefore it can be considered that the impact of the operation of the project on the incidence of ischaemic heart disease from project-related noise is considered to be low and/or similar to existing/background rates of ischaemic heart disease in the community.”*** Is WSI only looking at the number of people (population) living close to the airport based on algorithms to the new airport being low and insignificant or finding this worldwide evidence insignificant ?

**7.6 Environmental noise exposure and health outcomes: an umbrella review of systematic reviews and meta-analysis** found that different types of noise produced varying levels of annoyance, with **aircraft noise being reported as the most annoying type of noise.**  
<https://academic.oup.com/eurpub/article/33/4/725/7111337>  
<https://iris.who.int/bitstream/handle/10665/343936/WHO-EURO-2018-3287-43046-60243eng.pdf?sequence=2>

**7.7 Are people really adjusting?** Studies have identified results suggest an effect of aircraft noise on the use of **antihypertensive medication**, but this effect did not hold for all countries. Results were more consistent across countries for the **increased use of anxiolytics (for anxiety)** in relation to aircraft noise.  
<https://pubmed.ncbi.nlm.nih.gov/21084328/>

**7.8 Wallacia Noise single noise Prediction** Lamax is to experience maximum noise level of **75 decibels during typical overflight . Health issues** are related more likely to **Night time** exposure. At present Wallacia is regarded the quietest of a night time and will be one of the noisiest when the Aircraft flights begin. *The problem is that WSI have averaged the noise levels rather and not on peak noise levels or the frequency of noise thereby making the Lamax noise insignificant.*

So Wallacia is requesting WSI to **provide effective solutions or fair and Equitable health outcomes. The failure to identify, assess and manage these impacts can result in poorer health outcomes, missed opportunities to improve health, greater inequities and fractured communities.** *Health Impact Assessment Guidelines (Environmental Health <https://www.health.gov.au/resources/publications/enhealth-guidance-health-impactassessment-guidelines?language=enommittee>, 2017).*

The World Health Organisation's 2022 recommendation for the maximum aircraft noise level exposure is **45 decibels during the day and 40 decibels at night. Suburbs** in Brisbane regularly experience flights generating 70-85 decibels of aircraft noise. Wallacia Maximum 75 Decibels of a night <https://bfpca.org.au/health-study/>  
[https://cdn.who.int/media/docs/default-source/who-compendium-on-health-andenvironment/who-compendium-noise-01042022.pdf?sfvrsn=bc371498\\_3](https://cdn.who.int/media/docs/default-source/who-compendium-on-health-andenvironment/who-compendium-noise-01042022.pdf?sfvrsn=bc371498_3)

**7.9 Health Impacts and the financial cost** : By 2032, Brisbane Airport's excessive aircraft noise problem will **drain \$18.9 billion from Queensland's health budget.** These negative effects from Brisbane Airport's excessive flight noise are what will cause a **\$2.1 billion drain on Queensland's health budget per year**, equating to \$18.9 billion to 2032. This is in contrast with Brisbane Airport Corporation's estimates that a proposed night-time curfew would negatively impact Queensland's economy, shrinking it by an estimated \$2.8 billion by 2032, which **represents** just 0.08% of the state's \$360 billion economy.

<https://bfpca.org.au/health-study/>

Future aviation policy decisions should assess the impact from aircraft noise on health, including through Health Impact Assessments where appropriate, and should ensure that health impacts are monetised to inform cost-benefit analyses.

[https://www.aef.org.uk/uploads/AEF\\_aircraft-noise-and-health\\_FINAL\\_Web-1.pdf](https://www.aef.org.uk/uploads/AEF_aircraft-noise-and-health_FINAL_Web-1.pdf)

**7.10. WSI response to Reduction in Noise Pollution** : **Difficult to predict future reductions in aircraft noise exposure** from low noise variants because this is primarily the role of original equipment manufacturers, for example, Airbus and Boeing. (11.3.1.1 Reduction in noise at source) *In response to this Residents will be waiting for long time. So Noise abatement /insulation needs to be implemented in homes affected by night time noise.*

7.11 A request to receive **the specific evidence/research on Aircraft Noise** that was used to debate to Parliament to instigate the Sydney Airport Curfew Act 1995.

[https://www.infrastructure.gov.au/sites/default/files/migrated/aviation/environmental/files/Sydney\\_Airport\\_Curfew\\_Factsheet.pdf](https://www.infrastructure.gov.au/sites/default/files/migrated/aviation/environmental/files/Sydney_Airport_Curfew_Factsheet.pdf)

## Conclusion..

Evidence that noise not only causes annoyance, sleep disturbance, or reductions in quality of life and mental health issues but also contributes to a higher prevalence of the most important cardiovascular risk factor arterial hypertension and the incidence of cardiovascular diseases. Noise-induced sleep disturbance constitutes an important mechanism on the pathway from chronic noise exposure to the development of a various adverse health effects..

<https://academic.oup.com/eurheartj/article/35/13/829/634015?>

Health related noise impacts – the **highest potential for increases in sleep disturbance impacts would occur in areas closest to WSI being Luddenham, Greendale, Silverdale, Wallacia and Kemps Creek.** WSI Draft EIS 20.5.2.. p 416 The **medical implications of environmental noise exposure** needs to be addressed such as Noise Mitigation strategies such as curfews /insulation to residents by Night time noise to allow residents to have respite throughout the night.

At a community meeting it was suggested:

1. Every Non-RRO NIGHT TAKE-OFF PROCEDURE (Runway 23) needs a 20 degree left turn after takeoff.
2. There should be a NOISE ABATEMENT PROCEDURE advising Air Traffic Control to CANCEL the 'RRO Early Right Turn Night Procedure', when traffic permits, and instruct an initial 20 degree left turn.
3. Change the Early Right Turn Procedure to be: "at the latter of 500 feet above the ground or one nautical mile past the end of the runway" (or similar) to avoid overflying Wallacia village, and consider a lesser right turn (say 10 degrees less) which would help and avoid Park River Close.

So any health problems can be insignificant while all they think about the Billions of dollars the Governments is anticipating to make from this airport?

It reminds me of a story a **real life event one** of my friend 's Father won Powerball 20million. His ex wife asked if he would give her some money he said NO but he will pay for her counselling so she can learn to deal with it.

This is very similar but different.as this can relate to the problems of Brisbane Airport The airport also generates Billions of dollars in profit but the residents can only access- **free mental health counselling** - is this what WSI will be replicating ? <https://bfpca.org.au/health-study/>

***WSI Case AirServices and the Government have identified the impending impact BUT have not planned appropriately in solution focus strategies in dealing with these impacts*** to the people most affective by noise in constructive means. Therefore it is anticipated that the WSI will effect people health and **result in poorer health** outcomes, missed opportunities to improve health, greater inequities and fractured communities.